

NEURODIVERSITY AND EPISTEMIC JUSTICE:  
A THERAPEUTIC CONSILIENCE

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DOCTOR OF PHILOSOPHY IN COUNSELOR EDUCATION AND SUPERVISION

BY

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NEURODIVERSITY AND EPISTEMIC JUSTICE:  
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Neurodiversity and Epistemic Injustice

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Submitted to the Faculty of Adler University, Chicago Campus

Department of Counseling and Integrated Programs

In Partial Fulfillment of the Requirements for

The Degree of

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## Abstract

Traditional models of psychopathology medicalize divergence from a narrow norm of well-being, while the neurodiversity movement advocates for recognizing neurocognitive diversity akin to other differences of culture, gender or sexuality. Medicalization can be an epistemic injustice when it obfuscates a marginalized groups' unique strengths, ways of knowing, and paths to social success, damaging social credibility and depriving that community of adaptive self-understanding. The current study explored the subjective impact of a corrective training model based on an integrative "consilience" of four scientific meta-theories - gene-culture co-evolution, personality research, life history research and moral psychology. The model espoused that "normal neurodiversity" is present in most social animals: temperaments act as "social niche specializations" and create embodied traits that suit a subset of roles and environments. This creates a productive frame for neurodiversity as adaptive strengths connected to psychosocial tradeoffs and implicates a non-pathological view of distress: the need to align to a sustainable social niche as a source of mental resources and buffer against harmful psychosocial injuries. Directive content analysis was used to assess changes in beliefs and attitudes among participants using surveys given before and after the workshop. Nine participants completed the pre-workshop questionnaire and five completed the post-workshop questionnaire, with a demonstrated direction of change toward integrative, contextual, and functional views of neurodiversity, and generally favorable attitudes toward the workshop overall.

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To my clients: I am honored to consider you fellow travelers, and have been privileged to keep your company. You've made me who I am, and I carry your gifts with me wherever I go. Thank you for sharing with me, for letting me be a part of your journey, and for doing the work of giving pain meaning. You've helped me too, and through me, continue to help each other and your communities. I will keep paying it forward.

### Dedication

To my wife: You are my fork in the road, and I'm so glad to have taken you. Thank you for letting me take all these visions along with us, and for being the only road in the valley that led somewhere beautiful. It will always be for you.

To my kids: Someday I hope you are as proud of me as I am of you. You are too young to know how much you mean to me, but someday I hope you find this like a little breadcrumb trail to my heart.

To my mother & sister: Every day I get one step further, I think "we did it." You will always be my "we." With love there shouldn't need to be thanks, but this time there is.

To my brother & my father: The people who don't make it are the winds at our backs. You are my hurricane.

### *For Whom The Bell Tolls* by John Donne

No man is an island, / Entire of itself. / Each is a piece of the continent, / A part of the main. / If a clod be washed away by the sea, / Europe is the less. / As well as if a promontory were. / As well as if a manor of thine own / Or of thine friend's were. / Each man's death diminishes me, / For I am involved in mankind. / Therefore, send not to know / For whom the bell tolls, / It tolls for thee.

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## CHAPTER I: OVERVIEW

### Introduction: Neurodiversity and Epistemic Ambiguity

The neurodiversity concept was originated by Judith Singer (2017) in 1997 to speculate that a natural neurological diversity among humans might maintain a rich and healthy social ecosystem in an analogous way to the role of biodiversity in maintaining optimal planetary health (Blume, 1999; Doyle, 2020). The construct has been used to push back on the “abnormal psychology” perspective on diagnoses such as autism spectrum disorder (ASD) or attention-deficit hyperactivity disorder (ADHD) as outlined by the Diagnostic and Statistical Manual (DSM 5-TR), seeing them not as diseases to be cured, but as emergent neurological profiles with valid ways of being and knowing in the world to be valued, included and respected (Armstrong, 2010; Doyle, 2020; Priscott & Allen, 2021; J. Singer, 2017). There are a variety of perspectives on the relationship of these diagnoses to the neurodiversity concept: some characterize neurodiversity as part of the normal distribution of human traits that can lead to unique profiles of struggle either in the extreme or under duress (Oller, 2019); others emphasize the mental health challenges of neurodiversity as coexisting among underexplored strengths and contributions (Armstrong, 2010); still others emphasize the more heightened profile of trade-offs between cognitive strengths and vulnerabilities as forms of cognitive specialization (Doyle, 2020). Currently the term is epistemically ambiguous, predominantly defined by a resistance to the traditional medical framing of mental health psychopathology. ASD and ADHD are frequently centered in such conversations, but the list can range from learning disorders such as dyslexia or dyspraxia, to mental

health disorders such as mood and psychotic disorders, and generally emphasizes inclusivity in a nebulous taxonomy that can vary by source. Each conception shares a resistance to the deficit-based understanding of neurodiverse people as problems to be solved, and there is typically broad agreement that the problem is not reductive to individuals, but the absence of an accommodating society (i.e., the social model of disability; Armstrong, 2010; Chapman & Carel, 2021; Meadows, 2020; J. Singer, 2017; 2021).

However, while the individual frame is often etiologically resisted among neurodiversity advocates, few express skepticism that it is the best way to understand neurodiversity, with little discussion given to exploring what neurodiversity *is* outside of its association with pathological diagnoses, and a seeming widespread assumption that they are in fact one in the same even among advocates. For instance, *autism*, or *autistics*, are assumed to be the meaningful unit of understanding that “corner” of neurodiversity, and not some underlying differences of sub-clinical temperament, personality or neurological traits that are widely distributed and functional, of which autism or autistics would only be considered within as an emergent clinical manifestation of a deeper, normative logic. In fact, this framing is exactly what may characterize the conceptual topography of neurodiversity (Del Giudice, 2018; Oller, 2019). Some actively resist further efforts at scientific understanding for fear it would serve to reify social hierarchies and social Darwinist assumptions of intrinsic inequities (Chapman, 2021b; 2021c; Stenning & Rosqvist, 2021). Yet beyond the binary framing of individual problems versus social problems lies another issue: the lack of epistemic

clarity around neurodiversity helps to maintain the crude pathological paradigms which perpetuate confusion between society and the neurodiverse. In other words, as Chapman and Carel (2021) pointed out, it is not the autism that causes pain or suffering, but how people *think* of autism that shapes a marginalizing, silencing and high-barrier environment for autistics; as well as how this “overproliferation of neurotypical signposts” (p. 14) influence how autistics think of themselves. This position considers the lack of well-framed information as preventing neuromajorities from understanding how they should relate to, and position themselves, regarding the neurominorities. It also considers how neurominorities should position themselves psychosocially in epistemically “hostile” environments, as both dimensions lead to disempowering social dynamics among the neurodiverse that might help provide the context for why neurodiversity might be associated with widespread mental health problems.

### **Epistemic Injustice**

Miranda Fricker (2007) introduced the term *epistemic injustice* to address a unique form of disempowerment to epistemic agents in their capacity as “knower” [of the world] and [as someone who is] “known.” That is, marginalized communities may face two kinds of injustice. *Testimonial injustice* is where certain identities are silenced by working from a credibility deficit that makes their knowledge, motives and authority suspect. *Hermeneutical injustice* is where the ability to be known and understood is constrained by the lack of hermeneutic (interpretive) understanding of a minoritized experience both by the minoritized group and the majority. The latter form of injustice works in part by creating a lack of resistance to oppression because words to describe

the injustice do not exist and when they come into existence, they are not shared reference points by those in the majority (Kidd et al., 2017); for instance, imagine trying to describe racism or sexism in the 19th century.

### **Epistemic Injustice and Mental Health**

The mental health field has seen a variety of its labels act as epistemic injustices, from diagnoses of homosexuality, transgender or hysteria. With regard to hysteria, which was thought to be synonymous with female sexuality while being treated like a disease (Maines, 2001), feminist scholars now consider the condition to be both a reaction to, and reflection of, the oppressive social roles and station of women in the nineteenth century (Devereux, 2014; Gilman et al., 1993). In each example, the marginalized community is actively misunderstood and silenced by the pathological label: there is an inability by the marginalized group to shape the language to be true to their own experience (hermeneutical injustice) which leaves members unable to justify their suffering and distress to themselves and others; the imposition of a pathological understanding of this distress by the majority community is met without resistance by those who cannot articulate it to themselves, and the testimony of the marginalized group is discredited as impaired and suspect (testimonial injustice). Both hermeneutical and testimonial injustice can work together to perpetuate the dynamic, particularly as imposed knowledge is inherited by a disempowered minority as truthful and comes to reinforce the marginalized groups' own questionable credibility and low station to themselves. Elsewhere, this dynamic has been called *internalized oppression*, a key factor in what makes oppressive systems work, which is inclusive of a variety of

expressions such as *internalized racism*, *internalized homophobia*, and *internalized sexism* (David & Derthick, 2013). Thus, Fricker (2007) characterized multiple barriers in the dynamic of epistemic justice that a marginalized person or group must face to rise above its self-reinforcing nature: a) the inability to shape language in hermeneutical injustice creates a systematic barrier to self-understanding and self-knowledge by the minority community, and b) self-knowledge cannot spread when all members of the marginalized group suffer from poor testimonial credibility. When we add the dynamic of internalized oppression - that a dominant group can impose negative beliefs about a minoritized group that are adopted, internalized and accepted by the marginalized group (Rosenwasser, 2002) - then overcoming these dynamics involves at least three overwhelming efforts: recognizing the dynamic, fighting for others in the minority to hear and believe narratives of mistreatment, and then persisting until both the minority and majority to reevaluate their mutually-reinforcing beliefs despite strong investment in the existing social order.

Mental health fields may unwittingly have a history of policing such barriers among marginalized groups of class, gender, sexuality, race, and now, neurodiversity, having been noted by sociologists that medicalization inherently carries these social control features, i.e. policing deviations from cultural norms (Conrad, 1992; Correia, 2017). For instance, when social issues are reframed as individual problems, individuals become scapegoats for larger issues (David & Derthick, 2013; Ratts, 2009). By example, *structural inconsistency* describes the expectation of people in lower classes to pursue certain goals and interests by officially designated means, without providing the political

and economic opportunities and resources to attain them (Mirowski & Ross, 1983); the result is systematic demotivation among lower classes that may see those individuals treated as depressed instead of (or perhaps, phenotypically identical to) their having a demoralizing awareness of the barriers implicit in their circumstance (see also: *depressive realism*; Alloy & Abramson, 1988; Hanna et al., 2000). Said differently, people can “stop making sense” within a cultural frame when the dominant social narrative creates expectations that cannot be fulfilled by a particular subgroup, yet the reasons for failing to meet those expectations are also unjustifiable from within the narrative; some alternative and more stigmatizing explanation is usually offered instead - moral defects, social judgments, inferiority narratives, and so forth - which is internalized and accepted by all.

Scholars have found that the bioreductive assumptions of the medical model of psychopathology not only promotes such stigma among sufferers and neutral third parties (Lebowitz & Appelbaum, 2019; Rüsch et al., 2010a), it does so among mental health professionals as well (Larkings & Brown, 2018). These assumptions remain present in the current psychiatric consensus. For instance, the stress-diathesis model of mental illness assumes an environmental stressor serves to activate an intrinsic vulnerability, where the searching for the roots of these intrinsic vulnerabilities underpins the hunt for “pathology genes” in the psychiatric literature (Belsky et al., 2009). In the evolutionary literature, carrying pathology genes would invoke social Darwinist schemas that hold defective alleles to be intrinsically maladaptive, with an implication of relative evolutionary inferiority of such carriers in the face of those with

greater *genetic fitness* (Albee, 2005; Keller, 2005; Stenning & Rosqvist, 2021).

However, putting resistance to such ideas aside, even within these respective fields, there are other viable interpretations for the evidence along each link in the chain, including the role of the plastic brain (MacDuffie & Strauman, 2017a; 2017b), the role of plasticity genes and various forms of trade-offs and mismatches (Belsky et al., 2009; Del Giudice, 2018; Dobbs, 2012), and the role of evolution in creating universal vulnerability of mental health issues among social animals based on context and development, particularly as they face social and positional threats (Gilbert, 1989; 1992a; 1992b; 2019; Johnstone & Boyle, 2018).

A similar problem faces some evidence-based practices (EBPs) that are congruent with the medical model in the modality's use of "specific ingredients" thought to target specific deficits in the diagnosis. Cognitive-behavioral therapy (CBT), for instance, has been singled out for the presumption that mental health suffering is predominantly a function of the intrinsic faultiness of a client's thinking about their psychosocial problems. This sets up CBT to be a particularly egregious offender of epistemic injustice, as discrediting the client's testimony and pathologizing their way of knowing in advance is a core assumption of the therapy (Ratnayake, 2022). Ratnayake went on to suggest that the social science literature casts doubt on the theorized causal mechanism of CBT and may actually suggest the opposite to be true: well-adjusted people do not regulate their well-being through well-honed reason and rationale, but through a "delusional" *positivity bias* that is central to normal mental health functioning and motivation. Paul Gilbert (2009), creator of compassion-focused therapy (CFT) and

author on several seminal texts on CBT, agrees with the failure of CBT to align with social science findings particularly with respect to social variables regarding adversity and resilience, effectively taking clients out of the context of their life. In general, an accumulation of shows that contrary to the reputation of CBT as the default gold star evidence-based practice, Shedler (2018) suggested a systemic research bias toward CBT's claims to efficacy over the past years; there is evidence of a poor grounding with primary social science (Gilbert, 2009; Ratnayake, 2022); and there is a likely a small role (7%) of so-called "specific ingredients" entirely (Wampold & Imel, 2015).

Irrespective of the medical model and EBPs specifically, an *epistemic justice* (EJ) frame may be of general significance to therapy. Mental pain is inherently difficult to articulate, understand and causally-attribute, nor is it intuitively clear what a social threat is or why they may prove unsustainable to mental well-being (Johnstone & Boyle, 2018). A person or group that is discredited as a knower, or has no publicly-accessible narrative with which to articulate their position, is vulnerable to disempowerment, marginalization and helplessness as they can easily be targeted for their seemingly irrational behavior such as avoiding abstract social threats or idiosyncratic attempts to cope, which might creep across various roles, contexts and intersectional identities (Johnstone & Boyle, 2018; D. Rose, 2023).

For instance, the Power-Threat-Meaning Framework (PTMF; Johnstone & Boyle, 2018) offers a counter-narrative to the medical model including 12 ways in which the negative use of power and social threats can be obscured in their etiological role in mental health disorders, creating pernicious effects that 'take place outside the realm of

socially validated reality' and become 'unspeakable' (Herman, 1992, p. 8) even to the sufferer. According to the PTMF, it is possible to understand the etiology of mental and emotional distress, yet complex, making suffering "intelligible." Alternatively, being diagnosed with "mental illness" typically functions in the opposite way, with the "illness" construct acting as an intermediate construct to explain why suffering and coping responses *do not make sense*. This perpetuates testimonial injustice through the implicit invalidation of pain, and hermeneutical injustice by creating a public framework that assumes mental suffering is unintelligible to the self and others. "Epistemic violence" occurs when a disempowering discourse is imposed on a subordinate, silenced group, thus facilitating further and more overt forms of violence or mistreatment (Spivak, 1988); "epistemic inequality" can result when people lose faith in the knowledge and credibility of sufferers relative to others by virtue of the narratives that arise from their suffering (Sanati & Kyratsous, 2015). The dynamic operates at multiple scales - personal, familial, institutional and societal (Johnstone & Boyle, 2018) - such that the 'whole engine of collective social meaning' can effectively silence vulnerable people (Fricker, 2007, p. 99), in this case, by virtue of experiencing complex social and emotional pain.

It can be up to therapists, then, to stand with individuals against the collective weight of shared meaning-making. It is the position of this dissertation that there is therapeutic value in making mental suffering less opaque both clinically, and as a broader production to the discourse, including the role of neurodiversity in more complex clinical presentations. It follows that mental health frameworks that can help to make social, mental and emotional pain more intelligible can take away the epistemic

power gradient that stigma operates on for providers, sufferers and third parties, empowering individuals in bottom-up, and top-down, ways.

### **Neurodiversity and Mental Health**

Neurodiversity presents a compelling example of epistemic injustice for many of the same reasons found in broader conversations about mental illness. Neurodiversity is typically understood as a partly taxonomic, partly spectrum-based, collection of mental health disabilities as defined by the Diagnostic and Statistical Manual, 5<sup>th</sup> edition (DSM-V). Neurodiversity advocates often seek to be as inclusive as possible, including a wide definition of neurodiversity to occasionally include anyone who is currently experiencing a DSM-V disorder (D. Price, 2022), yet the most common associations with the term are diagnoses like ASD and ADHD, which are thought to be lifelong neurodevelopmental disorders. Traditionally, this has led to a “pathological” lens where the disorders are framed as deficits to be cured, and considered separate and distinct from the sufferer. In recent years, a core goal of the advocacy movement has been to push back on implications like these and see these diagnoses as inseparable parts of the person themselves (Sinclair, 1993). Groups that represent the medicalized position - for instance, Autism Speaks and the Applied Behavioral Analyst treatment of autism - have become increasingly reviled by the community (D. Price, 2022). The purely deficit-based view has also rejected, with many pointing out that the DSM is a problematic document, with a historical lack of rigor, transparency, representation and conflicts of interest (Bonino, 2018; Davies, 2017; Fischer, 2012; Fitzgerald, 2020; Kawa & Giordano, 2012; Khoury et al., 2014), while also being used to police evolving social conceptions of

“normativity” through diagnoses like hysteria and homosexuality, the latter only recently being expunged in the late twentieth century. Chapman and Carel (2021) showed how this sets up *Autism’s Catch-22*, where it is a premise of receiving mental health care that assumptions of autism-as-a-disease prevent clients who see autism-as-identity (capable of living “the good life”) from receiving support for the adversity of an unaccommodating social milieu as they pursue a valid path to well-being.

Neurodiverse diagnoses are still seen as exotic, controversial, othering disorders, typically viewed from a deficit-lens that reduces social credibility and are positioned poorly to mount effective self-advocacy or embrace self-confidence (Chapman & Carel, 2021; Fitzgerald, 2020). That may be in part because “neurodiversity” as a construct is not designed to separate itself from the DSM-V constructs on which they are based, but to primarily serve political advocacy and identity purposes (Lewis, 2020; Meadows, 2020; J. Singer, 2021). While some advocates have turned to evolutionary theory for an epistemic footing that can understand neurodiversity as life strategies suited for different social niches (Del Giudice, 2018), or complementary cognitive specializations (Doyle, 2020; Taylor et al., 2022), many advocates resist such efforts, believing neurodiversity should remain epistemically opaque for fear the “engine of scientific discovery” will reify social Darwinist assumptions of a natural social order as a power gradient of inferiority to superiority, or else be made to exclude those who can’t be made to formally fit a narrow and precise definition (Chapman, 2021b; 2021c; Meadows, 2020; Stenning & Rosqvist, 2021). There are few pursuing the goal of reframing neurodiversity as an epistemically just framework from which positive self-

knowledge and testimonial credibility follow from challenging the primacy of the disability lens. By contrasting this view with the more marginal, but less pathologized ideas of “normal neurodiversity” - where neurodiverse characteristics are better understood through the sub-clinical traits found in neurodiverse families in broad phenotypes across the population - we may find the juxtaposition can illuminate a fundamental relationship between stigma and the disability assumption.

### **Neurodiversity and Culture**

Neurodiversity may also face epistemically unjust frames from individualistic Western folk psychology that idealizes thinking about the self in ways that are static, self-focused, socially decontextualized, and trait-based, as opposed to emphasizing contextual meaning, social harmony, group-identification and social roles (Oyserman et al., 2002). Western stereotypes may idealize traits of advantaged groups as embodying virtues as individual traits such as *intelligence, willpower, strength, sanity or normalcy*. Ideologies like these typically serve *systems justifying functions* (Jost & Hunyady, 2002), so that a system is thought to be natural and just, as those who are well-positioned are there because of their virtues, and those who are at the bottom of the social ladder or on the social fringe, are there because they failed in moral character. It is thought that even those most disempowered by such beliefs perpetuate “out-group favoritism,” preferring the traits of the more advantaged group and reinforcing aspects of the epistemic regime because it is “ideologically palliative” to believe in a meritocracy rather than face life facing one’s the prospect of daily oppression. Consequently, marginalized groups may come to participate in their own oppression and face a visceral form of

epistemic injustice in the form of *stereotype threats*, where the specter of being judged based on idealized folk constructs can trigger hypervigilant survival responses for fear of being pushed to the social fringe when seen as failing to live up to social ideals (see also: *social evaluative threat*; Priscott & Allen, 2021). For all marginalized groups, but particularly neurodiverse presentations, it is perhaps the danger of being seen as the inverse of these constructs – *sensitive, different, cognitively impaired, crazy or weird*, that poses significant social threat. A study on human capital diversity in the workplace found that priming value-laden cognitive stereotypes about intelligence in a brochure about a fictional job opportunity led to neurodiverse people reacting to stereotype threats in a pattern consistent with more visible minority groups (Priscott & Allen, 2021).

Social sciences including psychology, evolutionary biology, economics and more have a history of playing into these systems justifying cultural narratives and stereotypes (Oyserman et al., 2002; D. S. Wilson, 2002; 2019). For instance, evolutionary theory, psychology and economics were long saddled with core assumptions based on some version of rational actor theory and methodological individualism (D. S. Wilson, 2002; 2019) that effectively codified the cultural values of Western individualism as social science (Oyserman et al., 2002). In evolutionary theory, ideas that codified the primacy of strong, self-interested individuals were the basis for social Darwinism and eugenics to justify the political and social order based on genetic essentialism; in psychology, studies of intelligence were introduced by Frances Galton, who was also the American originator of the eugenics movement, also tied to genetic essentialism

(Chapman, 2021b; 2021c; Keller, 2005; D. S. Wilson, 2002). Studies exploring the social-cognitive motivations of those endorsing genetic essentialist beliefs find increased ingroup bias and social prejudice particularly in those prone to such outlooks, linking a similar motivated reasoning to the quest of social sciences to explain events through internal variables of biology and physiology (Keller, 2005). It is worth considering that modern day social sciences may serve similar *systems justifying* functions deep in their bedrock assumptions, and that a consilience approach - emphasizing interdisciplinary agreement - may help separate such artifacts to arrive at intelligible ways of understanding normal neurodiversity and what is truly “normal,” to avoid the influence of institutionalized superiority narratives.

### **Statement of the Problem**

Understanding and “making sense” of neurodiversity occupies a unique challenge, not the least of which are ethical and moral quandaries (Bervoets & Hens, 2020; Chapman, 2021a; 2021b; 2021c; Meadows, 2020; Stenning & Rosqvist, 2021), all of which problematizes the basic nature of shared knowledge as reference points for understanding the distorted social experience of a minoritized group. First, unlike some marginalized groups, neurodiversity may resist understanding from a subjective vantage point alone as the “logic” of the experience may be evolutionary and biopsychosocial in nature. Promising evidence suggests social animal personalities indeed evolved to occupy different social niches (Bergmüller & Taborsky, 2010), and that the broader complementarity of different neurocognitive strategies may embody biopsychosocial trade-offs in order to drive cultural evolution in human complex adaptive systems

(Haidt, 2013; P. J. Taylor et al., 2021). Where mental frames like these may give intellectual context to the strengths and challenges of neurodiversity, current paradigms may currently obscure this intelligibility. Such paradigms may not only constrain full understanding by being reductive and narrow, they may also be stigmatizing and systems justifying, based on narrow cultural conceptions of normalcy (Fitzgerald, 2020) and requiring a challenge to legacy paradigms to surmount them.

A potential solution to both may lay in *consilience* (E. O. Wilson, 1998), a scientific method of converging on strong conclusions from interdisciplinary agreement, where assumptions that fail to live up to multidisciplinary scrutiny are seen as inherently problematic. This provides a rigorous way to transcend ways of knowing that rest on singular approaches, cultural biases and narrow assumptions, while gaining all the benefits of more integrative, dynamic, contextual frameworks. Paradigms that make mental suffering and neurodiversity more intelligible and nuanced are inherently more just from an epistemic injustice perspective, and may be beneficial for both clinical application and advancing the social discourse more broadly. A method that brings multiple perspectives to the table may also bring multiple stakeholders and agendas to the table, all of whom benefit when science, self-knowledge and advocacy are brought into dialog.

However, an epistemically just and intelligible framework on mental health and neurodiversity cannot be appreciated without being laid out to experience the palliative effect of this alignment firsthand. Moreover, consilience has not been fully explored as a research method and would likely require further applications to demonstrate any

potential useful and resonant information in order to prove its pragmatic value in counseling science and practice. Until that time, it is difficult to consider how diagnoses may be disentangled from the stigma that emerges from the very paradigm and assumptions with which they are framed and communicated.

### **Purpose of the Study**

While neurodiversity and epistemic injustice are increasingly entering the literature, neurodiversity theory has not been formalized for use in a therapeutic modality (Chapman & Botha, 2023). The purpose of this study is to explore the subjective impact of a training model of neurodiversity on mental health practitioners as delivered by a professional workshop consisting of 10 hours of video lecture content and three hours of virtual meeting to discuss and synthesize. The model presented was derived from a *consilience* methodology (E. O. Wilson, 1998) and addressed the perceived stigma related to the medical model's presumption of a deficit-based identity linked to DSM-V diagnoses. By reframing how mental health challenges are linked to sub-clinical traits distributed in families defined by functional social strategies for living life, the meaning of neurodiversity can be shaped by a rich understanding of strengths, potentials, niches of optimal functioning and resilience, as well as the obvious challenges. The goal is to deploy multiple professional, social and practical benefits in the workshop that emerge from the consilience approach including tangible tools and useful information. Consequently, the study aims to explore whether this utility, in combination with more epistemically empowering frameworks and the alignment of stakeholder agendas, translates subjectively into resonance with the material as

qualitatively captured through changes in beliefs and attitudes.

### **Research Question**

What are the impacts of a neurodiversity workshop on mental health practitioners' beliefs on and understanding of epistemic justice, social animal perspectives, normal neurodiversity, and consilience?

### **Research Approach**

Qualitative research is best used for systematic study of social phenomena in natural settings, particularly if a researcher is interested not just in testing reality, but testing people's views on reality (Teherani et al., 2015). Content analysis is a form of qualitative research best employed to study social behavior, views and messages without influencing them by analyzing the content of media forms such as newspapers, books, speeches and television broadcasts (Fraenkel & Wallen, 2006). Directive content analysis does so from a theory-driven approach, allowing inquiry to follow from a specific theory or viewpoint. In this study, participants took a workshop on neurodiversity, and were administered a questionnaire before and after the workshop. The questionnaire had seven open-ended questions on their beliefs and attitudes about the medical model and neurodiversity, as well as expectations/reactions to the workshop. Answers were coded with regard to the nature of their beliefs and attitudes coming into the workshop and the direction of any change therein following the workshop, and interpreted according to a) framework for evaluating workshop best practices, b) neurodiversity-informed questionnaires, c) epistemic injustice and d) a neurodiversity consilience, and e) a social animal theory of mental health sustainability.

Participants were purposively sampled from a national population of mental health clinicians across professions; from a pool of 31 initial participants, nine eventually completed the pre-workshop survey, and five completed the post-workshop survey. Data was de-identified with the help of a research assistant and stored on a secure computer, where it was coded with the help of NVivo qualitative research software.

### **Significance of the Study**

A thesis of this dissertation is that epistemic injustice may be a core dynamic to mental health suffering. Epistemic violence and inequality result from collective meaning-making that silences vulnerable people and marginalized experiences, creating the conditions for real mistreatment and mental suffering. This works in part by obscuring authentic and empowering self-knowledge about unique strengths, values, contributions and strategies that emerge in a niche of optimal functioning. Given that such logic is highly opaque to vulnerable and isolated individuals, it is up to people who are better positioned to assess and promote its veracity.

Embedded in the thesis are two theories, a theory of neurodiversity, and a theory of mental health intelligibility, the latter of which is based on a social animal perspective on mental sustainability, resilience and vulnerability. Both theories intersect to suggest novel and intelligible paths to sustainable well-being, lifestyles and worldviews that may be epistemically just to diverse stakeholders. However, to the extent that this proposition warrants inquiry, it is obscured behind deficit-based models that lead to worse outcomes for people. Adherence to pathologizing paradigms is a precondition of current mental health training and treatment, yet data suggests that

there are harmful consequences to believing that mental suffering is a static trait, one characterized by a presumption of intrinsic flaws, and which promotes passivity in the face of suffering (see: *autobiographical information*; MacDuffie & Strauman, 2017a; 2017b). Challenging such paradigms may be as important as it is daunting, so this study seeks to juxtapose models in terms of their accuracy, utility and subjective empowerment, with an intuitive metric of impact: demonstration of changes to beliefs and attitudes - subjective resonance - as reported by practitioners in the field.

This study also seeks to promote the logic of *consilience* - strong conclusions from converging interdisciplinary facts - as a general tool of evolving paradigms to be more congruent with epistemic justice. Integrative, contextual, biopsychosocial and evolutionary paradigms are already understood to be proverbial “grail” in mental health (Gilbert, 2019), and consilience gives us rigorous criteria for evaluating them. The useful yet nuanced understanding that results can help make the biopsychosocial experiences of diverse stakeholders more intelligible, while applying epistemic pressure on paradigms that are overly siloed, which can contribute to over-reliance on more *systems justifying* cultural assumptions (in this case, those of highly individualistic, WEIRD cultures). Consequently, consilience may be of general interest as a strategic and wise approach for generating complex, integrative and just social science praxis and practice (Biglan et al., 2020).

Consequent to these propositions, this study's significance lay in assessing whether there is a viable path forward for constructive reframing of both neurodiversity and general mental health intelligibility (using a social animal perspective; SAP). To the

extent that these perspectives are arrived at through a *consilience* approach to apply rigor to such goals, there may be significance in using consilience as a tool to promote epistemic justice at the institutional-level by facilitating model-level change. In both cases, the goal is to systematically empower marginalized groups and create more productive relationships by reducing power gradients in our ways of knowing.

### **Statement of Limitations**

The limitations of this study come from using a qualitative design befitting the exploratory nature of the study as the study is not designed to produce results that can be widely generalized to other scenarios or populations. Qualitative methods are concerned with credibility and trustworthiness, such as requiring researcher self-awareness of their biases as they might influence research design and interpretation, and the use of multiple triangulation techniques to ensure that the conclusions are comprehensive and informed by multiple converging perspectives. Qualitative limitations may come in limits to producing trustworthiness and credibility, such as the need to use NVivo coding software to make iterative coding passes, rather than using a second coder who may produce more constructive discourse throughout the coding process. Using theory salient to the material being presented to direct the questions and interpretations may also run the risk of creating a systematic bias in how the material is interpreted. Finally, small sample sizes and participant attrition may inhibit the richness of the thematic saturation and constrain the full range of potential themes that may have emerged with a larger data set.

### **Definition of Terms**

For the purpose of this study, the following terms are defined:

1. *Neurodiversity* — an evolving, and sometimes controversial construct having to do with reconceptualizing mental disorders presumed to be neurological in origin as a form of natural forms of human diversity (Armstrong, 2010); a natural human diversity is based in differences among brains and brain functioning which might characterize anything from varying styles of thought and behavior, ways of being, and emerging subcultures.
2. *Normal neurodiversity* — an approach to neurodiversity that begins by understanding the sub-clinical patterns of temperament and personality found in the families of neurodiverse people (Oller, 2019); patterns that arise from the relationship between cognitive trade-offs, temperament and personality foundations, adaptive life history strategies, and complementary social niche specializations, to contextualize neurodiverse diagnoses within the natural social evolutionary “logic” of normal neurocognitive differences.
3. *Epistemic injustice* — unfair treatment that emerges from issues of knowledge, understanding, and participation in communicative practices or structures in meaning-making or knowledge producing practices that exclude, silence, misinterpret, misrepresent, distrust, disbelief, discredit and otherwise justify a person or group’s marginalized position so as to reinforce it (Kidd et al., 2017).
  - a. *Testimonial injustice* — unfairness related to trusting someone’s word due to identities they possess, such as sexuality, gender, ethnicity and more (Fricker, 2007).
  - b. *Hermeneutical injustice* — injustice related to how people’s lives are interpreted, by

themselves or others, because they have historically been excluded from the sociocultural processes of shaping the language, beliefs, stories and ideas that might bear on their unique experience (Fricker, 2007).

4. *[Bio]medical model [of psychopathology and mental health practice]* – The assumption that psychopathology is the result of biological factors such as genetics, neurotransmitters, and organic dysfunctions of the brain as a causal attribution of mental health disorders, and an organizing principle for the communication, understanding and treatment of mental health issues in psychiatry and related fields.

5. *Consilience* – an academic principle that evidence from multiple independent and unrelated sources, disciplines or ways of knowing may “converge” on strong conclusions that are less compelling taken singularly; a “jumping together” of facts and fact-based theory taken across disciplines to create a common explanatory groundwork (E. O. Wilson, 1998).

6. *Stigma* – A mark of disgrace associated with a particular circumstance, quality, or person; in mental health, the negative attitudes and beliefs regarding those with mental health disorders which can be a source of discrimination or in internalized shame.

## CHAPTER II: LITERATURE REVIEW

### **Part I: Epistemic Justice, the Medical Model and Current Ways of Knowing**

#### **Epistemic Injustice**

Miranda Fricker (2007) introduced the term *epistemic injustice* to address a unique form of disempowerment to epistemic agents in their capacity as “knower” [of the world] and [as someone who is] “known.” That is, marginalized people and communities may face two subtypes of epistemic injustice. *Testimonial injustice* is where certain identities are silenced by working from a credibility deficit that makes their knowledge, motives and authority suspect. *Hermeneutical injustice* is where the ability to be known and understood is constrained by the lack of hermeneutic (interpretive) understanding of a minoritized experience both by the minoritized group and the majority. The latter creates a lack of resistance to oppression because words to describe the injustice do not exist and when they come into existence, they are not shared reference points by those in the majority and may even be constrained within the marginalized group.

In lieu of meaningful self-knowledge or self-story, both forms of epistemic injustice lead to *epistemic violence*, whereby a discourse is imposed on a subordinated, silenced group, which may facilitate more overt forms of violence or oppression (Johnstone & Boyle, 2018; Spivak, 1988). *Epistemic inequality* is where one’s knowledge of one’s experience is discredited or dismissed by an agent or agents who presume themselves to be “epistemically superior,” who then recharacterize the “epistemically inferior” to themselves in a paternalistic and/or stigmatizing way without being

consulted on their experience (Johnstone & Boyle, 2018). This may lead to “the whole engine of collective meaning” effectively silencing them (Fricker, 2007, p. 99; Johnstone & Boyle, 2018).

As an example, from the feminist perspective, the psychiatric diagnosis of “hysteria” was applied exclusively to women for behavior that may have been a reaction to the oppressive social roles and power dynamics applied to women in the 19<sup>th</sup> century (Devereux, 2014; Gilman et al., 1993). From an epistemic justice standpoint, the concept of “hysteria” would occupy a specific place in the oppression itself. The label both circumvents the need for a psychiatrist of the time to empathically understand the patient, a form of hermeneutical injustice, while also contributing to a stereotype of women as an “unreliable narrators,” a testimonial injustice. As a self-reinforcing system of suppression to women of the era, the result may have been etiological to the kind of mental breakdown that would lead to a *hysteria* diagnosis.

Epistemic injustice sees the imposition of discrediting and disempowering stereotypes as “knowledge” imposed on a minority by a majority (Chapman & Carel, 2021; Kidd et al., 2017; Stenning & Rosqvist, 2021), which in turn creates multiple barriers to overcoming one’s epistemic and social position when one cannot identify, much less protest, such conditions (Fricker, 2007). An obvious barrier to understanding the problem is a lack of language or shared understanding of the problem, but more insidious is the nature of epistemic violence to distort and displace such understanding with an imposed, stigmatizing alternative explanation. The hysteria construct would be internalized as derailing self-knowledge to actively misframe and pathologize one’s own

experience to oneself, adding subjective, emotional and ideological barriers to a more critical consciousness (see: *internalized oppression*, *internalized sexism*). What's more, even were one to surmount these first two barriers, oppressive majorities do not readily change social orders presumed to be virtuous, and a marginalized group that develops and spreads resistance concepts only wins the opportunity to *begin* a protracted fight to change such a system (for instance, after the rise of second-wave feminism; Devereux, 2014).

Taken together, epistemic injustice emerges as a complex, multidimensional power gradient that rests in part on the role of imposed language, constructs and interpretive meaning, which is sometimes called *internalized oppression* (see also: *internalized racism*, *internalized sexism*, *internalized homophobia*; David & Derthick, 2013). *Epistemic injustice* (see also: *epistemic oppression*) not only perpetuates unfair dynamics down power gradients, it creates knowledge that enforces this dynamic both among the more empowered and disempowered actors, while displacing more salient and useful self-knowledge that would help reduce the power gradient for the marginalized individual; for instance, concepts like sexual harassment and microaggressions have utility in part by empowering self-protection, self-care and self-advocacy.

### ***Epistemic Justice and Neurodiversity***

As an example of how this may apply to neurodiversity, Chapman and Carel (2021) applied this to ASD by suggesting the medical model confers a double-bind to those with ASD. A precondition of mental health support is acceptance that an ASD

disorder implies that the disorder itself is the natural target of treatment, leading aspects of one's character to be reframed as pathological symptoms flagged for clinical change. This assumption is incompatible with seeing autism as a valid, under-supported identity and way of being with a unique vision of "the good life," who needs therapy for the adversity faced in a hostile world. Neurodiverse clients must instead accept their personhood essentialized back to them as a disorder, which is an ineffective basis for one to build confidence or ambition, much less self-advocacy; at worst, a neurodiverse person is taught to distrust their strengths, judgments and values as manifestations of an illness-corrupted self-foundation.

The frame also presumes a separation of the disease from the self. This stands in contrast to early self-advocate Jim Sinclair's proclamation from "Do Not Mourn For Us" (1993) that:

Autism isn't something a person has, or a "shell" that a person is trapped inside. There's no normal child hidden behind the autism. Autism is a way of being. It is pervasive; it colors every experience, every sensation, perception, thought, emotion, and encounter, every aspect of existence. It is not possible to separate the autism from the person—and if it were possible, the person you'd have left would not be the same person you started with. (p. 1)

By contrast, we might frame an alternative lens as "normal neurodiversity;" the subclinical clustering of personality traits, motivations, strengths, challenges, values and life history strategies as multiple "broad phenotypes" of normal human variation as a species-typical norm (Ekblad, 2012; Oller, 2019). This may serve as a natural context for

diagnosis-based neurodiversity, complete with understanding strengths and challenges configured into neurocognitive social niche strategies that can be niche-congruent for optimal well-being, or disabling in hostile or incompatible cultures, environments and epistemic frameworks (Del Giudice, 2018; DeYoung, 2015; Haidt, 2013; Oller, 2019). Neurodiversity tolerance and frequency might vary by cultural strategy (see: *gene-culture coevolutionary research*), and local clustering would vary across subcultures, institutions, careers, families and so on. Opportunities for niche-congruence might vary according to neurotype rarity or marginalization, with oppressive contexts potentially more frequent and intense in those environments with less neurotype diversity. A neurotype that is marginalized or undersupported may manifest unique forms of distress and dysfunction that is not understood relative to their own neurotype baseline, but as evaluated through the norms and culture of the dominant neurotypes as a failure of an idealized and righteous homogeneity. Distributed social pressures, punishments and injuries can lead to various forms of suffering including the emergence of “masking” necessary to cope and suppress such pain; when the dominant culture then deprives this pain of meaning by presuming it to be absent, pathological or inherently invalid, there is a second level of epistemic injustice.

For neurodiversity writ large, the danger of epistemic injustice cast by inappropriately applied diagnosis and treatment includes:

- a) degrading the credibility of diverse neurotypes to prevent legitimizing their community, self-knowledge, identity, contribution, niches, and support needs by obfuscating their status as valid and equitable social agents, both to themselves and

others;

- b) imposing stereotyped knowledge with disempowering and distorting self-understanding as self-knowledge to the minoritized community, obscuring their own needs, goals, strengths, and values (see: *internal oppression*) while displacing more useful and adaptive self-knowledge;
- c) the risk of codifying normal human role diversity as a pathological divergence from a single, narrow, outdated, reductive, and static vision of normalcy to see neurotypes as a natural hierarchy rather than a natural diversity; the former of which may create a toxic environment of neurotype competition, marginalization, othering and domination; the latter of which may lead to mutually-enriching, complementary contributions to the cultural “commons” when empowering multiple niches in parallel (H. Taylor et al., 2022).

### **Mental Health and Epistemic Injustice: The DSM and Evidence-Based Practice**

The mental health field is coordinated through a taxonomy of psychopathological constructs codified in the Diagnostic and Statistical Manual in its fifth edition (DSM-5-TR), which forms the basis for diagnosis and treatment across mental health specialties. The root of this nosology began in medicine, with the “medical model” begun in the 18<sup>th</sup> century by William Cullen on the premise of clear and distinct diagnoses, support from physical findings and experimental data, and responsive to specific treatments (Shorter, 2015). A similar system was proposed to be adopted by psychiatry in the United States by Robins and Guze (1970), at the same time as large discrepancies between European and American diagnosticians were discovered, with

American clinicians being far more likely to diagnosis heterogeneous presentations as schizophrenia (Suris et al., 2016). Since the 1960's, pharmacological breakthroughs increasingly suggested the brain to be involved as a physical substrate of the mind, leading to a burgeoning *biological perspective* in psychiatry (Shorter, 2015), an idea in mental health with roots in Europe from physicians like Kraepelin and Alzheimer as early as the late 19<sup>th</sup> century. As the production of the DSM-III approached, papers began to be published, like one from Klein and Davis in 1969, talking of "discrete etiologies" for "specific diseases" that could be captured by "categorizations [with] explicit validity" (Shorter, 2015). Efforts to capitalize on these developments culminated in earnest with the DSM-III (1980) when task force chair Robert Spitzer went rogue to build a ground-up reconstruction of the DSM despite the APA's guidance to seek "a few minor tucks" (Shorter, 2015). Ultimately, the then chief executive of the APA called the outcome a "victory of science over ideology" (Kawa & Giordano, 2012), as Spitzer's task force reacted away from the broad idiosyncrasy of psychoanalysis that was seen as struggling to justify treatment approaches (Suris et al., 2016), and moved instead to a neo-Kraepelin diagnostic system: a consensus- and criterion-based system of diagnosis with validated constructs and none of the descriptive characterization which had been the hallmark of the previous nosology (Shorter, 2015). What had begun as the "St. Louis approach" by Eli Robins & Samuel Guze, came to be known as the "medical model" of psychiatry (Suris et al., 2016), or "biomedical model of illness" (Rocca & Anjum, 2020).

Elsewhere, historians have framed this transition against the backdrop of an existential fight for psychiatry's place in Western culture. Surís et al. (2016) framed the position of psychiatry going into the DSM-III as having "little public respect," with a lack of rigorous inquiry, no formal justifications for treatment selection, and excessive healthcare expenditures made worse by providers such as social workers offering far cheaper, more psychodynamic alternatives to psychiatric care (Davies, 2017; Kawa & Giordano, 2012). In contrast, a move toward a categorical, atheoretical classification system favorable to inter-rater reliability was in part a reputational, as well as economic, boon. Following the move toward the DSM-III, pharmacological research exploded thanks to drugs that could gain FDA approval now that they could be researched for efficacy as treatments for specific disease constructs; the NIMH budget to research such drugs increased by 84% on the back of government funding accordingly to \$484 million annually (Kawa & Giordano, 2012). Analysis of the percentage of DSM-5-TR task force members who had ties to the psychopharmacology industry found 69% could be connected, up 21% from the 57% of DSM-IV task force members with such ties (Cosgrove & Krinsky, 2012). Insurance also quickly aligned with this new, clear system as the default basis for their reimbursement schedule (Kawa & Giordano, 2012). Economic and medical alignment aided in cultural legitimacy, making the DSM project "an evolving document that is shaped by science, economics and politics" (Kiehl, 2017) to which Fitzgerald (2020) concluded, "no wonder neurodiverse people do not trust it."

The DSMs III through 5-TR have been wracked by critical histories across the

literature of multiples social sciences including psychiatry (Fitzgerald, 2020; Ghaemi, 2018), psychology (Kawa & Giordano, 2012; Khoury et al., 2014; Suris et al., 2016) counseling (Bonino & Hanna, 2018; Eriksen & Kress, 2006), social work (Wakefield, 2016), sociology (P. Conrad, 1992; Correia, 2017), anthropology (Davies, 2017), ethics (Pickersgill, 2014), philosophy of science (Rocca & Anjum, 2020) for a partial list. Protest also comes from unlikely places, including prominent figures in national mental health administration – two former NIMH directors, Steven Hyman (Fitzgerald, 2020; Scull, 2015) and Thomas Insel (Fitzgerald, 2020; Pickersgill, 2014; Scull, 2015) – and two former chairs of the DSM task force itself: Robert Spitzer (Greenberg, 2013) and Allen Frances (Greenberg, 2013; Pickersgill, 2014). Here we will explore four main avenues of criticism of the medical model (MM) found in the DSM: MM as a driver of stigma; MM as impaired practice; MM as impaired theory; and MM as having social costs.

### ***Stigma and the Medical Model***

The medical model has been associated with stigma, which can be framed herein as a form of epistemic injustice, not just among patients, but providers as well (Keller, 2005; Larkings & Brown, 2018; Lebowitz & Appelbaum, 2019; MacDuffie & Strauman, 2017a; Rüsch et al. 2010a). Khoury et al. (2014) pointed to the three forms of stigma as *public stigma, self-stigma, and label avoidance*: public stigma is the projection of negative stereotypes that lead to ill-treatment by large social groups; self-stigma is internalizing public views to downgrade self-perceptions, self-efficacy and self-confidence; and label avoidance reduces help-seeking to skirt the negative impact of stigma. They highlight that these forms of stigma can have a “devastating” impact, with a

potential for negative self-fulfilling prophecies such as reduced ambitions and self-expectations, as well as altered treatment by others. MacDuffie and Strauman (2017a; 2017b) frame a similar problem with the concept of *autobiographical information*, which problematizes the way in which biological information is incorporated into one's self-concept to produce either productive or counterproductive effects on treatment and recovery. They find that the current medical model often leads to worse prognosis when framing mental suffering with biological aspects as necessarily *intrinsic, stable* and *uncontrollable* (as opposed to extrinsic, unstable and controllable), despite the fact that none of those things may be true.

The reason stigma may flow from the medical model may lie in the underlying philosophical implications in the way the information is framed for thinking about the self and others. *Biogenetic essentialism* arises when genetic frames for mental illness lead to reduced blame for sufferers, but in correlational studies, also led to increased aversion to sufferers, as well as perceptions of dangerousness and pessimism about prognostic outcomes (Fitzgerald, 2020; Loughman & Haslam, 2018); in experimental studies, not even the reduced blame was observed (Fitzgerald, 2020). A study by Rüschen et al. (2010a) found that biogenetic essentialism can experimentally induce avoidance of serious mental illness sufferers or incite strong fear and self-guilt when these assumptions are primed among sufferers themselves. A meta-analysis by Larkings and Brown (2018) found that among 10 studies on biogenetic causal beliefs related to mental illness, a majority found increased stigma or negative attitudes were a consequence. Biogenetic essentialism is linked to "essentialist intuitions" known to be

associated with prejudice and stereotypes (Fitzgerald, 2020; Lebowitz & Applebaum, 2018; Rüschen et al., 2010a); incidentally, perceived anticipation of judgment based on stereotypes are known to be linked to neurodiversity threat responses (Priscott & Allen, 2021). Historically, biogenetic essentialism has played a strong role in “social Darwinism,” a belief where the social world is seen as a “ruthlessly competitive jungle” where “the strong win and the weak lose,” typically owed to intrinsic factors. This becomes the basis for discriminating practices towards specific social groups and a justification of a status quo favoring social inequalities (Radkiewicz & Skarżyńska, 2021). Fitzgerald (2020) argued that psychiatry findings, by being framed “immutable” and “static” qualities, despite no intrinsic need for being conceived of as such, become connoted and communicated about as a form of “neuroessentialism.” This static or essentialist quality of psychiatric diagnosis was certainly not an intended quality, as Kawa and Giordano (2012) highlighted a disclaimer that accompanied the DSM-III:

Some individuals may interpret [the move to the medical model from psychodynamic diagnosis] as a return to a Kraepelinian way of thinking, which views mental disorders as fixed disease entities... Actually, this was not the intent of the APA Committee on Nomenclature and Statistics.

Nevertheless, by framing mental suffering through biological substrates as necessarily an implication about one’s genetic integrity, it may incite dread about one’s social standing in some existential social order, or fears such judgments could be directed at them, as a vulnerability of social positioning and attendant social threats.

Another issue with problematizing individual well-being, despite the seeming

intuitiveness of the approach, is that problematizing individual well-being makes the individual the problem (Ratts, 2009). An individual problem-solving approach may intervene at the locus of greatest impact, but it also auto-implies some causal responsibility owed to the individual as an artifact of framing, even when this may not be fair or accurate. Ratts (2009) highlighted how individualistic frames in mental health may paradoxically scapegoat individuals for the adversity they face, while also obscuring a potential etiological role for *social determinants of mental illness*, i.e. inadequate social supports, oppressive cultural systems or unsustainable stress and deprivation.

Intriguingly, the medical model as a misframing of mental health issues is related to an insight that emerged in the development of second-order cybernetics as a branch of systems theory: that when framing a given problem, the problem-solvers are not neutral observers outside of a problem field, but become joined with it; depending on the wisdom of the approach, the framing of the problem itself can either ameliorate or perpetuate the problem at a different “level.” This view of the medical model would see it as an intuitive approach plagued by unanticipated externalities that compound the problems being solved. A similar framework for seeing mental health problems themselves - as problems maintained by intuitive, yet misframed mental and behavioral solutions at another level - has already been broached with the theory of *Second Order Change* (Fraser & Solovey, 2007).

The medical model as “misframed” problem-solving may be important in another way. Khoury et al. (2014) talked about the DSM as a “mindless” text, in contrast to “mindfulness,” as two distinct cognitive styles. Specifically, *mindlessness* creates a

reliance on prior categories in a rigid, automatic, uncritical way, creating cognitive commitments to viewing the environment in narrow, static, unchanging ways. *Mindfulness* would be the opposite, committing to reconstructing one's cognitive hierarchies to see the environment flexibly and anew, including paying attention to novel aspects of the environment by seeking multiple perspectives. Mindlessness is particularly a problem when institutionalized, as it creates blindness to novel presentations, subtle differences, changes over time, inconsistencies with categories, contextual nuance, and biopsychosocial complexity. Importantly, these may lead to *fundamental attribution errors* by systematically viewing deviance from unrealistic categorical ideals as reflective of stable, trait-based, internal characteristics of pathological deviance rather than, say, contextual factors that force a disabling scenario on an adapting person.

Khoury et al. (2014) elaborated on supporting experimental findings and implications, but here we would focus on the DSM as not only consistent with such a "mindless" cognitive style, but encouraging of it, in ways that depart incompatibly with counseling values (Bonino & Hanna, 2018; Eriksen & Kress, 2006). Important for the supporting neurodiverse clients, for instance, are values such as self-acceptance, the potential for growth and change, the value of unconditional positive regard, authenticity, realism about one's situation, among others, as key factors in the therapeutic journey to positive self-acceptance and identity integration and adaptation (D. Price, 2022). Yet these are incompatible with the framing of neurodiversity as a stable, narrow, categorical disease to be treated, and the result is that the subtext of the

“mindless” framing is in competition with the therapy from the outset. For instance, neurodiverse clients must come to see their neurodiversity as something indivisible to accept, not something to be cured; they must see their neurodiversity as a source of identity, community and strengths, not a reductive deficit tied that is connoted in a label; they must see their neurodiversity as a source of acceptance, accommodation and self-grace, not as ABA therapy might proscribe, something to punish with the withdrawal of all social engagement at the slightest neurodiverse behavior, the very definition of conditional social support. Self-stigma arises from internalizing public stigma, and public stigma flows from the mindless attitudes toward neurodiversity on display with the DSM.

### ***Problems of Practice and the Medical Model***

A number of problems with the medical model result from unexpected externalities of the system as conceived, including the way the system leads to inefficiencies and challenges as a guide for clinical practice. Suris et al. (2016) wrote:

With subsequent revisions of the [DSM], however, increasing dissatisfaction with the validity of the criteria has become apparent, with complaints that the criteria do not sufficiently differentiate disorders leading to high rates of diagnostic comorbidity, diagnosis lacks specificity for selection of treatment, genetics fail to distinguish psychiatric disorders, and many observed syndromes do not fit any diagnostic definition.

Added to this list might be problems with diagnostic inflation (Bonino & Hanna, 2018), and treatment polypharmacy.

The problem of construct validity flows outward to every use of the DSM because it challenges the very nature of the constructs themselves as being “real disorders” with “clear bright lines” delineating them from other diagnoses. Currently, one rightfully extrapolates such conclusions from the DSM - an authoritative, trans-institutional, “scientific” text - where by implication, such constructs are assumed to correspond to distinct etiological pathways, psychological variables, biological substrates and/or genetic contributions. It follows that such assumptions naturally flow into treatment approaches - “real” disorders deserve effective treatments - EBPs - to target the specific nature of the disorder through the “specific ingredients” of the treatment shaped to the disorder itself (Wampold & Imel, 2015).

However, from the outset, the people closest to these problems have doubted these very qualities about diagnostic constructs. Thomas Insel, former director of the NIMH at the time they pulled out of using the DSM-5 to guide research just weeks after it was released (Ghaemi, 2018), was quoted as saying: “[psychiatrists] actually believe [that their diagnoses] are real, but there’s no reality. These are just constructs” (Greenberg, 2013). Elsewhere he commented that the DSM exhibits “a lack of validity ... as long as the research community takes this to be a bible, we will never make progress. People think that everything has to match DSM criteria, but you know ...biology never read the book” (Fitzgerald, 2020; Scull, 2015). Construct validity in the DSM has a history of being notoriously varied and suspect, with everything from PTSD, bipolar disorder and ADHD subtypes found lacking to name a few (Khoury et al., 2014). It is no wonder, when the process of creating such constructs sometimes involved “major efforts...to

exclude any signs and symptoms with poor interrater reliability,” i.e. ignoring anything that was difficult to agree on, which might promote a superficial understanding of mental health issues, and not “important” or even “foundational” signs and symptoms that might be key to understanding how the disorders actually worked or were experienced subjectively (Joober & Tabbane, 2019).

The issue of construct validity becomes an underlying problem in every way the book is used. The problem of *diagnostic comorbidity* was highlighted by former NIMH director Steven Hyman, when he said, “many people who got one diagnosis got five diagnoses, but they didn’t have five diseases – they have one underlying condition,” with problems of this scale leading Hyman to call the DSM a “total scientific nightmare” and “wrong in the way its authors could never have imagined” (Fitzgerald, 2020; Scull, 2015). Diagnostic comorbidity itself becomes complicated given the history of the DSM as prone to *diagnostic inflation*, which sees the library of diagnoses grow year over year: from 106 (DSM I) to 182 (DSM-II), to 265 (DSM-III), 297 (DSM-IV), and 298 (DSM-V; Suris et al., 2016). Combined with diagnostic comorbidity, the risk is the “pathologization of everyday life” (Greenberg, 2013; Kudlow, 2013). Half of people are expected to have a DSM disorder at some point in their lives (Bonino, 2018), and normal periods of adversity or struggle - anxiety, low mood, lack of confidence or marginalizing differences of eccentricity - are vanishing; clinical indicators of pathology for developmental challenges are becoming normalized, with strong health insurance and psychopharmacological incentives. Note the synergistic problem that begins to emerge: a symptom-driven approaches increasingly take suffering out of its socio-developmental

context and situates suffering in the context of stable pathological constructs; there are a ballooning number of such constructs applicable to all facets of life; and they are assumed to be discrete pathologies with orthogonal etiologies attributable to stable, individual differences. The result is that relatively normal, healthy, functioning people can quickly appear dysfunctional or medically complex on paper in such a system, and are increasingly managed as such (Rocca & Anjum, 2020).

If there is doubt that such small assumptive differences add up to seeing people through a medicalized lens rather than a “common-sense” biopsychosocial one, note the phenomenon of *polypharmacy* where “polypharmacy often becomes a cycle of treating one condition [with psychoactive drug treatments], experiencing side effects, and treating the side effects, until the patient and the clinician cannot remember where the cycle began” (Kukreja et al., 2013). Adverse drug reactions are common in polypharmacy, found 2-3x higher prevalence than monotherapy, despite no benefits over monotherapy (Stassen et al., 2022). Given that the chemical imbalance theory of mental health has been significantly rebuffed (Moncrieff et al., 2022), and a more moderate position might hold the brain as a substrate of experience and not necessarily the primary cause of distress (Hari, 2018; Johnstone & Boyle, 2018), polypharmacy might be seen as a strong version of the hypothesis that diagnostic constructs are “real.” Stacking powerful drugs ad infinitum when the role of biology is poorly understood, relies entirely on faith that decontextualized “symptoms” or multiple comorbidities diagnosed based on checklists, point to real and discrete brain pathways that are individually impaired and won’t produce additive disruptions to global functioning

instead; this despite psychiatrists themselves believing that multiple comorbid diagnoses may in fact be an artifact of framing alone, and reflect neural processes that share underlying brain substrates (Fitzgerald, 2020; Scull, 2015).

However, problems of over-prescribing psychopharmacological interventions aside, the majority of mental health providers are engaged in diagnosis and psychosocial treatment - do DSM practice issues tangibly affect them? A study by Wakefield (2016) reviewed the potential for “false positive problems” where the lack of clear and bright boundaries between normal and pathological behavior left clinical ambiguity about what constituted pathology and treatment, and found that nearly every major category of the DSM - 17 in total - was plagued by them. To name just a few examples, some 71% of DSM-IV’s Bipolar I disorders are assessed to have been produced by false positives because the “irritability” symptom helped satisfy the requisite number of criteria, despite most irritability stemming from “a contextual cause of normal irritability;” Bipolar II disorders can necessitate mood stabilizers if a person is assessed as having had two days of elevated mood and two symptoms, so “someone could qualify for hypomania simply by experiencing the joy of emerging from depression into normal mood;” and the elimination of the bereavement exemption in the DSM 5 for major depressive disorder “meant that bereaved individuals manifesting five general-distress depressive symptoms for two weeks after a loss are classifiable as having MDD,” pathologizing normal human experience and making over half the population eligible for a diagnosis at some point in life. Neurodiverse disorders are likewise affected, with ADHD seen as having a “massive” unaddressed false positive problem and

overmedication, while ASD was controversial by removing support for “less stigmatized” diagnoses, while requiring a higher burden for diagnosis than PDD, which may exclude people from diagnosis for mild expressions. Allen Frances (2012) was right: “Many millions of people with normal grief, gluttony, distractibility, worries, reactions to stress, the temper tantrums of childhood, the forgetting of old age, and ‘behavioral addictions’ will soon be mislabeled as psychiatrically sick.”

### ***Problems of Theory in the Medical Model***

The DSM has been criticized for having a variety of theoretical vulnerabilities. Theory problems may be said to begin with the drafting process of the DSM: the process is decidedly unscientific and can be seen more as a defacto “authority” model: a deliberative consensus-building process among experts (Krueger et al., 2018), which has a historical record of avoiding responsiveness to critics amidst controversies (Greenberg, 2013; Wakefield, 2016), and historically lacking in cultural or professional representation across iterations with task forces composed of homogeneous groups of white, male psychiatrists (Bonino, 2018; Davies, 2017). However, one might assume that such political projects still reference a scientific or theoretical process to guide their efforts, but this is also false (Davies, 2017). There really is no theory at all (DeYoung & Krueger, 2023), and in fact, the DSM has long fashioned this as a feature, not a bug, by positioning itself as atheoretical so as to be a neutral system of description that can be flexible, useful and evolve its constructs (Davies, 2017; Kawa & Giordano, 2012; Suris et al., 2016), despite inevitably sliding toward use in a static, reductive and immutable way, and controversially so (Fitzgerald, 2020; Hari, 2018).

A foundational criticism is the ability to distinguish between what is normal and what is not. Oller (2019) pointed to an arbitrary distinction between the “symptoms” expressed by a given psychiatric subject, and the same or similar behavior expressed in proband families at subclinical levels. Wakefield (2016) problematized the issue as the “normal/disorder threshold,” where the DSM-5 has been commonly seen as taking a step back in its ability to demarcate the boundary between psychopathology and normal adverse reactions, and all versions of the DSM have been plagued by “false positive problems.” DeYoung and Krueger (2023) developed the position as inherently doomed because the enterprise rests on faulty assumptions: the very idea of “abnormal psychology” is used ubiquitously as a synonym for psychopathology, but statistical deviation from the norm only means unusual, and no one would sweep giftedness, talent and other rare ability as implicit in such a definition. In the course of positing their own theory of psychopathology (see: *cybernetic psychopathology* discussed later), DeYoung and Krueger (2023) problematized a statistically-based approach to normality as theoretically untenable.

First, they look at the best current theories of psychopathology and find them wanting. The most talked about is Wakefield’s (1992) *harmful dysfunction*, which attempted a pragmatic middle-ground in establishing sociocultural guidelines for what violates social norms (sidestepping problems of veracity), and posited a breakdown of internal mechanisms that were biologically evolved for a specific adaptive purpose. Notwithstanding the high bar of verifying the relationship between socio-cultural judgments, biopsychological mechanisms and fitness levels (or other valid challenges to

the theory), the problem with this theory is that it and others like it have had no influence on DSM development, use, or guiding theory, making them parallel efforts.

As the DSM uses its own framing of psychopathology, that leaves three constructs - statistical deviance, psychological distress, and impairment - whereby the evidence is clear that the three cannot, and do not attempt to, resolve the normal/disorder threshold. Impairment can be both normal and common, for instance, in bereavement or trauma; subjective distress is likewise a functional response to common adversity; and most importantly, deviation from the norm does not help resolve either with respect to each other: "one reason that deviation from the norm fails as a criterion for psychopathology is that, in virtually every psychological dimension, variation is the norm and healthy people with extreme levels can be found" (DeYoung & Krueger, 2023). In fact, even the use of the word "symptom" is tautological - while it is often used to demarcate normal from abnormal levels on dimensional measures in psychopathology instruments, no studies have shown compelling reasons as to when a symptom becomes a symptom, what makes it so, or why it is seen as breaking from normal behavior; the word "symptoms" seems to insist upon its own adoption as language as a facet of convention (DeYoung & Krueger, 2023; Oller, 2019). The authors illustrated both the problem of statistics and symptomatology by heightening the issue: hallucinations and delusions are seen as classic examples of extreme mental health "symptoms," and yet they break down under scrutiny. Hallucinations can be common in extreme grief, for instance, and delusions are common among adherents of many religious sects; the authors use the example of a study of

clairvoyant psychics who heard daily auditory commands from other realms, who had thriving businesses, robust social networks, and people who negotiated their differences with respectful disagreement about the nature of their beliefs. To their point, the Hearing Voices Network puts the number of people who hear voices worldwide between 3 and 10%, most without distress. We can add another problem to this list - it is an assumption that there is a single species-typical norm of functioning, as neurodiversity suggests diverse life history strategies may exhibit different patterns of normative and abnormal behavior tied to their respective adaptive strategies in the social milieu (Del Giudice, 2018), a dynamic common in other social animals as a species-typical norm (Bergmüller & Taborsky, 2010).

The stance that the theory behind the DSM is suspect is not fringe. The NIMH famously broke with convention and ended using the DSM to guide mental health research just weeks after the release of the DSM-5, switching instead to the Research Domain Criteria approach, or RDoC (Ghaemi, 2018). While much of the challenges to the DSM herein are levied against the “abnormal psychology” assumptions as statistical deviation, it is also worth noting that the biomedical assumptions that mental health disorders can be causally reduced to physiology, neurology and genetics, has also been questioned. A recent meta-analysis by Moncrieff et al. (2022) casted doubt on the serotonin theory of depression, a long history of debunking the fragile chemical imbalance theory of mental health (Bonino & Hanna, 2018). The chemical imbalance hypothesis has always had a dubious epistemic status as a deduction from observing that psychoactive drugs seemed to affect mood, leading to psychiatry’s core metaphor

being one of assumed dogma. This is despite more modern conceptions of the embodied brain as a substrate of all experience, correlated with external events in good times and in bad (Hari, 2018; Johnstone & Boyle, 2018), which could go toward explaining these same findings without the attendant biological reductionism, instead seeing the brain involved in a multi-level interacting hierarchy of experience (Oller, 2019). Regardless, given the challenges to the theory of biomedicine and abnormal psychology, it may be no wonder that the DSM lacks construct validity, a reflection of its atheoretical stance developed less around theory, and more around pragmatic considerations of boosting consensus, ameliorating reputational woes, and facilitating economic and political agendas (Davies, 2017; Fitzgerald, 2020; Kawa & Giordano, 2014).

Finally, more evidence comes from recent alternatives to the current diagnostic system. For instance, a consortium of over 70 researchers have collaborated in the production of the Hierarchical Taxonomy of Psychopathology (HiTOP; Krueger et al., 2018) which assumes that there are problems with the current “authoritative” system. They point out that, despite emphasis here that much of the efforts of moving to the neo-Kraepelin model was to boost reliability, the DSM 5 was known to have significant reliability problems in major categories like major depression and anxiety, and pushed them through on the weight of authority. The authors’ primary criticism is that while there is taxometric evidence, comparing this evidence directly to “model-based” evidence which posits psychopathology as more dimensional than discrete sees the dimensional approach having the preponderance of evidence. Importantly, here we

have another challenge to the “clear, bright lines” of diagnosis wherein the very heuristics for thinking about mental illness are seen as suspect and empirically unsupported. Similarly, DeYoung and Krueger’s (2023) *cybernetic psychopathology*, posited:

In our theory of psychopathology, to be considered, mentally ill people must be persistently unable to move toward their important life goals, due to failure to generate effective new goals, interpretations, or strategies when existing ones prove unsuccessful. This theory invalidates the typical assumptions that psychopathology is necessarily a function of having unusual characteristics and that mental illness is really disease of the brain. (p. 228)

This theory offers something novel in mental health research, a holistic model of normal human functioning as a socio-cybernetic organism that is functionally optimized at all levels in pursuit of social goals, and psychopathology is therefore characterized by self-organizing biopsychosocial barriers to this core functioning across subdomains. Another important theoretical challenge comes from the British Psychological Society’s PTMF (Johnstone & Boyle, 2018). Here the authors do a good job of challenging the deeper philosophical traditions of Western culture and their role in biomedical thinking:

Abandoning what the authors have called the ‘DSM mindset’ is not easy, since it is deeply embedded in fundamental Western philosophical assumptions including, but not limited to, the separation of mind from body, thought from feeling, the individual from the social group, and human beings from the natural world; the privileging of ‘rationality’ over emotion; and a belief in objectivity, or

the possibility of partialling out values, ethics and power interests from theory and practice in human systems. These influential but not universal worldviews underpin what can broadly be described as positivism, which tends to promote a view of human beings as objects acted on by causal forces rather than agents who have reasons for their actions. Although this paradigm has led to major advances in medicine, science and technology, it is not well suited to understanding human emotional distress and troubled or troubling behaviour.

(p. 5)

In each of these cases, of which there are others unmentioned, the alternative theories are uniquely constructive in their criticism by juxtaposing the biomedical approach with a productive alternative. It is worth noting that each will also be compatible with the evidence that will be put forward here - the dimensional approach is compatible with Oller's (2019) observation of neurodiversity traits as continuous with subclinical traits in proband families, while the socio-cybernetic approach is core to the model of normal human functioning, and the power-threat-meaning approach is built on important evolutionary approaches made by Paul Gilbert's work on social threats; each is also quite compatible with existing biological evidence, while providing important interpretive context.

### ***Problems of Social Costs and the Medical Model***

In summary, Khoury et al. (2014) found that under scrutiny, the DSM holds up significantly to questions of reliability, but fails similar assessments of "validity, utility, or ethics," so "these findings cannot justify the overuse of DSM in mental health neither

the power nor authority assigned to the DSM categories besides being only of financial and sociopolitical reasons.” An important follow-up question might be, to what extent does the execution of such financial and sociopolitical goals lead to social harms? The DSM has been criticized for having a number of unanticipated externalities that might qualify: DSM’s role in stigma would be relevant here (Larkings & Brown, 2018; Lebowitz & Appelbaum, 2019; MacDuffie & Strauman, 2017a; 2017b), but also the medicalization of normality (Frances, 2014; Greenberg, 2013; Pickersgill, 2014), the pacification of help-seekers (MacDuffie & Strauman; 2017a; 2017b; Rocca & Anjum, 2020) and a history of the DSM in pathologizing marginalized communities such as women (hysteria), LGBTQI+ (homosexuality and transgendered) and arguably, neurodiverse communities (Fitzgerald, 2020; D. Price, 2022).

The medicalization of normality sees all mental, emotional, social and behavioral life become scrutinized for function or dysfunction in a way that makes it inherently “suspect” (N. Rose, 2007). Allen Frances, chief architect of the DSM-IV and outspoken critic of the DSM-5, wrote in a *BMJ* editorial that the first draft of the fifth edition, with its inclusion of a slew of new mental disorders, would ‘expand the territory of mental disorder and thin the ranks of the normal’ (Frances, 2010; Pickersgill, 2014). Criticisms about expanding medicalization go back at least as far as 1922, when proposed changes to the nomenclature of the time led prominent psychiatrists to worry about tacit implications that “the whole world is, or has been, insane” (Greenberg, 2013).

Indeed, the consequences of being mislabeled as “insane” may be quite severe. Blurry boundaries between normal and pathological behavior have resulted in a

majority of people counting for a pathology diagnosis at some point in their life, wherein quintessential human reactions to something like grief can be labeled as “symptoms” by taking them out of their normal context (Wakefield, 2016). Conceptual problems with diagnosis may lead people to be inappropriately pulled deep into the system riding such conceptual cracks, where it can be difficult to outlive stigmatizing labels given based on checklists, and where reductive, limited and static schemas for behavior can lead the loss of autonomy based on evaluations subjectively guided by a flawed framework, or powerful drug therapies. Such psychoactive treatments may be more ethically complex than some realize, with critics suggesting the industry has downplayed psychopharmacology’s harms over the years, and overplayed the benefits, i.e. the systematic minimizing of suicides from drug treatment, and the glossing over evidence that antidepressants are only slightly better than placebo (Gøtzsche et al., 2015). This is in addition to the aforementioned issues with widespread polypharmacy, with known harms and questionable justification (Stassen et al., 2022).

Rocca and Anjum (2020) talked about the costs of medicalization from objectifying the patient, which “reduces them to a passive target of therapy, rather than as an active (and the most crucial) actor in healing.” MacDuffie and Strauman (2017a; 2017b) have attempted to capture something similar in their operationalization of *autobiographical information*, which suggests the medical model frames biological information in ways that lead to worse outcomes when biological information is misattributed to causes that are *internal* and *stable* (genetic) and therefore *uncontrollable*, while good evidence suggests biology is regularly attributable to normal

brain states subject to environmental flux (*external* and *unstable*) which are therefore *controllable*. This attributional difference is immense because it feeds back into one's sense of control, and optimism or pessimism, about their prognosis, which improves or worsens actual outcomes as a result.

Much of this extends to the pathologizing of neurodiverse communities and social harms done downstream as a result. As Fitzgerald (2020) noted, neurodiversity is challenging medical myths in psychiatry. There are problems with the concepts of abnormality in psychiatric diagnoses and the concepts of abnormality [can change or disappear] in the DSM, for example homosexuality. The concept of normal is not uncontroversial in psychiatry.

A good example of the consequences of this are the Autistic "catch-22" from Chapman and Carel (2021):

If a person who identifies as autistic and who fulfils the diagnostic criteria is living a good life, they are denied recognition of their autism. If they are not currently living a good life, they are recognized as autistic, and their low quality of life is presumed to be caused by autism even if they declare otherwise. Interlocking epistemic injustices mean that autistic accounts are taken to mean either that the person is not happy or that they are not autistic. On the former interpretation, 'I am autistic and I am flourishing' is not intelligible; it's not possible to be both. On the latter interpretation, if that person is happy and articulating clearly their happiness, then the eloquence and rich use of language and their happiness mean that the speaker is not 'really autistic.' (p. 16)

In other cases, the problem of seeing a person whose distress is “caused” by autism, may lead to legitimate grievances of mistreatment when the “specific ingredients” of a psychosocial treatment is presumed to target the “symptoms” of neurodiversity. For instance, the application of Applied Behavioral Analysis (ABA) therapy has been implicated in producing PTSD among former autistic clients, implicated in making autistic clients more pliable to manipulation and abuse, and generally considered dehumanizing by those in the community by training costly masking behavior and punishing attempts to de-mask thought to be of more genuine therapeutic value (D. Price, 2022).

In summary, Rocca and Anjum (2020) put it thusly:

Modern medicine...is faced with a contradiction by which scientific advances and medical technology offer the best opportunities ever, but at the same time an increasing number of patients are over-medicalised, over-diagnosed, become chronically ill, do not find a place in the health system, or feel that they are not met as whole persons in the healthcare system. The biomedical model seems to have played a central role in this development. (p. 79)

### ***Evidence-based Practice and the Medical Model***

It may be worth highlighting other downstream effects of the medical model, for instance, in promoting treatments that conform to biomedical assumptions, which may help elevate those approaches inappropriately to a privileged status. The medical model assumes, if not always intentionally, that individual deficits are psychologically causal to mental suffering (Fitzgerald, 2020). This leads to Evidence-Based Practices (EBPs) such as

CBT to be regularly singled out for a reputation of unusual efficacy through its “specific-ingredients” approach of targeting specific deficits - i.e. faulty cognition - rather than some more general or relational mechanism of change, though this may be unwarranted (Wampold & Imel, 2015).

Evidence-Based Practices (EBPs) or Evidence-Based Treatments (EBTs) have come under fire for telling stories that are limited in their understanding of human nature (Gilbert, 2009; Ratnayake, 2022), which may prove problematic from an epistemic justice standpoint (Ratnayake, 2022), and contribute to less efficacy among neurodiverse people (D. Price, 2022). CBT, often considered a gold standard among therapies, makes the assumption that “faulty” or “unhelpful” reasoning is the causal agent of suffering, a belief at the heart of epistemic injustice. However, this story may be limited and evidence does not support the underlying theory of human nature presumed by such a theory (Ratnayake, 2022). For instance, human beings are not predominantly rational creatures nor does rationality play a prominent role in well-being, as normal and healthy cognition is constituted by reliance on strange beliefs, social intuitions, useful fictions, stereotypes, biases and cultural myth-making (Haidt, 2013; Henrich, 2016; Ratnayake, 2022; D. S. Wilson, 2002). Prominent scholars regularly adopt the opposite stance, that high degrees of analytic rationalism would likely have been maladaptive during most of human prehistory as it might deconstruct one’s relationship to “useful fictions” which help to orient people toward collaborative goals, cooperative problem-solving, and in maintaining the social order (Henrich, 2016). Secondly, when CBT assessments of distorted cognitions deploy measurement

inventories, they are often capturing feeling statements, risk-management statements and probabilistic statements that rely on incomplete information, rather than distorted cognitions per se (Ratnayake, 2022). Finally, positive mental health may itself be a product of poor reasoning. Positive mindsets are often characterized by an *optimism bias* that borders on delusion and yields an “illusion of control,” while *depressive realism* shows that high degrees of realistic assessments of one’s level of control, performance and responsiveness to feedback are associated with higher rates of depression (McGuire-Snieckus, 2014; Ratnayake, 2022). Depressive realism has also been linked to *perspicacity*, the ability to accurately assess one’s degree of entrapment and powerlessness in oppressive systems (Hanna et al., 2000). Ratnayake’s (2022) criticisms were made by taking it for granted that CBT does in fact work as well as has been claimed, yet others cast doubt on this point as well. In “Where is the Evidence for Evidence-Based Treatment,” Shedler (2018) gathered evidence that systematic researcher biases have overreported the efficacy of CBT, cherry-picked data, removed outliers and ignored counter-evidence over many years. A similar thesis was presented by Wampold and Imel (2015), who also highlighted meta-analyses that limited the role of any therapy’s “specific ingredients” to 7% of outcomes, while highlighting relational factors (Wampold & Imel, 2015).

Any therapy that assumes a decontextualized narrator is effectively assumed to be unreliable should be seen as problematic from an epistemic injustice standpoint. This may be particularly true when applied to therapy for neurodiverse clients, who are defined by atypical ways of knowing and hidden minoritized dynamics. CBT may not be

appropriate for neurodiverse clients (D. Price, 2022), as it tends to pathologize fears of social threats as irrational, and attribute any attendant depression or anxiety to such cognitions. By contrast, other research shows that these concerns are very much valid, and etiological to depression and anxiety (D. Price, 2022). For instance, neurodiverse people in organizational settings show similar vigilance in their threat response profiles as other minoritized groups by hyper-responding to *stereotype threats* - the anticipated negative consequences of being stereotyped in ways that degrade social status in both perception and reaction to that perception (Priscott & Allen, 2021). This suggests hidden minority dynamics of navigating perceived threat in the social world as a factor shaping emotion and cognition. A community-researcher generated model for *social burnout* in the ASD community echoes such findings: a high level of life stressors (masking/enforced conformity, social expectations, life transitions and disability management) plus barriers to support (gaslighting/dismissing one's needs, poor boundaries and self-advocacy, lack of time for self-care, lack of external resources and supports) predictably leads to expectations that outweigh abilities and energy, and thus, burnout (Raymaker et al., 2020).

Social dynamics operate through a variety of real, embodied, and non-conscious pathways in neurodiverse people. CBT may be uniquely vulnerable to committing epistemic injustice by having core assumptions that doubt peoples' relationship to their lived social experience when fixating on decontextualized fallacies (catastrophizing, over-generalizing, black and white thinking) as mechanistic to dysfunction and assuming the client's way of knowing to be the attributional source of dysfunction, core features

of epistemic injustice.

### **Cultural Individualism and the Medical Model**

It is worth noting that much of the DSM-5-TR and EBPs may take their power from the cultural congruence with the foundations of Western individualistic philosophy and social thinking (Johnstone & Boyle, 2018). To recall an earlier quote:

Abandoning what the authors have called the ‘DSM mindset’ is not easy, since it is deeply embedded in fundamental Western philosophical assumptions including, but not limited to, the separation of mind from body, thought from feeling, the individual from the social group, and human beings from the natural world; the privileging of ‘rationality’ over emotion; and a belief in objectivity, or the possibility of partialling out values, ethics and power interests from theory and practice in human systems. These influential but not universal worldviews underpin what can broadly be described as positivism, which tends to promote a view of human beings as objects acted on by causal forces rather than agents who have reasons for their actions. Although this paradigm has led to major advances in medicine, science and technology, it is not well suited to understanding human emotional distress and troubled or troubling behaviour.

(p. 5)

An influential meta-analysis by Oyserman et al. (2002) found that much of these properties of Western philosophy and social science may be baked in through cultural individualism. Cultural individualism assumes a “stable causal attribution” to the individual, and consequently, individualistic cultural psychology carries with it several

(non-universal) assumptions about human nature that: a) creating a positive sense of self is assumed to be a universal basic drive; b) feeling good about the self, one's accomplishments and various idiosyncratic opinions and attitudes are valued; c) the self is constructed through abstract, decontextualized traits, rather than immediate, contextual social responses; d) open emotional expression and attaining personal goals and ambitions are sources of well-being and life satisfaction; e) causal inference, judgment, and reasoning are oriented to the decontextualized individual; and f) social relationships are peripheralized and transactional because they are key to achieving social status, but are costly to maintain. The effect writ large is that "individualism promotes a decontextualized, as opposed to a situation-specific, reasoning style, one that assumes social information is not bound to social context" (Oyserman et al., 2002). In this context, the biomedical model and the DSM merely echo a familiar vision of the Western individual back to themselves, down to an understanding of people in terms of decontextualized, stable, reductive individuals and psychopathology constructs that become enduring labels worn akin to abstract traits.

Our current limitations to understanding neurodiversity may include a role for Western cultural individualism as a problematic meta-frame for psychopathology in producing our biomedical thinking, including a variety of ways we may be constrained in thinking of people and problems through stable, reductive traits.

First, we can see in the critique by MacDuffie and Strauman (2017a; 2017b) that the framing of the DSM's problematic ways of talking about mental health - that prognoses feel *uncontrollable* when problems are framed as derived from *intrinsic* &

*stable* factors - may stem from Western individualism itself, as these are features of individualistic thinking about people in general, including the self.

Second, even in therapies far from the influence of the medical model, individualistic frames are commonly expressed as assumptions about what is therapeutic, including the need to express one's feelings as a goal, or the importance of self-love, self-acceptance, and self-esteem as basic outcomes of therapy. Here too the decontextualized self is assumed to generate its own love, esteem and acceptance as basic traits of well-being, where the only justification for not feeling that way is pathology. This is despite a number of findings that self-orientations like self-love or self-esteem are properties of internalized social feedback (see: *sociometer & hierometer*; Leary, 2004; Leary & Baumeister, 2000; Leary & Downs, 1995; Mahadevan et al., 2016). These empty individualistic constructs may misframe well-being when they obscure the *self-in-relationship* (Hari, 2018), or the *relational agent* (Heylighen, 2023), which are critical to well-being. An individualistic self-focus may become problematic (Hari, 2018) when it: a) adds a layer of pain to suffering clients when they are made to feel that they have failed to care, love or respect themselves, b) leads to therapeutic platitudes that displace more substantive therapeutic goals, and c) obscures real pathways to well-being that are found in a variety of normal human relationships with the social environment.

Finally, Western individualistic folk psychology may also fit with, and reinforce, a capitalistic economic system that benefits from the competitive drive to "keep up with the Joneses" to fuel materialism as an engine of demand (Hari, 2018). When this

becomes conflated with materialism as a pathway to life satisfaction and well-being, it leads to “junk values” that misdirect people away from more meaningful paths to life satisfaction.

Culture adds a layer of misframing to how we understand well-being and psychopathology, and may explain why abundant social science information is systematically overlooked regarding neurodiversity and social well-being. That is, given the critiques of the medical model, cultural congruence may justify the models power and influence by conforming to widespread social assumptions and expectations as “commonsensical,” or even ideal, and not an abundance of strong data. Similar criticisms have been made of the West’s turn to hyper-individualism in the 1970’s as spearheading the academic dominance of *methodological individualism* and *rational choice theory* in evolutionary, psychological and economic thought (D. S. Wilson, 2002; 2008). These paradigms were contradicted by significant findings in the social sciences but were compatible with strong individualism, and so rode this cultural congruence to further and further levels of analytical reductionism down to the level of the gene rather than to more complex biopsychosocial explanatory models of people in context (see: the role of *selfish gene theory*).

### ***Systems Justification and Epistemic Injustice***

*Systems justification theory* suggests that people are motivated to justify the prevailing social order even when it relegates them to a subordinate status. This is done by reinforcing the current epistemic regime, including endorsing narratives and stereotypes that find the disadvantaged group morally deficient by trait - i.e. incompetent,

unintelligent, lazy - while idealizing more advantaged groups (i.e., *out-group favoritism*).

This resembles the insights of epistemic injustice, but adds a motivation in the "palliative function of ideology" (Jost & Hunyady, 2002), wherein it is more preferable to see a social order as natural and just than to carry the weight of a life under an illegitimate, oppressive system, which produces anxiety, uncertainty, anger, dissonance, helplessness, alienation, powerlessness and discomfort. Evidence validates this theory by establishing the mental health consequences among those who cannot maintain such an illusion. For instance, Mirowsky and Ross (1983) found that mental health "symptoms" such as paranoia and helplessness were reliably correlated with awareness of one's powerless circumstances among disempowered Mexican women on the Texas border. Hanna et al. (2000) found *perspicacity* - the realistic assessment of one's oppressed social- position - fostered helplessness, hopelessness, and powerlessness by way of *depressive realism*, an etiological pathway to depression and anxiety that occurs when one has a demotivating awareness of their own entrapping circumstances. It is worth noting that this is the antithesis to CBT's proposed mechanism of mental distress (Ratnayake, 2022); groups that cannot maintain the delusional optimism of a *positivity bias*, perhaps because they face too much discrimination or mistreatment (or because they are dispositionally prone to analytical thinking as with some neurodiverse groups), may struggle with overwhelming emotions upon losing the bias and enter depressive realism simply through awareness of their own entrapment, disempowerment and alienation (Hanna et al., 2000; Mirowski & Ross, 1983).

It is worth adding this layer to the epistemic justice issues faced by the

neurodiverse, who may be motivated to believe negative stereotypes about their own experience, a useful reminder that self-applying negative frames does not equate to such frames being problem-free. Challenges for the neurodiverse are commonly expressed as negative impacts on their social marginalization and economic functioning - issues with motivation, role fulfillment, lack of self-regulation, staying on task, idiosyncratic styles of thought, conforming to social and occupational expectations, and so on - and neurodiverse people are often judged as failing in terms of perceived socioeconomic inadequacy, including by themselves in the form of self-stigma, self-judgment and self-criticism. *Systems justification* suggests that socio-political and economic orders take on a moral valence by being seen as "meritocracies;" those at the top are presumed to be more virtuous and those on the bottom are less so, and deficiencies in economic participation are taken as implicit referendums on moral character and worth, leading to shame and stigma. For instance, in a study exploring the link between stigma and individual meritocratic views as tied to an ethos of individual responsibility, there was a consistent association between stigma and attitudes about individuals "getting what they deserve," i.e. the *Protestant ethic*. Mental illness was not spared from this calculus: self-stigma plagued those with schizophrenia, schizoaffective disorder and affective disorders, and came from the public at large (Rüschen et al., 2010b).

If even those who identify as neurodiverse do not find a disability diagnosis can ameliorate meritocratic stigma completely, the problem is likely worse among those who lack a diagnosis altogether and may default to explaining their life's struggles through self-stigmatizing narratives. For instance, Devon Price (2022) made the case

that there is a large “unmasked” contingent of neurodiverse people who are undiagnosed, atypically presenting, or subclinical in their traits, and successful masking may also mean defaulting to self-stigmatizing narratives. Epistemic injustice holds that such people will begin by being disempowered by such narratives, and that it takes surmounting multiple barriers to challenge the epistemic dynamics to the point of pushing back on ideas like “laziness,” which may primarily exist to shame and blame disempowered people for the demotivating economic barriers they face (Price, 2021). Instead, such people are more likely to believe their fears of being “lazy,” “stupid,” “weird” or “crazy,” particularly as they buy into such notions when subconsciously seeking to align with the culture as part of efforts to mask (D. Price, 2022).

In short, systems justification motives add a range of implications to the problem of epistemic injustice. First, it may make disempowered people more likely to endorse unfair stereotypes that marginalizes and exclude them and promotes a narrow and unrealistic ideal of normalcy and economic success, including stereotypes in the form of authoritative social science findings. Second, it suggests that problematic theories of neurodiversity, counseling or pathology may not derive their cultural power through scientific rigor, but because they reinforce the existing narrative social order; institutions that rely on this power may be complicit in the oppression of an unjust status quo, and promote untruths when the purpose of some frames and stereotypes is designed to obscure more empowering truths. Third, neurodiverse people, like all marginalized groups, may be uniquely forced into a mental health Catch-22 in a different way to the autistic Catch-22 (Chapman & Carel, 2021). They may be forced into a Matrix-like choice

between a “blue pill” - accepting the epistemic violence and systems justifying ideologies that are “ideologically palliative,” but contribute to their epistemic oppression in the tradeoff - or a “red pill” - *perspicacity* about their oppressive conditions, and through awareness, overwhelming negative mental and emotional consequences, including cynicism, pessimism, misanthropy, and *depressive realism*. At the broadest level, then, to problematize epistemic injustice and systems justification as they contribute to disempowering narratives in mental health, we may need to return to Johnstone and Boyle’s (2018) critique of the foundations of Western thought, which has led to the:

the separation of mind from body, thought from feeling, the individual from the social group, and human beings from the natural world; the privileging of ‘rationality’ over emotion; and a belief in objectivity, or the possibility of partialling out values, ethics and power interests from theory and practice in human systems. (p. 5)

As a system of psychological thinking, it is this framework for thinking about psychology in the West that allows stigma to take the form of enduring, stable, reductive traits of vice and deficiency, and it is the framework therefore, that begs for an alternative (see: *PTMF*).

### ***Systems Justification and Neurodiversity***

Among the epistemic injustices facing the neurodiverse, many likely stem from social narratives and stereotypes intertwined with that serve a systems justification purpose. Many are also maintained by the social and clinical sciences themselves. If

these positions were correct but problematic, it would be ethically complex, but the good may outweigh the bad. Systems justification is typically intrinsically factually incorrect, however, as it is based on ignorance of the experience of marginalized groups codified as negative stereotypes about them.

For instance, the role of IQ tests as a measurement of *intelligence* originated with Francis Galton, who was also the father of the American eugenics movement and strongly influenced social Darwinist thinking, both of which are systems justifying ideologies (Chapman, 2021c; Dennis, 1995; Gillham, 2001). It may be no wonder, then, that neurodiverse people are threatened by neurodiverse conceptions of intelligence. Neurodiverse people are often more rational than neurotypical people (D. Price, 2022), but their atypical presentation and disability status leave them vulnerable to being treated as cognitively inferior; consequently, evidence shows that priming neurotypical judgments of about a neurodiverse person's "intelligence" is shown to function as a *stereotype threat*, prompting hypervigilance and stress (Priscott & Allen, 2021).

*Normality* is a social construct that likely serves a function of enforcing conformity, which is functional to the strategy of some cultures and neurotypes who rely heavily on adaptive *social cohesion* (Del Giudice, 2018; Haidt, 2013; Henrich, 2004; 2016, Richerson et al., 2014). Such cohesion may be intentionally compromised in neurodiverse people as part of an evolutionary tradeoff to instead embody the strategy of *evolutionary search* (H. Taylor et al., 2022). Here, neurodiverse people are higher instead on traits like openness to experience/intellect, creativity and critical thinking, which can promote idiosyncratic and even eccentric individuality that is naturally in

friction with conservatism and collectivism. This promotes values toward social disruption and change as a complement to these dispositions, including the use of painful friction between the two groups as a driver of cultural evolution (Haidt, 2013), which may include judging and mistreating neurodiverse people as *abnormal*.

*Laziness* may be equally directed at ADHD and ASD which share struggles with motivation as a form of *neurodiverse inertia* (D. Price, 2022), making them both more prone to *social burnout* when excessive burdens and lack of supports creates too much expectation and not enough energy to meet it (Raymaker et al., 2020). However, laziness may be a myth (D. Price, 2021), an over-attribution of systemic demotivating barriers to important goals framed as individual faults. The neurodiverse may appear “lazier”, but this typically hides differences rather than deficits; those with ADHD may be more sensitive to *flow states*, rather than motivationally impaired (Armstrong, 2010), and there is a question of whether *executive dysfunction* may similarly be framed as an adaptive difference of *task-switching* as a tradeoff.

The *stress-diathesis model* suggests mental distress is always framed as the interaction of environmental factors and innate vulnerability to mental health disorders, which means no mental health suffering can ever be truly justified. However, the theory of *Orchids and Dandelions* put forth by Dobbs (2012) presents a good way to reframe the current evidence. The study of pathology genes, which has always assumed that implicated gene alleles were inherently dysfunctional, may actually be better framed as sensitivity alleles; findings by researchers like Belsky et al. (2009) showed those with risk alleles only became pathological in some environments (and cultures; see: Chiao &

Blizinsky, 2009), and overperformed in others. Neurodiverse people, who are more likely to feel intrinsically different, socially marginalized, and devalued as “weird,” face increased risk of depression and anxiety connected to this social friction. Frames that promote evidence of mental health issues as genetic vulnerability may piggyback on this vulnerability as those who already feel like an outcast for reasons they cannot discern, find institutional narratives happy to authoritatively confirm the worst-case scenario, that the meaning of those differences are inextricably linked to their intrinsic genetic inferiority.

### **Consilience Approaches**

In each of the above constructs, robust challenges can be mounted against ideas that depend on authoritative ignorance to justify the status quo; they are easily deconstructed by *more knowledge*. However, this may necessitate what sociologist Emile Durkheim called *social facts* (Haidt, 2013). Social facts are constructs that call attention to predictable social patterns and relationships that are as robust and consequential as the physical sciences, particularly for mental health and well-being, but may lack a natural interpretive framework in the Western paradigm. For our purposes, social facts may include epistemic injustice, social determinants of mental health, and power gradients, to name a few. Furthermore, it requires multiple strains of evidence to reveal more complex phenomena only illuminated at the intersection of multiple perspectives.

*Consilience* (E. O. Wilson, 1998) is derived from Latin, and translates directly to “jumping together.” It refers to a scientific method of converging on strong conclusions

from interdisciplinary agreement. In addition to providing more access to information, consilience may have multiple benefits in, for instance, imparting rigor to the pursuit of more advanced, complex, and useful therapeutic models. This rigor would balance analytical reductionism with systematic holism at the level of knowledge itself; complexity might benefit the goals of empathic understanding, which Haidt (2013) has argued has been missing from efforts at pure systematization in academics.

Several neurodiversity scholars have voiced support to walk back, or “unpick,” the biodiversity metaphor of neurodiversity because the “engine of scientific discovery” has reified social Darwinist hierarchies, pathologization and exploitation (Chapman, 2021b; 2021c; Meadows, 2020; Stenning & Rosqvist, 2021). Yet eschewing science altogether may be problematic. Neurodiversity is fundamentally a biopsychosocial phenomenon that resists being understood through subjective phenomenology alone; neurodiversity is equally expressed at biological, psychological and social levels, through diverse presentations, and across various ecological contexts. This may be particularly important to grasping the evolutionary “logic” of neurodiversity, which shows when, why and how neurodiverse traits are adaptive, and when they are not, so we can imagine clients for what they could be and not just what they are not. Yet this approach would require the ability to create a complex interdisciplinary picture, which consilience can provide.

Consilience may also have other positive externalities of bringing multiple stakeholders to the table, the intentional prioritizing of epistemic justice, and creating empowering self-knowledge across diverse people. It may also create the social power

necessary to change minds at the scale of whole paradigms. Consilience values data and models that can agree in large meta-models to make sense of the most data across sciences; this puts pressure on siloed fields that cannot be synthesized or integrated. Siloed and reductive fields may have a disproportionate number of systems justifiers propped up by idiosyncratic ideologies that allow ignorance to flourish in comparative simplicity. Alternatively, if large metamodels can bring more thinkers and researchers together across fields, this represents the opportunity for larger numbers of scientists to work together across their differences, a kind of cross-disciplinary validation of the meta-model as a consensus that spans fields, and social power that likewise scales to new heights. This might help throw weight behind large, complex and just metamodels to create more “surface area” for collaboration and innovation, and might ultimately lead to promoting the model that supported an expanding frontier in academics. This is a model of paradigmatic change, one that can push back on epistemic injustice and systems justification when complex understanding is valued. This would only be a boon to the goal of therapists who need new integrative ways to understand complex, diverse, intersectional people in a modern world. The current grail of modern therapy research has been characterized as approaches that are integrative, evolutionary, contextual, and biopsychosocial (Gilbert, 2019); this is exactly the kind of promise consilience can make.

## **Part II: On Framing Neurodiverse Social Animals**

### **A Summary of Existing Paradigmatic Problems**

A variety of problems with the current medical model were laid out as problems

with the current system. Let us review several of them.

The medical model may represent misframing the problem of mental illness by solving the problem “at the wrong level.” By reducing mental health issues to individual problems, stigma is created as an externality by implying causality at the individual level (Lebowitz & Appelbaum, 2020). A similar insight was used in forming the science of second-order cybernetics, which assumes that observers are not neutral observers, but part of the system they are observing (Heylighen & Joslyn, 2003). When problem-solvers deploy an intuitive framing of a given problem - for example, “I don’t like this behavior in my spouse, so I will fight all signs of it” - they are more likely to maintain the problem at a higher level by creating a new problem instead - in this case, excessive conflict with the spouse, which may depletes positive relational influence as a motivator for behavior change - and this may only make the original problem worse (see: *second order change*; Fraser & Solovey, 2007). Sometimes a less intuitive solution is needed, but harder to see. For the medical model’s part, framing individual problems has created unintended consequences by blaming individuals for their suffering, and also obscured social etiologies like unsustainable or oppressive social systems (Ratts, 2009).

There is also the possibility that blaming the individual is not unintended at all. *Systems justification* is the premise that blaming disadvantaged groups for their problems, or the problems of an entire system, has the benefit of allowing advantaged groups to maintain the status quo that benefits them. In this model, the medical model may be creating fictions that are internalized for added self-stigma because this helps to maintain a problematic system -- as evident by creating inequalities that are based on

false pretenses of an inherently just social order based on superiority and inferiority dynamics - which is then maintained in part by the systems justifying beliefs (Jost & Hunyady, 2002). This is similar to the implications of *epistemic injustice* and *epistemic violence*, but adds the layer that all actors are motivated to maintain such a system, even those abused by it, because it is preferable to the psychological implications of recognizing the system one is under is not benevolent, aligned with your best interests, and may be actively exploitative, all of which have implications that are psychologically untenable (see: *perspicacity* and *depressive realism*; Hanna et al., 2000; Mirowski & Ross, 1983).

Because the medical model is not science-based (Davies, 2017) and is explicitly atheoretical (Suris et al., 2016) with flawed assumptions (DeYoung & Kruger, 2023), it derives its power from its political and economic utility (Fitzgerald, 2020) and its cultural congruence with Western individualism and philosophy (Johnstone & Boyle, 2018; Oyserman et al., 2002). This makes for the problem as built into Western culture's tendency to reduce social information to stable, decontextualized, abstract traits (Oyserman et al., 2002), leading DSM diagnoses to be worn like enduring negative self-concepts and preventing more dynamic models of the person in context (Johnstone & Boyle, 2018), as Western thinking leads to a

the separation of mind from body, thought from feeling, the individual from the social group, and human beings from the natural world; the privileging of 'rationality' over emotion; and a belief in objectivity, or the possibility of partialling out values, ethics and power interests from theory and practice in

human systems. (Johnstone & Boyle, 2018, p. 5)

The preeminence of the medical model has led to the overmedicalization and mental health and pacification of clients (Rocca & Anjum, 2020), the pathologization of everyday life (Frances, 2014; Greenberg, 2013; Khoury et al., 2014), social control as a policing of controversial norms (Conrad, 1992; Correia, 2017; Fitzgerald, 2020), frames on mental health that lead to perceived uncontrollability and pessimism about diagnostic prognoses (MacDuffie & Strauman, 2017a; 2017b); and the assumption of a single idealized standard as a species-typical norm, which is likely false (Oller, 2019).

### ***The Advantages of a Social Animal Perspective (SAP)***

A *social animal perspective* (SAP) may help redress these areas; let's consider a non-exhaustive list of some benefits. The SAP is science-based with robust integrative social theory built on *multilevel selection theory* (MLS; D. S. Wilson, 2002; 2008), which organizes relationships between biological, psychological and sociocultural levels of analysis with evolutionary thinking. MLS builds in rigor to a consilience approach by integrating four perspectives into understanding any biopsychosocial element from an evolutionary approach using Tinbergen's (1963) four questions: what is the function, history, mechanism, and development of the element in question (Hayes et al., 2020)? Iterated out, this allows for complex understanding of a people and problems in context; it can incorporate a variety of tools to model social facts (Haidt, 2013); and it scales at multiple levels and embodies dynamic change and variation as norms. The scale of the SAP also allows the modeling of Western thought as part of the problem field and this thinking can evolve in a process of cultural evolution; by implication, the framework

understands its role in the problem field and can use feedback to refine it progressively.

The SAP is richly contextual and systemic and would not obscure social etiologies as Ratts (2009) feared, in part by making the logic of mental distress more “intelligible.” For instance, Paul Gilbert’s work (1992a; 1992b; 1995; 2000a; 2001a; 2001b; 2004) uses an SAP and provides multiple evolutionary pathways for social injury including a role for “powerlessness” (Gilbert, 1989; 1992b) and social or structural determinants (2018; 2019). The SAP would combat epistemic injustice and systems justification, which benefit from ignorance about marginalized experiences to create negative stereotypes that collapse in the light of information. Hari (2018) used the SAP to deconstruct *systems justifying ideas* and *epistemic injustices* derived from biomedical frames on mental health struggles. This is in part because the multidisciplinarity of the SAP can explicitly accommodate a scientific footing for social facts like power dynamics, allowing meta-cognition about the role of power, threat and social context as social determinants of mental distress (Johnstone & Boyle, 2018). Likewise, it can help validate moves away from the “specific ingredients” of medicalized therapies and validate existing support for the more general social mechanisms of therapy promoted by *common factors* models and *evidence-based relationships* (Wampold & Imel, 2015).

The SAP can problematize Johnstone and Boyle’s (2018) critique of Western thinking at the heart of the “DSM mindset,” by problematizing reductionism, decontextualization and fragmentation by explicitly integrating and organizing all science domains as a stated goal. By extension, the SAP may combat the “mindlessness” in the critique by Khoury et al. (2014), where decontextualization, reductionism and

fragmentation lead to cognitive commitments that are rigid, uncritical, automatic, static, narrow and unchanging, a style of thinking that may systematically fail to see clients with grace, charitability, possibility, imagination or compassion. Indeed, as a therapeutic frame for complex empathic understanding, the SAP lives up to Gilbert's (2019) assessment of the grails of therapy as "integrative, evolutionary, contextual and biopsychosocial." The SAP can benefit from a partnership from European systems thinking (Heylighen, 2000; 2005; 2023; Heylighen & Joslyn, 2003) and American evolutionary functionalism (Hayes et al., 2020; D. S. Wilson, 2002; 2008) as part of its holistic modeling and complexity science, where each offers different kinds of flexible thinking about people and problems.

Finally, multilevel evolutionary thinking can de-stigmatize and de-medicalize social life, allowing multiple norms of functioning in life, an assumption of multilevel variation and change, and a moral arc to ground issues of justice and morality (Del Giudice, 2018; Haidt, 2013; Hayes et al., 2021; D. S. Wilson, 2002; 2008). All mental health substrates - biology, psychology, and sociocultural experience - can be explained through interplay across levels of analysis, and resist reduction to any one level. Even dysfunction can be articulated in terms of evolutionary functions that conflict, make tradeoffs or encounter mismatches (Gilbert, 2019; Hayes et al., 2020). Multilevel views make complex, changing and varied behavior more intelligible, justifiable, and communicable, while narrow views may fall back on explanatory vacuums, moral judgments and deficits to explain what cannot be explained, promoting stigma and undermining credibility. SAP-informed frameworks have already proven attractive for

justifying alternative frameworks to existing approaches. Wampold and Imel (2015) used the SAP to push back on “specific ingredient” therapies in favor of common factors approaches, while Johnstone and Boyle (2018) drew on SAPs in efforts to replace the medical model in Britain. The same can be said in neurodiversity, where a Diversity Model (DM) can be assembled from a variety of contributions (Del Giudice, 2018; Haidt, 2013; Oller, 2019; H. Taylor et al., 2022) and may help validate research by the community such as the *burnout model of autism* (Raymaker et al., 2020).

In short, if we are to understand neurodiversity as differences in human nature and ways of moving through the human condition, we need an equally complex language to negotiate, communicate, and justify our ways of being across these differences. A theory of neurodiversity may argue that the differences between neurotypes are normal and natural, but these differences will remain abstruse and opaque until the SAP can allow us sufficient language with which to bridge the divides in a bottom-up fashion.

### **What are Social Animals?**

It is important to acknowledge that for many, evolution has become synonymous with the hyper-individualistic “selfish gene” reductionism (D. S. Wilson, 2002; 2008) which may contribute to evolution being relatively ignored in social sciences today (Hayes et al., 2020), or even associated with social Darwinist logic (Dennis, 1995), and that some may find the association with neurodiversity and mental health repugnant (Chapman, 2021b; 2021c). However, the *extended evolutionary synthesis* (EES; Laland et al., 2015) may reverse such associations sufficiently as to make evolutionary theory

uniquely important in legitimizing the kind of social facts that are key to combating epistemic injustice.

The EES now says that human beings are not independent, solitary creatures locked in competitive zero-sum games where the strong reproduce, nor are they mere pawns in games where their genes play for survival (Hayes et al., 2020). Human beings are considered *social animals*, which aggregate in large groups defined by complex cultures and rule-governed interactions. Relative to other animal species, humans do not dominate in strength, speed or physical prowess, but have a variety of phenotypic advantages - bipedalism, opposable thumbs, symbolic thought, social learning, cultural inheritance, imagination, tool use and speech - that allows for behavioral plasticity to pay off at the social level: humans can flexibly organize, cooperate, divide labor and enjoy interacting with one another (Henrich, 2004; 2016; Richerson et al., 2014; Sinn & Hayes, 2017; D. S. Wilson, 2002; 2008; 2019; Wright, 1994; 2000; 2009). The word for this is *prosocial*, which supersedes cooperation or altruism, and includes any behavior that supports the welfare of others or the group as a whole, allowing the group to function as an adaptive unit (D. S. Wilson et al., 2023).

Prosocial animals include social insects called “eusocial” or “ultrasocial,” which become so social as to become a kind of organism in its own right, a *social superorganism*. Humans have been considered a type of social superorganism (D. S. Wilson & Sober, 1989; 2002; 2008; Wright, 2000), and may have evolved a flexibility with respect to their ability to move from states of semi-independence to strong interdependence under specific conditions, what Haidt (2013) called the *hive switch*.

Neurodiversity may bear on the degree to which people naturally vary along this groupish tendency (Del Giudice, 2018; Haidt, 2013), and different people may fit better or worse among groups that express groupishness in different ways, with mental health issues like depression and anxiety capturing the friction (Chiao & Blizinsky, 2009).

There may be a natural tension between our positioning respective to our individual and social needs. At one level, humans must optimize individual social positioning selfishly to access resources and compete for mates (i.e., *within-group selection*), but at another, it is their prosocial ability to selflessly cohere that ensures adaptive success, with more harmonious groups outcompeting more splintered rival factions (*between-group selection*). This has been pithily stated as “Selfishness beats altruism within groups. Altruistic groups beat selfish groups. Everything else is commentary” (D. S. Wilson & Wilson, 2007, p. 345).

D. S. Wilson (2002) posited that a “black box” of evolved prosocial mechanisms must exist in the human mind to uniquely support our ability to suppress self-interest to the point where cultural evolution is the dominant evolutionary process in operation today, but suggested that while evolutionary psychology has made progress in this area, we don’t currently know what is “in the box.” The mental health literature may be uniquely suited to the nature of the question, showing us mental health suffering is the natural externality of evolutionary solutions to the problems of prosocial living, where suffering and vulnerability are a predictable “stick” to being disconnected or impugned with respect to prosocial engagement, and a sense of meaning and resilience is the carrot for optimizing prosocial engagement. In other words, *we have evolved to find*

*prosociality meaningfully energizing and mentally sustaining, and evolved to find its absence uniquely debilitating and unsustainable.* Understanding how this works would be useful for our purposes, by rendering the opaque logic of mental health functioning as intelligible from an epistemic justice perspective. As the title of an evolutionary medicine book by Nesse (2020) put it, there are “Good Reasons for Bad Feelings” and understanding them can help us optimize our well-being accordingly.

### ***Relevant Evolutionary Concepts***

The *extended evolutionary synthesis* (Laland et al., 2015) is an acknowledgement that a variety of evidentiary gains in subdisciplines of the evolutionary research program (evo-devo, developmental plasticity, inclusive inheritance and niche construction) have produced a compelling enough reason to modify the original *modern synthesis* (MS) as an alternative conceptual framework.

Much of this extended synthesis serves to widen the scope of our understanding of evolutionary processes – *variation, selection* and *heritability* – into new domains that fundamentally expand the dynamism and purposiveness of evolution. By appreciating that any substrate that can have the properties of *variation, selection* and *heritability* can function in a Darwinian fashion, a multitude of domains are seen as evolutionary processes and interact purposively and even directionally (Hayes et al., 2020; D. S. Wilson et al., 2023).

This *multidimensional* approach to evolutionary processes (Hayes et al., 2020) includes known biological substrates such as genetics and epigenetics, but expands to include biopsychosocial substrates for social learning, symbolic thought, and

sociocultural learning (Hayes et al., 2020; Jablonka & Lamb, 2014). A breakdown in basic assumptions about the direction and nature of evolution begins to emerge, as a quote from Hayes et al. (2020) makes clear: “it is now possible to think of physical organisms themselves as systems for turning environment and behavior into biology (Slavich & Cole, 2013),” where the primacy of biology as the sole unit of selection is lost and even subsumed relative to other units of selection that learn and adapt more quickly. We see a similar challenge to MS assumptions in the growing understanding of *niche construction*, where behavioral and psychological variables influence the environment itself by constructing niches that a species adapts to, where the niche then feeds back to further shape the phenotypic expression of the species in a bidirectional fashion. A view of evolution emerges that is multilevel, multi-timescale and bidirectional between organism and environment, where biology is no longer the linear determiner of evolution we once imagined, but a substrate among many.

Evolution is not just *multidimensional*, but *multilevel*. It may appear chaotic to liberate different “dimensions” of evolution, but the concept of being “multi-level” stabilizes these dimensions into broadly parallel, mutually-determining, experimental processes on different evolutionary timescales. These timescales may be purposive and directional (Hayes et al., 2020) as illustrated by the concept of *major transitions* (METs).

A MET is a process of increasing complexity where evolution adds to the multi-tier hierarchy of life by moving from molecules to cells, cells to organisms, organisms to social superorganisms. Fundamentally, it involves changing how information is stored and transmitted across generations, and so the major transitions can be captured at a

fine grain in the transition from prokaryotes to eukaryotes, asexual cloning to sexual reproduction, protists to multicellular organisms, solitary organisms to eusocial insect colonies, and primates to human culture groups (Szathmáry & Smith, 1995). The dynamics of a major transition sees processes of natural selection producing a rise in complexification when, after periods of variation and selection, invariably a) some group of smaller entities form a larger group, b) the group comes to function as a whole, including individual reproduction becoming impossible outside the larger entity, which reproduces as a whole, c) the group organizes, specializes and differentiates into organelles, tissues and castes, d) lower-levels of selection can undermine higher levels as in cancers, selfishness and coup d'etats, and e) a new form of information transmission evolves ala DNA, epigenesis and universal grammar. The evolution of neurodiversity may represent such a major transition (H. Taylor et al., 2022), as neurodiversity a) contributes to group resilience and plasticity by supporting human social groups to function as interdependent wholes that evolve through cultural evolution, b) cultural evolution sees groups transmitting information through cultural ideologies that capture group organization as a way of life, making it possible to frame the group as the locus of reproduction where neurodiverse subgroups (or *neurotribes*; Silberman, 2016) are “tissues” in the superorganism; c) may reflect human specialization and differentiation as biopsychosocial strategies optimized for “evolutionary exploitation” versus “evolutionary search;” d) this function may be subverted by lower levels of selection (Hayes et al., 2020; D. S. Wilson et al., 2023) when developmental conditions result in misanthropic loners, burnout or cults; and e) these may be stored

and transmitted by genetic and epigenetic differences targeting a universal temperament or life history strategy system.

Considering the evolution of humans, we can also frame METs as transitions of individuality (West et al., 2015). That is a multipart evolutionary process sees the following: individual organisms form limited communities, community cooperation expands, and then cooperative communities transform into an indivisible, interdependent whole as a new, higher-order individual. By example, individual primates originally formed communities built of limited cooperative capacity and potential, evolution expanded on that prosocial capacity in the evolution of humans, and we would now be somewhere in the process of transforming from a cooperative culture-group to a single, higher-order *superorganism*. This process helps to resolve the tension between selfish and selfless behavior by assuming that prosocial behaviors can evolve when between-group selection outweighs within-group selection (Sober & Wilson, 1998; D. S. Wilson & Sober, 1994), i.e. intergroup competition becomes more salient than individual competition to individual fitness. It also explains how individual human psychology is heavily overlaid with prosocial mechanisms like social emotions, moral intuitions, altruism and values, which further help the group function as an adaptive unit. This may frame how individual well-being can have group-level targets for well-being that do not reference the individual directly, i.e. niche-construction, where it is the ability to align individual prosocial needs and drives to a niche that channels and rewards that way of being, by conferring feedback of adaptive success that translate to feelings of life satisfaction, optimism, confidence, connection and resilience.

METs help to build an interdisciplinary scientific meta-narrative inclusive of all living and non-living systems as building up a multi-tier hierarchy of complexity over time (Hayes et al., 2020; Heylighen, 2000; 2023; Szathmáry & Smith, 1995; D. S. Wilson, 2023; D. S. Wilson et al., 2023). From this dominant pattern, other major patterns can be discerned. For instance, each evolutionary leg is faster. Cosmic evolution has taken place over billions of years, biological evolution took hundreds of millions of years, sociocultural evolution has occurred over tens of thousands of years, technological evolution has taken thousands and behavioral evolution unfolds on the span of years or faster. Because of this, and given that any process of variation, selection and retention is Darwinian, it would be meaningful to compare the speed of biological evolution to behavioral evolution. In biological evolution, learning takes generations to emerge as organisms reproduce with tiny variations and must die in order to bear out subtle patterns of differential fitness as evidence of accrued adaptive benefit, while behavioral evolution can occur on more immediate timescales, consciously or subconsciously, by selecting a desired outcome, varying possible mental or behavioral approaches to fulfill the goal, and retaining the most effective. This example highlights the concept of *evolvability* as itself a target of selection, which is to say, evolution as a change process favors each new tier on the hierarchy of life to be more changeable as measures of robustness, redundancy, flexibility and exploration (Kirschner & Gerhart, 1998), and is generally expressed as increasing behavioral phenotypic plasticity (flexible responses to novel scenarios) that can accommodate more varied environments (i.e., a global niche for humans) and adapt over longer time-scales (i.e., goals on the scale of decades for

humans). Evolvability may help explain the mental dimension of evolution itself, as mental anticipation and modeling increase the ability to control one's environment across time and space (Heylighen, 2005). When humans evolved language and universal syntax, they unlocked the ability for shared representations of the world fueled by social learning and symbolic thought; this became a new inheritance system that could be selected upon by cultural evolution to evolve the complexity of interior models of the exterior world (i.e., worldviews), increasing goal-directed flexibility, scope and farsightedness still further (D. S. Wilson et al., 2023). This may mean the evolution of consciousness has effectively been "in the cards," and our ability to model our own evolutionary change and direction may be an important next step (Heylighen, 2023; M. E. Price, 2023; Vidal, 2023; D. S. Wilson, 2023).

These concepts have implications for psychological science (Hayes et al., 2020), for as the balance of forces between individual and group-selection shifts over evolutionary time, the group becomes a conscious target of selection. For instance, humans are most likely disproportionately subject to *cultural evolution* as their predominant selection process, and to the extent that biology still matters, it is only through a process of *dual inheritance*, where culture shapes genetic evolution and vice versa (Muthukrishna et al., 2018; Richerson & Boyd, 2008). Thus, humans concern themselves with the business of evolving culture and shaping the niches that will, in turn, co-regulate them.

In this regard, neurodiversity may also vary as a function as a degree to which their evolved role differentiation is purposive. The concept that "purposeless" evolution

can create “purposeful” organisms is not new, and is borne out by implication from evolvability as in asking the question of “whether the collection of species we have with us today is not only the product of the survival of the fittest, but also that of the survival of the most evolvable?” (Wagner & Draghi, 2010, p. 381). Effectively, if each sub-pattern of major transitions finds it predictable that some living system (such as eukaryotes or primates) will move from individual to community to individual as a rise in evolvability and complexification, this can be considered a defacto *purpose* of evolution, even if no purposeful designer exists. This is the concept of *teleonomy* (Mayr, 1974), and scholars have even conceived of it as a moral and spiritual good, where the net outcome is to expand conscious anticipation of evolutionary challenges so as to avoid them, and create higher level evolutionary units where lower-level units experience a harmonious and meaningful interdependence experienced purposively (see: *Pierre Teilhard de Chardin*; M. E. Price, 2023; Vidal, 2023; D. S. Wilson, 2023). A more cautious position might acknowledge a) the important challenges of co-evolving the evolutionary niches that regulate our collective well-being; b) negotiating neurodiverse tensions in navigating change versus stability with more intention and less friction; and c) modeling exponential evolutionary change as fraught with opportunities and threats to manage global conflict and catastrophe as a target of selection (D. S. Wilson et al., 2023). For neurodiversity, teleonomy may also be an important frame for understanding neurotypes as serving distinct functions in regulating the group, achieving subgoals of conservation and change in social life, and constructing co-regulating social niches in service of directional cultural evolution (Haidt, 2013).

We will return to the question of neurodiverse well-being including key concepts of niche-construction, mismatch and trade-offs, as well as social facts such as agonic or hedonic environments organized around power and threat or safety and cooperation.

First, we will turn to neurodiversity in a consilience, SAP framework.

### **Neurodiversity: A Primer**

The term neurodiversity was coined by sociologist Judith Singer as a way to reframe the brain as possessing an inherent diversity of cognitive organizations and functions as “a trait possessed by a group, not an individual” (Boswell, 2020). Singer’s neurodiversity drew on two predominant influences, the social model of disability, which advocated that the challenges of disability lay in the systemic barriers and exclusionary attitudes of an inhospitable society, and the biodiversity concept of the life sciences, which documented the necessity of a rich and diverse biome to maintain critical ecosystems for planetary health (Doyle, 2020). Like the social model of disability in Britain in the 1970’s, neurodiversity eschewed diagnoses like autism (since rebranded as ASD) and ADHD as diseases to be eradicated, and saw them as positive identities with unique contributions of thought and agency to be valued, included and respected (Armstrong, 2010; Doyle, 2020; Priscott & Allen, 2021; J. Singer, 2017). Importantly, the nature of these “strengths-based perspectives” can themselves be controversial (see: Meadows, 2020) and may even seem pollyannaish, in part because they are poorly understood and are often provided by eclectic studies that merely link a diagnosis to a valued trait like creativity, enthusiasm or intelligence in a clinical population (Armstrong, 2010). However, this may be because such contributions are necessarily pre-

paradigmatic because the neurodiverse concept is still premised on reframing existing pathological diagnoses as a starting point. There exists plausible evidence that neurodiversity is functionally and normally distributed as functional subclinical traits (i.e., not associated with pathology) in the population, meaning a) they are invisible to the pathology focus of mental health, and b) only become “on the radar” through their unique signatures of suffering and dysfunction (Del Giudice, 2018; Oller, 2019).

Originally, neurodiversity was applied to Asperger’s syndrome (Ortega, 2009), since renamed to ASD, as Singer was “in the middle of three generations of women somewhere on the autism spectrum” (J. Singer, 2017). Singer differentiated between neurotypicals — those who were considered a neuromajority with the cultural privilege of being deemed “normal” — and the neurodivergent, which included a variety of neurominorities on one or more spectrums of neurodivergent thought, but are most prominently associated with medical diagnoses such as ASD and ADHD (Priscott & Allen, 2021). Neurodiversity has since become a crowded umbrella term for competing taxonomies owing in part to the term being used to apply equally to those in the mental health, education and communication disability literature, and reflecting ambiguous inclusion criteria and epistemic status. Neurodiversity in education settings may include diagnoses such as dyslexia, dyscalculia, dyspraxia and ADHD (not a learning disability, but often diagnosed in educational settings), with some using neurodiversity as an umbrella for both the learning disability and giftedness communities as well; the two are thought to intersect by degrees, where some gifted students may have only subtle learning disabilities, some may have gifts outweighed by disabilities, and some go

unidentified by the gifted community as most of their gifts go unrecognized as simple compensation for their disabilities (Dalton, 2013). The most definitive diagnoses, ADHD and ASD, are included with Tourette's syndrome as communication disorders, but have significant overlap with mental health diagnoses as defined by the DSM-5-TR. This bridge sometimes extends the neurodiversity label to other DSM-5-TR diagnoses such as bipolar disorder, schizoaffective disorder, mood disorders and schizophrenia, with some arguments that these diagnoses may also have functional origins and potential strengths, given they have not been selected away by evolution (Armstrong, 2010; Del Giudice, 2018). Other constructs from the self-help and folk psychology world such as introverts, empaths and highly sensitive people (HSPs) could find inclusion under the neurodiversity umbrella, even as they challenge existing empirical frameworks to provide categorization.

As a big tent sociopolitical advocacy movement, it is no surprise that neurodiversity represents many things to many people (VanDaalen, 2021). Neurodiversity has been seen as a neutral difference, as in the quote: "There is no 'normal' style of human brain or human mind, any more than there is one 'normal' race, ethnicity, gender, or culture" (Walker, 2012, p. 228). Some hold neurodiversity is a positive advantage: "Neurodiversity may be every bit as crucial for the human race as biodiversity is for life in general" (Blume, 1999). Some go so far as to claim it is a superpower (Thunberg, 2019).

Advocacy may become controversial when they challenge the dominion of institutional and healthcare groups whose influence is mediated by framing neurodiverse

issues through the deficit models of disease. For instance, neurodiversity advocates came out against the popular organization “Autism Speaks” and led the group to remove its pursuit of a “cure” as a mission goal in 2016 (Lewis, 2020), and the success of neurodiversity advocates led the autism research luminary Simon Baron-Cohen to write an article “the concept of neurodiversity is dividing the autism community” (Baron-Cohen, 2019). Yet a conversation about the relationship between disability and identity may be the movement's largest contribution to date, including how to reconcile the pathology perspective with credible identities. For example, the autism-as-an-identity and autism-as-disability camps represent a spectrum of positions including those who a) see autism as inherently disabling (Olsson, 2007), b) seek to differentiate between high and low functioning (Baron-Cohen, 2000), c) those who see any such differentiation as inherently discriminatory (Alvares et al., 2019), d) those who think the heterogeneity of autism presentation undermines the argument for neurodiversity (Hughes, 2020), e) those who see difference as compatible with disability (Bailin, 2019), and f) those who see neurodiversity in purely positive terms (Thunberg, 2019). As pointed out by Doyle (2020), these polarized and passionately held positions are to be expected and respected as layers of the intersectional identity challenge. Fulfilling the motto of the Autism Self Advocacy Network to say “nothing about us without us” is to grapple with the dissonance of what might be brought to the table. There may also be an issue of who gets centered in the neurodiversity conversation; this author found difficulty in finding neurodiversity assessments and theses that did not assume the autism community as the focus, followed by ADHD, creating a potentially problematic

impression that one neurominority can stand in for the whole as a proxy for neurodiversity writ large (e.g., Ekblad, 2012; Robertson, 2009; VanDaalen, 2021).

### **Neurodiversity empirical status: threats, opportunities and epistemic justice.**

One reason for the controversy surrounding neurodiversity is that it is currently a community stakeholder-driven, self-advocacy movement that is united by a critical discourse of the medical model's empiricism, while not attempting to establish a separate empirical footing, grounding itself instead as a political and identity-based solution (Chapman, 2021a; 2021b; Chapman & Carel, 2021; Fitzgerald, 2020; Meadows, 2020; Walker, 2012). Fitzgerald (2020) called neurodiversity an “attitude of mind to deal with stigma,” and highlighted problematic gaps in the social, political, and scientific framing of the psychiatric model that can be remediated by neurodiversity; however, he does not attempt to situate neurodiversity on a distinct epistemic footing. Stenning and Rosqvist (2021) would seek to “unpick” the biodiversity metaphor, as biodiversity was partially justified by the use of finding economic value in under-exploited ecological sectors, something that was seen to have eerie parallels when neurodiversity came to be used to find ways of exploiting neurodiverse strengths in the business sector. They further seek to downplay the significance of biological differences in the fear that doing so could reify social Darwinism, exclude those with unidentifiable neurodivergent differences, or reify a hierarchy of normality amid deficit-based identity categories. Meadows (2020) decried that neurodiversity is becoming increasingly popular as a cosmetic upgrade to the pathology paradigm, a way to add strength-based language without challenging the nature of the underlying constructs of pathology, yet resists

providing a counter-narrative per se. She classifies attempts to “understand the neurodivergent brain” as regressive because it “puts individuals under a microscope” and implies a normative neurotypical brain, instead of embracing the “biological truism” that all people are neurodiverse at an individual level (Meadows, 2020; J. Singer, 2021). Chapman (2021a) countered that it may not be possible to fully reject the medical model’s “broken or sick brain” hypothesis as doing so would restrict access to sense-making stories needed for people to assemble a pastiche of identities and self-stories. However, Chapman (2021b) also opposed epistemic frames like evolution that might offer non-pathological justification for neurodiversity as a) the act of justifying neurodiversity based on “strengths” rejects the values of inherent worth, and b) doing so may reify an underlying social Darwinist subtext that neurotypes are in competitive comparison with one another; he concludes that both positions hold a danger of reinforcing the current oppressive social and epistemic order.

Chapman’s overarching vision might summarize much of the resistance to epistemic footings for neurodiversity. Chapman and Carel (2021) center epistemic justice (Fricker, 2007), where marginalization and oppression of minority groups is often based on their status as knowers and their ability to be known; i.e. the medical model nullifies the assumption of credibility, forces individuals to be known only through negative stereotypes, and provides internally oppressive self-knowledge. Epistemic justice highlights a Catch-22 implicit in pathologization wherein a precondition for accepting mental health support for autism is to accept viewing the diagnosis as a disease pathology, which necessarily precludes the potential to embrace autism-as-a-

viable-identity, where autism would be seen as an indivisible part of one's experience that does not compromise their credibility or path to thriving. This Catch-22 is paraphrased by Bervoets and Hens (2020) as "I'd be disordered if I accept to being autistic, but if I'm in good mental health, I have to accept I'm not autistic." The epistemic justice frame extends its criticism of the medical model to general suspicion of the entire scientific "engine of discovery" (Stenning & Rosqvist, 2021), as institutional knowledge production might inevitably reproduce more constraints on community-generated identities and self-stories, creating more epistemic injustice from societal knowledge structures imposed upon, and precluding understanding of, the same people who are marginalized under the current ideological power gradients. One possible interpretation is that move represents a general disqualification of institutional players in knowledge-production as a strategic move to reposition the individual as the primary narrator; and by extension, were this to lead to epistemic opaqueness, that wouldn't necessarily be bad if it further disempowered institutions and empowered individuals.

### ***Epistemic Paths***

Not all are opposed to epistemic clarity, however. While Fitzgerald (2020) largely focused on criticism of his own field of psychiatry as a specialist in adolescent autism, he offered a heuristic for neurodiversity as statistical deviation of normally distributed traits. Ollers (2019) pointed out that a neurodiversity of distributed trait clusters is important to understanding the normal foundation of psychiatric disorders, as families that show subclinical traits related to certain psychiatric diagnoses may help explain why disorders themselves run in families. He criticized the recent concept of "symptom

networks” of related mental/linguistic events (i.e., thoughts and emotions), which eschew understanding the functional biological context of these events, as not helping to understand why such disorders arise, persist or become heritable. The result is to isolate people with mental health diagnoses from their neurodiverse context by turning traits that may be heightened but subclinical in their families into “symptoms” only when exposed to clinical settings, arbitrarily dividing clients from “normal” mental health.

Doyle (2020) added a line of functionalist evolutionary thought by making a case of neurodiversity as an evolution of specialist forms of thinking to balance out more generalist typologies, where neurodivergence accordingly offers a “spiky” profile of extreme peaks (strengths) and troughs (challenges) across cognitive skills such as verbal ability, working memory, visual skills and processing speed (reminiscent of the phrase, “genius isn’t general”).

In contrast, Armstrong (2010) compiled a book-length synthesis on an eclectic neurodiverse taxonomy (organized based on reframes of a mix of learning disabilities and mental health diagnoses), which explored a variety of social science contributions from psychology to anthropology). Armstrong’s evidence was eclectic, citing a variety of findings and perspectives to characterize neurodiversity as unique ways of being suited to different social niches, and irreducible to simple dysfunction. He incorporated research arguing that the positive attributes of neurodiversity emerged when people adapted to certain “social niches” were aligned with those strengths, supports and needs, while those who expressed the pathology variations were mismatched to their

environment.

David Dobbs (2012) charted evidence refuting the idea of “pathology genes” in psychiatry by arguing that the pathology gene focus precludes discovering the functional strengths of gene-carriers, which often increased in frequency over evolutionary time, contrary to what one might expect of vulnerability genes. In contrast, evidence suggested that some carriers were “orchids,” sensitive but capable of great talent, while a majority of people might be “dandelions,” hearty while trending toward the collective median. Dobbs highlighted examples of so-called mental health predispositions were in fact disposition for personality traits like restless creativity and novelty-seeking, which could lead to disorders, but only in toxic, unsupportive environments; in contrast, these gene-carriers over-performed in supportive and empowering environments (Belsky et al., 2009). A better name for these genes, then, would be *plasticity genes*, i.e. sensitive to both positive and negative change.

### ***Complementary Cognition***

Steven Silberman (2016), author of the book NeuroTribes, argued for conditions such as ADHD, autism and dyslexia as a natural diversity of human nature via cognitive variation, which in turn drives human cultural and technological evolution. Importantly, the theory of *complementary cognition* by H. Taylor et al. (2022) gave a full evolutionary treatment of how this might work despite not attempting to account for neurodiversity per se (though the authors are associated with a group of researchers that identify as dyslexic). Complementary cognition is built on resolving an information-processing optimization problem called the *exploration-exploitation trade-off*, where both

exploration and exploitation are important, but neither can be optimized simultaneously due to functional constraints (Črepinšek et al., 2013). For instance, resource exploitation may use incomplete information to produce imperfect strategies to survive that are then streamlined for efficiency, but the time spent improving workflow can prevent investment in efforts to discover better long-term information and strategies, which may be particularly important when environments change and old strategies break down. Alternatively, optimizing for exploration may lead to evolving survival strategies over time, but a lack of behavioral commitments can leave skills, ideas and expertise underdeveloped and fail to harness existing opportunities. The authors take it for granted that a range of complex adaptive systems have solved this divide by instantiating a division of labor, with some mechanisms oriented to exploitation and some to *evolutionary search*; for instance, biological evolution, they argue, has produced mechanisms that support *genetic search*, while in humans, the analog is *cognitive search*. Cognitive search only makes sense in light of cultural evolution, which guides the evolution of human complex adaptive systems as a group-level process, and uses symbolic thought and language as inheritance systems. Accordingly, neurocognitive specialists would increase group-level evolvability. While generalists would fail to optimize either exploitation or exploration, adding cognitive specialists to generalists would optimize for both, particularly as aggregating idiosyncratic search strategies could pool both risks and rewards, ensuring increased search *capacity* (again, at the group-level) through the multiple approaches being used, and *risk-mitigation* by ensuring that one of the search approaches would work so exploratory efforts would not be wasted,

even as stakes were high under conditions of changing or varying environments. By adding specialists to generalists, then, both efficiency *and* capacity improve at the group-level, facilitating both the retention of existing survival strategies and adoption of new ones over time, the raw ingredients of directional cultural evolution.

The model espoused by the authors may fit with existing conceptions of neurodiversity in the following ways. One might expect changes to innate psychological systems (the domain of evolutionary psychology) that lead to idiosyncratic life strategies. A parsimonious mechanism could be possible through small tweaks to reward and threat processing systems leading to larger differences at the motivational level which in turn led to emergent differences at the life history level (Haidt, 2013). Specifically, this could result in differential engagement with information in ways that are not immediately captured as individual pay-offs, but only at the group level over time, which provides a sufficient fitness benefit individually and collectively to be maintained in the population through balancing selection (Hunt & Jaeggi, 2022; J. Williams & Taylor, 2006). We might expect idiosyncratic interests to motivate engagement with symbolic thought in service of building idiosyncratic, complex, mereological models guided by individual curiosity and interest salience. That might lead to short-term inefficiencies with decision-making, attention, and behavior as trade-offs, particularly as these would be disproportionately telegraphed as costly frictions that would inevitably occur within incompatible niches throughout development. Paradoxically, however, it is possible for this to pay off at the group-level if even a subset of specialists can combine their individual search strategies via information-

sharing, as resources would be pooled and risks mitigated leading to some group-level successes in areas of exploration, experimentation and creativity. It also highlights the challenge of identifying the strengths and contributions of the strategy in question which only become apparent by tracking social outcomes that are contingent on a) finding niches-of-fit, which vary on the luck of inherited social positions and identities, and b) the success of relevant group efforts; neither of which are guaranteed, and are indeed probabilistic based on social circumstances. Framed by MLS, we could highlight a tension between group-level selection, which may reinforce these strategies over long time horizons, and individual selection, which may find the value of the strategy highly contingent on local circumstances, creating a “high-risk, high-reward” evolutionary strategy maintained at the group-level.

Thus, while a variety of evidence is provided by the authors that is beyond the scope of this dissertation, here only the implications are important: we would expect evolution would create innate differences in bottom-up mechanisms to a) create different systems of motivation, attention and behavior that should favor intrinsic and idiosyncratic goals; b) such bottom-up mechanisms would only prime an increased probability of employing a particular life strategy, not necessarily guarantee its success, requiring robust and tailored social supports as a critical element in social coordination to achieve niche-of-fit; c) socio-political friction between ways of being should be expected despite the meta-level complementarity of the approaches, as the strategies themselves are antagonistic at a process-level, and d) the success of these strategies in tandem are nothing short of crucial to the human project, which means the strategies

themselves should not be targeted for eradication as some gene-therapeutic technologies have aspired, and this would be true even if we know that the strategies sometimes lead to outcomes that cause individual pain and suffering in a failure state. Indeed, much benefit may someday be done by embracing the high-level frame of neurodiversity as serving an *evolutionary purpose* - where frictions are costly yet meaningful self-sacrifices that counter-balance the potential of unique and important gifts to the human project - if this leads to an empowering identity and frame to create resources during times of duress. Finally, being aware of such a purpose may be crucial to the ability to believe in individuals and hold for them their potential as a paradoxical solution to mental health problems - reinvestment of energy, resources and support, not facilitating social drop-out.

All of the above epistemic paths represent positive efforts, but few have borne them out to build alternative holistic ways of thinking about a “diversity model” including how mental health needs and challenges would be addressed. It is crucial to acknowledge the ethical terrain that is the focus of neurodiversity advocates - that using the scientific “engine of discovery” shouldn’t reinforce social Darwinist implications as forms of epistemic injustice or systems justification; nor can it afford to reinforce neurodiversity as a labor pool to exploit, or preemptively draw the boundaries of inclusion and exclusion too clearly (Chapman, 2021a; 2021b). Consequently, we must begin with the question - what evidence exists across social sciences that bears out neurodiversity as a form of diversity, and what would the implications be at a construct level, and for mental health and well-being?

### Social Animals Occupy Social Niches

Social animals exhibit individual variation in strategies for navigating their social environments. Social animals typically seek certain social conditions, avoid others, and may be disposed to certain roles, with specialization going a layer deeper: consistent preferences and constraints for social behavior and social conditions (Montiglio et al., 2013). The strategies that result such as aggressiveness or sociability are contextually-sensitive, and may functionally subsume a range of traits such as activity, exploration or boldness. Fixing these preferences and constraints at a deeper temperamental or personality level prevents the costs of switching strategies and limits conflict to those within your social niche (Bergmüller & Taborsky, 2010; Montiglio et al., 2013).

Social niche specialization includes a relationship at three levels – biological dispositions (temperament), characteristic social adaptations (personality) and social ecology (social factors). The key thesis of social niche specialization is that the range of social factors shape biology and personality, and include social conflict, strategy frequency, ecological forces and division of labor in more cooperative species (Bergmüller & Taborsky, 2010). These social dynamics act upon innate differences to predispose individuals toward certain strategies based on niche availability, and developmental plasticity further sub-specializes into roles that adopt personality traits into correlated “packages.” Said another way, a given animal may only have access to a subset of the behavioral repertoire of the species depending on the social niche (Montiglio et al., 2013). A key finding is that social conflict drives development of these integrated *life history strategies* at every level, with stress shaping personality through

social experience, and biology through epigenetics as a life history “switch” (Del Giudice, 2018). Avoiding the social stress of conflict works to minimize niche overlap, and behavioral consistency helps in this regard; this may help explain why even identical twins sometimes possess opposing traits (Bergmüller & Taborsky, 2010) and may be a factor in temperament and personality, and accordingly, the risk susceptibility to certain mental health disorders associated with life history strategies shaped by both genes and experience (Del Giudice, 2018).

The overall social ecology is itself shaped by ecological forces which might produce more cooperative or antagonistic dynamics, frequency-dependent opportunities for parasite-host dynamics (free riders that exploit group strategies), frequency-dependent differences in responsiveness, have more or less temporal consistency across time, possess more or less environmental heterogeneity, carry differential risk-reward payoffs, varying food abundance, and so on (Bergmüller & Taborsky, 2010; Del Giudice, 2018; Wolf et al., 2008). Consequently, strategies can vary across each of these dimensions, with some broad phenotypic profiles being more likely to be “packaged” together to handle these differences using the same strategy - for instance, responsiveness, boldness, temporal inconsistency and environmental heterogeneity; i.e., a strategy that responds quickly and boldly to fleeting opportunities. Furthermore, parsimonious mechanisms may make it possible to produce broad phenotypic strategies (which can then be further sub-specialized by experience and personality) with only small changes to important behavioral systems. For instance, differences in reward and/or threat sensitivity in the behavioral approach system (BAS)

and behavioral inhibition systems (BIS) can shape behavioral loadings that shape differences in dominance/submissiveness, responsiveness or unresponsiveness, exploitation & exploration, and “fast” and “slow” strategies (Del Giudice, 2018; DeYoung, 2015; Wolf et al., 2008). To summarize, then, these adaptive differences only make sense as they relate to traits in the environments and niches themselves, and should be thought of as evolutionary *trade-offs*, as optimizing for different niches, roles and environments is to co-create challenges, vulnerabilities and liabilities in other environments, times or niches. These may be especially relevant to mental health as these traits are, by definition, optimizing strategies at a subconscious or preconscious level, and designed to shape behavior for automaticity.

It has long been a puzzle why genes would predispose to pathology and not simply select themselves out of the gene pool (Belsky et al., 2009; Del Giudice, 2018; Dobbs, 2012). A social animal framework gives us a potential answer by implicating life history strategies as niche solutions. Here, selection operates on broad innate differences to prime different ways of moving through a landscape of social conflict and social resources in different adaptive ways. These adaptive strategies by definition include unique dispositions to mental health syndromes that emerge as a byproduct of permutations of trade-offs, strategies and niches, and may include idiosyncratic biopsychosocial challenges, vulnerabilities, lose-lose scenarios, failure modes, imbalances and mismatches (Belsky et al., 2009; Del Giudice, 2018; Dobbs, 2012). We will cover these relevant evolutionary concepts next.

### ***Evolutionary Concepts and Language***

As covered above, evolutionary *trade-offs* are cognitive, affective and behavioral strengths that are optimized for specific niches, roles and environments, and they manifest predictable challenges, vulnerabilities and liabilities in other environments, times or niches. For instance, humans are good at long-distance running at the cost of foot and leg problems; anxiety is a trade-off that signals impending danger, at the costs of false alarms that can be distressing (Nesse, 2019). These may be especially relevant to neurodiverse mental health more broadly as these traits are, by definition, optimizing strategies at a subconscious or preconscious level, and designed to shape behavior for automaticity. For instance, with respect to neurodiversity, ADHD might be related to responsiveness, and ASD to unresponsiveness, both of which are viable strategies in specific environments, roles and niches. Hypothetically, alignment with a niche of fit might make for a strategy that is experienced socially and by the self as strengths, particularly when receiving positive social feedback that confers value, inclusion and esteem, while social feedback out of an ideal niche would manifest punishment, friction, social injury and criticism.

*Evolutionary mismatches* are when an organism's adaptations to past environments are in conflict with current environments (Del Guidice, 2018; Gilbert, 2019). It may include everything from: modern office environments being incompatible with physical activity, circadian rhythms being disrupted by modern screen time, loneliness as a response to industrial scheduling, social dysphorias from asynchronous social feedback due to texting as the primary means of communication, and so on. Mismatches were often framed as common because human's environment of

evolutionary adaptedness (EEA) is radically different from today, which was taken to mean these feedback mechanisms are effectively vestigial, and unfortunate meaningless noise in the modern world - i.e., one might frame the evolved stress response by saying "humans evolved their stress response to being chased by lions on the savannah, not as a realistic way to handle office stress." However, it is worth noting that the EES and MLS see social evolution as directionally increasing evolvability over time, and many of these mechanisms are conserved for a reason; social stress is a valid form of social information about conditions that are socially unsustainable, potentially full of excess conflict, and implicate a need to change the social conditions, not scapegoat the individual evolved stress response. With regard to life history strategy, we would extend mismatch to life history strategy fit, and suggest that social, political and economic environments that work for some people do not work for others, and this may be a source of everything from depression to anxiety, as well as expressing neurodiverse "liabilities" and deficits disproportionately.

The final terms included are not specific jargon, but are placeholder constructs to get at the important space where life history strategies intersect with evolutionary social dynamics (Hunt & Jaeggi, 2022). *Idiosyncratic biopsychosocial challenges* anticipate the likelihood a given social strategy might face unique barriers, burdens, costs and conflicts that translate into unique embodied psychological loads. For instance, antagonistic strategies possess unique social challenges in the form of excess conflict, while exploratory and hyper-responding strategies may have to deal with more reactive instability, both of which have corresponding biopsychological load. *Vulnerabilities*

would be the proclivity for these strategies to be vulnerable to externalities of these strategies; for instance, the incuriousness of exploitation strategies might create vulnerability to blind spots that prevent updating to new and better information; risk-averse strategies might be vulnerable to loneliness where a lack of boldness may make for the inability to capitalize on social opportunities. *Failure modes* might be captured as a compounding deleterious feedback loop that sees a strategy break down and become unsustainable, likely with embodied consequences that inhibit re-energizing the strategy. *Lose-lose situations* make failure modes more likely as they contribute to certain negative feedback that fuels deleterious feedback loops. We will return further to the themes of evolutionary social dynamics in the subsequent section.

### **Neurodiversity Consilience: Contributions from Personality Research**

In mental health, personality research is sometimes limited to career counseling to seek a career path with personal compatibility, or less rigorous applications of self-discovery, such as using the MBPI to grapple with aspects of social functioning like introversion and extraversion. These areas may partially map onto the terrain of neurodiversity. Of particular interest is how the refinement of the Big Five personality theory is being used to create a functional hierarchy of personality traits that integrate with evolutionary theory (DeYoung, 2015; DeYoung et al., 2011), cybernetics (DeYoung, 2015; DeYoung & Krueger, 2021), mental health (Del Giudice, 2018; DeYoung & Kreuger, 2021) and social animal frames (Del Giudice, 2018), to allow us to use personality literature to our understanding of neurodiversity as systematic trait-level differences in embodied cognition.

Personality research has coalesced in large part around integrative models like the Big Five, which has historically been studied through atheoretical lexical studies that performed factor analysis on adjective lists and personality questionnaires (DeYoung, 2015). Personality traits themselves are characteristic patterns of motivation, cognition, emotion, and behavior that differ between individuals, but which also represent global differences in mental, emotional and behavioral organization that differ systematically between them. The Cybernetic Big Five Theory (CB5T; DeYoung, 2015) argues that these traits can be given theoretical rigor by being functionally framed as evolved cybernetic parameters for common motivational systems (also called differences in *reaction norms*; Del Giudice, 2018), with emergent differences of cognition, behavior and emotion at the personality level arising in conjunction with one another. Like a social animal approach, a cybernetic view seeks to model the dynamic, goal-directed relationships an organism has with its social environment (e.g., cybernetic steering and feedback loops) without reducing them to singular deterministic mechanisms or substrates (Heylighen & Joslyn, 2003), creating a compatible synthesis between cybernetics and social animals. The CB5T, then, helps to frame a science of individual differences that a) supports the existence of natural embodied differences in ways of being, b) is non-pathological, illuminating a normal and functional diversity of such strategies, and c) frames how idiosyncratic mental health presentations may be the externalities of personality traits as evolved parameters on goal-directed agency (including the constraints, trade-offs, mismatches, and extremes therein). This ability to pursue social goals has been framed as a human universal of normal functioning, while the inability to pursue them can serve

as an irreducible theory of mental illness, called *cybernetic dysfunction* (see: next section; DeYoung & Krueger, 2021). Here we find many of the same premises of social niche specialization - of embodied, preconscious, mental and behavioral dispositions - that are fleshed out into a plausible hierarchy of cybernetic strategies, traits and mechanisms. The approach is a) consistent with our consilience, and b) helps us understand how personality traits as socio-cybernetic (e.g., cooperative and goal-directed) mechanisms are related to mental well-being as trade-offs, down to the level of parsimonious mechanisms for creating the individual changes.

The use of cybernetics to frame personality theory is an attempt to create an "integrative theory of the whole person" that is also evolutionarily functional, contextual, and biopsychosocial, with novel contributions such as reconciling inter- and intra-personality dimensions and the adaptive functions of each dimension (DeYoung, 2015). Like a social animal approach, cybernetics allows an organism to be "in relation" to its environment, by attaching to mentally (neurologically) represented outcomes across space and time, processing information as feedback from the environment, and "steering" behavior toward an anticipated outcome (DeYoung, 2015; Hawkins & Blakeslee, 2005; Heylighen, 2005); an evolutionary theory is cybernetic, just as cybernetics is evolutionary (see also: *relational agency*, DeYoung, 2015; Heylighen, 2023).

Big Five (B5) personality research is a credible contribution to a neurodiversity consilience. The B5 has a significant history in the second half of the twentieth century and continues to organize much of personality research, with measures that are stable

across development and reliable across culture and language; factor analysis has repeatedly shown the trait hierarchy to be robust (DeYoung, 2015). However, the labels used in its constructs have been ad hoc and borrowed, obscuring the potential functions and coherence of the traits (DeYoung, 2015; John et al., 2008). The CB5T, which converts the B5 into an evolutionary-cybernetic frame, provides a contribution of providing theoretical comprehension throughout the trait taxonomy, giving the Big Five' personality traits - extraversion, openness to experience/intellect, conscientiousness, agreeableness and neuroticism - theoretical grounding as variations in parameters for cybernetic goals (DeYoung, 2015), while broadly improving congruence with a social animal frame.

Specifically, and as shown in Table 1, personality differences emerge by adjusting the various cybernetic parameters on goal-directed behavior, and personality traits can be seen as emergent changes to the “density distribution of [embodied] states” (DeYoung, 2015; Fleeson, 2001), where “states” refer to “the tendency to be in certain emotional, motivational, cognitive, and behavioral states” (DeYoung, 2015, p. 35). Each of the personality traits would be a parameter relevant to a different cybernetic goal and within each goal, there is a different target in the *cybernetic cycle*: goal activation, action/strategy selection, action, outcome interpretation, goal comparison (these being semi-sequential, with many happening more or less in parallel; DeYoung, 2015). The cybernetic function of traits, then, are: extraversion as increased reward salience (which is decreased in “reserved” pole), openness as increased exploratory behavior (or decreased in the “unimaginative” pole), agreeableness as increased

cooperative/affiliative behavior (or decreased in selfish pole), conscientiousness as increased goal persistence (decreased in unreliable pole), and neuroticism as increased defensive sensitivity to psychosocial injury (or decreased in “unflappable pole”; see: table). To briefly situate these traits in the whole taxonomy, traits are in a meso-level of the taxonomy, with the level below them being *aspects* for which each trait has two (for instance, *openness* has a dimension of *openness to experience* or *openness to intellect*; DeYoung et al., 2007; see: below for further functional characterization). Below traits, each aspect has multiple *facets*. Above the Big Five trait level, research suggests the existence of a metatrait level called the Big Two (see: below; DeYoung, 2006; 2015).

Traits and metatraits are embodied through neurotransmitter systems that can be functionally separated into whether they activate behavior or inhibit behavior (DeYoung, 2016; Gray & McNaughton, 2003; Quilty et al., 2013). The *Behavioral Activation System* (BAS) uses rewards to trigger approach behavior (DeYoung, 2015; Quilty et al., 2013), while the *Behavioral Inhibition System* (BIS) uses punishers to trigger withdrawal and avoidance (DeYoung, 2015; Gray & McNaughton, 2003). Importantly, both systems are for rewards and punishers generally, but as humans are a social species, many of these rewards and punishers are social in nature. Accordingly, changes in the approach system may affect social dispositions like introversion and extraversion (DeYoung, 2015), while the BIS has been called an “avoidable danger” system that provokes uncomfortable social emotions or worries based on perceived threats to social positions and goals.

The BAS is a dopaminergic system while the BIS is serotonergic, and evidence

suggests that different receptor subtypes expressed in different parts of the brain across both systems can functionally activate or inhibit different kinds of thought and behavior by using the same neurotransmitters differently depending on which region of the brain is involved and which receptor subtype is being activated (five subtypes for dopamine - DRD1-5 - and seven for serotonin - 5HT1-7). It should be, then, that different personality traits and mental health susceptibilities can both be mapped onto different neurotransmitter pathways within the BIS and BAS, and this is what we see; for instance, extraversion is predicted by genetic alteration of the DRD2 pathway (Smillie et al., 2010) for reward and punishment related to pathological gambling (Janssen et al., 2015); openness to experience/intellect is altered by an allele that predisposes people to novelty-seeking and ADHD by modifying the DRD4 receptor pathway (Belsky et al., 2009; Del Giudice, 2018; Dobbs, 2012); similarly, the SERT gene modifies traits like neuroticism and introversion through anxiety (Chiao & Blizinsky, 2009) with differential serotonin subtype activation (Carr & Lucki, 2011; Savitz & Ramesar, 2004). Genes that affect neurotransmitter activity in these systems and subsystems functionally alter the state distribution called personality traits, which also impacts the dispositional risk toward mental health disorders (Belsky et al., 2009; Chiao & Blizinsky, 2009; Del Giudice, 2018; DeYoung et al., 2011; Dobbs, 2012; Mrazek et al., 2013).

An important finding of note, is that most personality traits emerge as clusters tied back to just four gross differences at the metatrait level - strong plasticity and stability, weak plasticity and stability, strong plasticity and weak stability, and weak plasticity and strong stability. Here we see that niche specialization is possible by

creating a hierarchy of embodied trait parameters on goal-directedness that lead to gross differences in temperament strategies, where finer personality and role specialization can be tailored as one moves further down the hierarchy. Particularly at the gross level, this hierarchy may conform to the functioning of two major behavioral response systems, the BAS and the BIS, which can achieve stable response patterns by adjusting the sensitivity of activation and inhibition to major neurotransmitter systems as shapers of motivation, thought and behavior.

As embodied pathways for temperament and personality, this may implicate a different role for genes with regards to mental health susceptibility. Gene alleles that contribute to risk would not be “pathology variants” per se, which may make up a small percentage of most mental health dysfunctions (see: *mutational load*, Del Giudice, 2018), but would instead work to modify the strength of embodied strategies in the environment by adjusting the response sensitivity of emotional, cognitive and behavioral trade-offs, in a for-better-or-worse fashion. That is, in creating behavioral response preferences and constraints, we see trade-offs that can a) create strengths in some social domains and challenges in others; b) increase maladaptivity when overexpressed; and c) find idiosyncratic struggles with environmental injuries and mismatch. Gene studies looking at differential risk susceptibility to mental health disorders may inherently capture biobehavioral strategies as an inseparable relationship with environmental interaction. For instance, some such strategies may be “high risk, high reward” strategies, prone to certain mental health disorders if their optimal niches are rare or difficult to find, but that would not equate to pathology per se. Many

susceptibilities likely capture the risks of some strategies to express mental health challenges as trade-offs, particularly in environments of friction outside of a niche-of-fit; for instance, idiosyncratic strategies that strain group conformity may run a high risk of loneliness and/or the survival stress of ostracism, but that is not a pathology. This would be an important change in assumption for the role of neurodiversity in mental health, as it would rebuff a pathological or deficit model. The CB5T should therefore be considered evidentiary weight that interactions between temperament & personality strategies and social environment are relevant to understanding the nature of mental health challenges and their treatment (Del Giudice, 2018; DeYoung, 2015; DeYoung & Krueger, 2023).

### **Neurodiversity Consilience: Contributions from Genetic Research & Gene-Culture**

#### **Coevolution**

The role of genes in mental health disorders may be misframed as pathology genes, obscuring a more useful lens. An alternative frame was put forth by David Dobbs (2012) in his *Orchids and Dandelions theory*, which is strikingly akin to neurodiversity conjectures. The basic thesis is that most people are “dandelions,” rugged and capable of surviving anywhere, like a dandelion growing through a crack in the concrete, while a small minority of people may be more akin to “orchids” that are beautiful, but notoriously delicate, requiring attentive care to watering and feeding. Here, dandelions would be neurotypical people, while neurodiverse people might be orchids, sensitive in a “for-better-or-worse” fashion to the quality of parenting, environments adversity or support, and stressful life events or their absence. As evidence, Dobbs points to a paper

by Belsky et al. (2009) called “Vulnerability genes or plasticity genes?” Belsky and colleagues pointed to the meta-issue of pathology gene research lying in the research agenda itself: no one looks to biology except to understand when something is wrong, and in fact, biology is implicated in all human functioning as the brain is the substrate of all experience (see also: *autobiological information*, MacDuffie & Strauman, 2017a; 2017b).

Belsky and colleagues sought to understand the role of *differential susceptibility*, or plasticity in a better-or-worse-fashion, where the mechanism is a general sensitivity to contexts of all kinds, particularly developmental contexts. They looked at leading pathology gene candidates - the DRD4, 5-HTTLPR and MAOA genes - to explore correlations under not just negative gene-environment interactions, but also positive ones. Among the findings, children who were disposed to antisocial treatment after being exposed to childhood mistreatment while possessing a less sensitive MAOA allele, were *less* disposed to antisocial behavior when not exposed to mistreatment (Caspi et al., 2002). Carriers of the short/short variant of the 5-HTTLPR gene were of greater risk for depression and suicidal ideation by age 26 if exposed to stressful life events, but were at even less risk than most long/long allele carriers when not exposed (Caspi et al., 2003). The same gene variant was disposed to negative emotionality at 6 months of age when paired with insensitive parenting and childcare, but was less negative than controls with high-quality parenting and childcare (Pluess & Belsky, 2009; 2010). Forty-seven children with the 7r variant of the DRD4 gene were observed to have either sensitive or insensitive maternal childcare at 10 months in a longitudinal study; while

those with the 7r variant were more likely to have externalizing behavior at 2 years of age after exposure to insensitive parenting, those with sensitive parenting were even less to show externalizing behavior than non-7r carriers. Results consistently showed that the genes in question were not causal in themselves, but moderated by various contextual factors to produce outcomes that were either significantly “worse,” or “better,” relative to various kinds of controls.

The orchid and dandelion theory presents an alternative way of framing the data generally thought to support the *diathesis-stress model*, where environmental stress is thought to trigger innate vulnerabilities to mental illness predispositions. Dobbs (2012) and Belsky et al. (2009) showed genes to instead confer a general quality of increased *plasticity* to their developmental context in a for-better-or-worse fashion. This more adaptive function would explain why such genes have not been selected out of the gene pool, and would be consistent with one of the major personality metatraits of the CB5T (see: below).

### ***Gene-Culture Coevolution***

There is a second alternative to the pathology gene frame that is also an extension of the SAP, and that is a role for social-contextual strategies. Such strategies would draw on strategies as making sense in adaptive social niches that make sense in group-contexts insomuch as they add or complement some larger group adaptive strategy; for instance, by augmenting the explorer-exploration division of labor (H. Taylor et al., 2022; J. Williams & Taylor, 2006). Gene-culture coevolution theory has provided some unique evidence validating this idea using these same gene allele

candidates, perhaps because these alleles load recurrently on the intersection of temperament and mental health trade-offs. Here, however, the evidence highlights the role of those alleles in a relationship with a broader group cultural strategy.

Gene-culture co-evolutionary studies explore how cultural strategies and behavioral genetics co-evolved to create functional relationships between the two, and when these strategies are mismatched, dysfunction can arise. For instance, the 7r variant of the DRD4 dopamine gene that codes for increased salience of prediction-errors in the brain, leads to an increase in trait *novelty-seeking*, expressing the personality trait *openness to experience/intellect* and leading to increased risk for ADHD (DeYoung et al., 2011). The 5-HTTLPR serotonin transporter gene is associated with increased harm avoidance, negative emotionality bias and greater fear conditioning, increasing introversion while also increasing the risk for mood and anxiety disorder as mediated by trait neuroticism (Chiao & Blizinsky, 2009; Mrazek et al., 2013). Typically, however, these genes are not associated with these aspects of social functioning and personality in psychiatry research, and are instead highly researched as *candidate-* or *pathology genes* in the diathesis-stress model of mental health, where they are seen only as “risk alleles” for mental illness that are not assumed to be functional (Belsky et al., 2009; Del Giudice, 2018; Dobbs, 2012), while gene-culture coevolution assumes them to be functional and even advantageous in the right cultural context.

For instance, that the 7r allele predisposes carriers to have diagnoses such as ADHD, but does so as a trade-off to increase trait novelty-seeking as a pathway to several adaptive strategies among allele carriers. The strategy may become costly when

the carrier is mismatched with the social environment (i.e., a culture that is settled, industrial or collectivistic) or when this creative strategy is overly expressed and becomes too unstable (Del Guidice, 2018; Dobbs, 2012; J. Williams & Taylor, 2005), but evidence does not show the gene to be strictly pathological. For instance, there is evidence of positive selection at the gene locus for the last several thousand years (Ding et al., 2001), and the gene has been positively correlated with adaptive traits like novelty-seeking (Ebstein et al., 1996), and creativity (Mayseless et al., 2013).

However, two findings in particular stand out for 7r carriers. One is that the gene shows increased carrier frequency in populations with higher rates of long-distance global migration, or macro-migration (C. Chen et al., 1999). A global analysis shows a populations' carrier frequency to be highly correlated to the length of time the population spent in a macro-migratory way of life. For instance, those groups who traveled relatively short-distances show as having relatively fewer 7r allele carriers as with the Falasha Jews, who traveled 1.8 thousand miles from Israel to Ethiopia, and correspondingly have 11% of the population who carry the 7r allele. At the other extreme, those who migrated long distances show a frequency-dependent increase in numbers to where large majorities of the population are allele-carriers. For instance, the Ticuna of modern-day Columbia traveled from Asia to South America some 11.3 thousand miles and consequently, 78% of the population carry the allele. The frequency-dependence itself suggests strong functionality of the allele in addition to its role in mental health risk, and the fact that the functionality can express itself in a strong majority suggests the strengths of the trade-off can be powerfully expressed in the right

environment. In this case, the trait “restlessness” may help to motivate and energize a migratory way of life. Second, computer models suggest the allele may create an idiosyncratic, “unpredictable” or eccentric profile, but one that may nevertheless be maintained by frequency-dependent selection at a minimum level in a population of otherwise conservative, sedentary people. Despite a potential risk that a contrasting way of life might create some group friction, the propensity of carriers to have “unpredictable [exploratory] behavior” may yet increase overall resilience to “group brittleness” by increasing the capacity for collective change under conditions of shared existential threat (J. Williams & Taylor, 2006). That is, under changing environmental conditions where existing group strategies stop working and old ways of life break down, a characteristic disposition toward novelty seeking among a small minority of the population may prove adaptive by providing new forms of behavioral exploration that increase access to new kinds of resources and new ways of life. Such models validate H. Taylor et al. (2022) almost 15 years later in their conception of complementary cognition, which would call this group-level benefit an increased capacity for evolutionary search, in this case, one that is maintained under times of peace because they are particularly valuable under times of duress. In fact, models showed that in environments where change was neither too frequent nor too infrequent, a balance of generalists and specialists may have been easiest to optimize.

While functionally quite different, the short allele of the SERT gene (i.e. serotonin transporter gene; also called 5HTTLPR & SLC6A4) offers many similar group-related trade-offs. The gene increases avoidance of harm (Munafò et al., 2004) and risk,

increases negative emotionality including anxiety (Munafò et al., 2004; Sen et al., 2004), creates an attentional bias toward negative information and increases risk for depression under conditions of environmental risk ala as chronic life stress (Caspi, 2003), sensitizes fear conditioning (Lonsdorf, 2009), increases basal amygdala activation (Canli et al., 2005) and reactivity (Hariri, 2002), and drives an overall neurotic (Gonda et al., 2008) and introverted profile (Cain, 2013; Chiao & Blizinsky, 2009; Mrazek et al., 2013). This helps to explain why the SERT gene has been such a promising candidate as a “risk-allele” or “pathology-gene” due to its relationship with mood disorders; by sensitizing individuals to the costs of psychosocial injury, carriers have greater environmental risk for anxiety and depression (Belsky et al., 2009; Chiao & Blizinsky, 2009; Lesch et al., 1996; Mrazek et al., 2013).

Just as the more prominent associations with mood disorders are only found in under-supported or adverse conditions, and carriers can show even greater resilience than controls in enriching circumstances (Belsky et al., 2009; Dobbs, 2012), the short allele of the SERT gene is also only associated with mood disorders in the cultural West. In the cultural East, there is no moderating influence of the gene on depression and anxiety (Chiao & Blizinsky, 2009). That may be because the gene-culture coevolution research shows the gene is highly buffered by collectivistic cultures that shape a prevailing socio-cultural strategy at the group level, and this strategy may insulate carriers to the worst of environmental insults and pathology risks. Specifically, as the number of carriers increases, the degree to which the surrounding culture will be collectivistic also increases, peaking at 82% of Chinese citizens possessing the

short/short allele, an allele commonly thought to be a “pathological gene” in the American West; in turn, collectivism may also be uniquely suited to meeting the psychosocial needs of those carriers synergistically. Note that in a striking finding, Chiao and Blizinsky (2009) found it a robust association across all cultures that the number of carriers of the SERT short allele is correlated with the expressed strength of cultural collectivism at the group level; the culture and genetics coevolved on a massive scale. In China, cultural collectivism is thought to be expressed to the strongest degree the world over (as assessed by organizations who operationalize and measure these things; see: Geert Hofstede’s cultural dimensions; Hofstede, 2001; 2011), and incidentally, the strongest majority of SERT short allele carriers is found there. Notably, China’s “culture of we” seems to moderate the depression risk of the gene variant entirely; it is only in the individualistic US that the gene allele is associated with a 22% rate of mood disorders in the population. The strong implication is that there is alignment between the prevailing cultural strategy (individualism versus collectivism), the gross temperamental make-up of those within the group, and the degree of well-being one attains at the synergy or friction between the two as a cost of mismatch.

Both the DRD4.7r and the SERT gene are examples of gene-culture coevolution, where the more sensitive, plastic or malleable personality strategy synergizes with others who are similarly disposed, and creates a group-level strategy that provides a necessary context for the expression of the strategy, including both the group-function of the strategy and the functioning of the person expressing it. With the DRD4, the gene is found in increasing frequency with migratory populations, and is at a higher risk of

ADHD outside of those contexts (Dobbs, 2012). With the SERT, the gene buffers the risks of psychosocial threat by creating communal, moral and authoritarian “tightness” that creates a stable hierarchy and harmonious social order to minimize uncertainty and rank tensions which in turn offsets depression risk, while potentially increasing conformity and parochialism as a kind of two-level (individual vs group-level) trade-off (Chiao & Blizinsky, 2009; Mrazek et al., 2013). In both cases, the genes, which are emblematic of these kinds of trade-offs in a myriad of genes like them, defy the classical picture of pathology genes. Instead, they illuminate how personality strategies are fundamentally a relationship to an ideal socioecological context, or niche-of-fit, in order to properly attribute suffering as byproducts of trade-offs and mismatches that might otherwise be viable ways of being (Belsky et al., 2009; Del Giudice, 2018; Dobbs, 2012). This alternative narrative would likely be important to undercut stigma in mental health narratives to properly contextualize the meaning of biology in suffering, and can help increase the potential for therapeutic realignment, hope and control (see: autobiographical information; MacDuffie & Strauman, 2017a; 2017b).

### **Neurodiversity Consilience: The Big Two Synthesis of Cybernetic & Social Animal**

#### **Approaches**

Evidence from the CB5T personality taxonomy shows that the B5 categories most people are familiar with - extraversion, openness, neuroticism, agreeableness and conscientiousness - are further configured at a higher level of metatraits, called the Big Two. These metatraits - *stability* (also known as *alpha*) and *plasticity* (or *beta*) - may be particularly important for discerning the broadest adaptive profiles of temperament and

personality (Del Giudice, 2018; DeYoung, 2006; 2015), and may be implicated as the major divisions of functional and “normal,” non-clinical neurodiversity (Oller, 2019). Specifically, when you combine the two poles of each metatrait and plot them against one another, you may result in four major emergent profiles in the extreme. Here we will explore more on the nature of these metatraits as major cybernetic set-points as soft-wired profiles of behavior and cognition.

A primary adaptive challenge of cybernetic beings and social animals is in how they orient to the unknown as the unknown is simultaneously a source of lurking threat and significant opportunity (DeYoung, 2015). Organisms must defend against threat while pursuing opportunity, but opportunity includes knowledge that can convert the unknown into the known, shrinking the contours of threat and converting them to opportunity in the long-term (DeYoung, 2015). Personality strategies thus adopt different trade-offs in relation to defense and exploration in a cybernetic sense; a *stable* strategy defends existing goals by resisting perturbations to them, even at the cost of new information and opportunity; a *plastic* strategy seeks adaptive flexibility by exploring for new information and opportunity, even at the cost of loss of stability. Gene and temperament changes to the BAS approach system are changes to metatrait *plasticity*, while changes to the BIS avoidance system are changes to metatrait *stability*.

In the CB5T (DeYoung, 2015), some personality traits are thought to be related to the metatrait plasticity, while others are related to metatrait stability. For instance, the *plasticity* metatrait includes strategies like extraversion (exploratory social behavior) and openness (exploratory cognition and perception), because both promote more

permeability and flexibility in goal-setting, which allows goals to be revised under new conditions, information and opportunities. The *stability* metatrait, which includes agreeableness (resistance to social deviations), conscientiousness (resistance to goal deviations) and neuroticism (resistance to negative feedback and psychosocial risk), helps to conserve existing goals and resist perturbations to them with a more defensive posturing. From the social animal perspective of gene-culture coevolution, the function of these traits also cannot be separated from their effect on the overall social group: increases to metatrait *plasticity* increase curiosity and reward-seeking to promote adaptive flexibility and behavioral innovation that helps groups to adjust to changing ecological and social conditions (J. Williams & Taylor, 2005). Increases to metatrait *stability* avoid the psychosocial risk of the unknown which tends to conserve existing social conditions and commitments, conserving cooperative goals and social learning transmitted through culture and tradition through more morally “tight” cultures (Chiao & Blizinsky, 2009; Mrazek et al., 2013). In other words, strategies that express metatrait plasticity more tend to align with cultural individualism, while strategies that align with metatrait stability more tend to align with cultural collectivism.

In summary, these evolutionary approaches to the unknown serve to give individuals different strategies and niches in a social environment (Del Giudice, 2018; DeYoung, 2015; Gray & McNaughton, 2003). They also can, depending on the group strategy, enrich personality diversity within a given system because neurotypes benefit from different strategies serving different roles to the group (H. Taylor et al., 2022; J. Williams & Taylor, 2005); for instance, more conservative temperament subpopulations

in a culture may conserve group-level culture and learning, while more plastic strategies may promote innovation and semi-stable growth; Chiao & Blizinsky, 2009; J. Williams & Taylor, 2005). This may be subject to the overall extremity of the cultural strategy; some evidence suggests that DRD4.74 that promotes a more unstable, individualistic disposition may have been selected out of China, which is the world's most collectivistic culture (Chang et al., 1996; Hofstede, 2011), while again, the SERT gene is a risk factor in the US, the most individualistic culture (Chiao & Blizinsky, 2009).

With the CB5T, DeYoung (2015) added that there may be other emergent differences that are relevant in both character and function to each adaptive strategy, including a range of other implicated dualities to the metatraits. For instance, other interpretations of metatrait differences include the tendency to be oriented toward socialization or personal growth (Digman, 2007), self-control versus environmental engagement (Olson, 2005), social self-regulation versus personal dynamism (Saucier et al., 2013). These various interpretations can be visually represented as in Figure 1, but DeYoung summarized them thusly:

These various interpretations can easily be synthesized: The self-control or self-regulation associated with Stability should make children easier to socialize and may also be strengthened by socialization. The exploratory tendency associated with Plasticity should produce the kind of active engagement with novel and interesting phenomena that others tend to find dynamic and that is likely to lead to personal growth. (DeYoung, 2015, p. 47)

It will continue to be important to consider how these personality differences

effectively create different dualities in each metatrait, as well as the unique emergent qualities of plotting the metatraits against one-another (see: below). As we will see, these domains may be as far reaching as differences in innate values (see below: *moral intuitions*), the relative strength of psychosocial needs (for instance, agreeableness as an increased need in relatedness, or openness as an increased need for autonomy), thinking styles (openness to experience as experiential and mentalizing processing, while openness to intellect is rational and deliberative), and well-being or dysfunction (plasticity as increased risk for psychotism, while stability has increased risk of defense disorders like anxiety and depression; DeYoung, 2015). The personality metatraits may correspond to the two main systems of temperament from which social niche specialization can be founded; one a system of approach and opportunity, the other a system of threat and inhibition. These may align with the BAS and BIS, major neurotransmitter systems in the body, and their combinatorial idiosyncrasies may add a further level of social functioning nuance and diversity still. We will turn to these differences next.

### **Neurodiversity Consilience: Contributions from the Life History Framework**

The life history framework considers itself an integrative study of individual differences particularly around the interface of personality and physiology (Del Giudice, 2018). Life histories see organisms allocate to various trade-offs in cognition, behavior and sociality, which lead to embodied strengths in certain niches and roles, alongside related vulnerabilities. Marco Del Giudice made a major contribution in theory at the intersection of life history research and psychopathology with his book *Evolutionary*

*Psychopathology* (2018). With an integrative framework called the *fast-slow-defense model* (FSD), he presents abundant evidence for the way in which embodied individual differences as biocognitive strategies can be used as a novel theoretical grounding for all differential psychopathological risk. The fast and slow categories may be relevant to neurodiversity in particular, while topics relevant to the defense portion of the model will be covered below in the section regarding biosocial models. Here we will see how the major mechanisms of temperament and personality, one's dispositions regarding metatraits alpha and beta, may interact to create emergent biocognitive properties. These emergent life history strategies, or niche strategies, may provide a compelling evolutionary basis for the major neurotypes and their respective social niches. Regardless, the life history strategies highlight a variety of motivational, behavioral, cognitive and social trade-offs relevant to understanding the nature of neurodiversity including their idiosyncratic strengths and mental health challenges, and the important role of niches-of-fit or friction. Note, we will spend less time on the specific relationships of the life strategies and the functional basis of psychopathology, but much of the theory's power resides in the ability of the theory to explain why the contours of psychopathology exist as we understand them. For more on evolutionary accounts of mental health disorders, see: Hunt and Jaeggi (2022).

Drawing on interdisciplinary research, the life history framework attempts to account for major differences in personality (at the trait and metatrait levels), including motivation, decision-making, cognitive ability, self-regulation, sexual maturation and early environment; Del Giudice, 2018). Much of this research was initially grounded in

social animal research based on r- and k-selection strategies, where animals showed a quantity versus quality trade-off depending on the harshness of the environment. *Fast* strategies favored low parental investment, high mating effort and high number of offspring, while *slow* strategies showed high parental investment, selective mating and fewer offspring. While r/k strategies were shown to correlate ecological factors and patterns at the population level, it became clear there was no formal theory of fast-slow trade-offs relevant to humans (Jeschke et al., 2008; Mathot & Frankenhuys, 2018). In biology, information about a fast and slow continuum emerged out of *pace-of-life syndromes* (Mathot & Frankenhuys, 2018; Reale et al., 2010), which saw a fast strategy associated with higher impulsivity, risk-taking, aggression (particularly for males), and boldness (Cole & Quinn, 2014; Coppens et al., 2010; Hall et al., 2015; Stamps, 2007), with less investment in learning and knowledge in favor of superficial exploration and resource exploitation (Berger-Tal et al., 2014; Eliassen et al., 2007); other correlates included speed over accuracy in decision-making (Sih & Del Giudice, 2012), and feedforward (proactive) control versus feedback (reactive) control (Coppens et al., 2010). A variety of embodied mechanisms were shown to be involved in flipping the environmental switches between fast and slow strategies, including hormones (i.e. estrogen and testosterone), the HPA and HPG axes, IGF-1 (growth factor), neuropeptides (i.e. oxytocin) and cytokine (pro-inflammatory) systems (Del Giudice, 2018).

In humans, the early emphasis on biological factors (initially controversial due to racial overtones, which has since given way to the less-problematic gene-culture coevolutionary theory) eventually moved to influential developmental models. These

models postulated that early family environment plays a key role in setting life history strategies, including the sensitivity and investment of parenting to form the quality of parent-child and overall family relationships. These ecological and systemic variables play a role in moderating overall stress and attachment qualities at the family system level (although temperament genetics likely also modifies these same niches; Belsky et al., 1991; Del Giudice, 2018). As echoes of fast strategies in other animals, significant environmental stressors can flip epigenetic switches for “live fast, die young” survival strategies geared toward resource exploitation, competitive antagonism and reduced long-term orientation. The profile included high trait extraversion (assertiveness and dominance facets, but not warmth and sociability), risk-taking, impulsivity, and sensation-seeking; earlier sexual debut, unrestricted sociosexuality and higher mortality; avoidant attachment and reduced commitments; increased relational anxiety in women; and increased status-seeking and aggression, with men being more likely to use physical aggression and women more likely to employ relational aggression (Belsky et al., 1991; Björkqvist, 2001; Del Giudice, 2018). By contrast, a hedonic “slow and steady wins the race” approach (Del Giudice, 2018) arises in more stable environments and is correlated with personality traits agreeableness, conscientiousness and honesty-humility (in the HEXACO personality system, which adds only that dimension to the B5); secure attachments, an increased moral and sexual disgust response, long-term partner orientation, couple stability, lower sex drive, and restricted sociosexuality; low impulsivity, higher risk aversion, and increased future-orientation and longevity; this includes higher likelihood of social anxiety, insecurity and behavioral inhibition (Del

Giudice, 2018). In most animals including humans, this latter temperament represents a trade-off in parental effort over mating, with more relaxed environments allowing for higher *somatic effort*, which is to say, investment in bodily maintenance, self-development and growth as a form of *embodied capital*. Though on the surface the fast strategy seems socially undesirable, Del Guidice (2018) cautioned against romanticizing slow strategies: the costs of future-orientation, agreeableness (cooperative) and conscientiousness (goal-persistence) can be rigidity in the face of new information or the need to change, social conformity and a risk of being exploited, while the risks of modern day collectivism have also been documented in the form of ingroup bias and xenophobia, groupthink, authoritarianism and costs to the marginalized (Haidt, 2013).

### ***The Basic Model: Fast and Slow strategies***

Functionally speaking, these early strategies adapt to different kinds of environments, with fast strategies “moving fast” to position themselves quickly in chaotic environments, while slow strategies take a slower, cooperative approach in stable environments. Fast strategies (socially plastic, highly flexible) do this paradoxically by lowering innate psychological defenses (i.e., lower attention devoted to threats or anticipated negative consequences, or alternatively, an increase in confidence) in order to pursue sometimes reckless and bold high-risk strategies optimized to the immediate “winning conditions” (the dual status hierarchies of dominance/prestige). Consequently, one sees early developmental opportunism in pursuing social status and acquisition, including early sexual debut and parenthood. More confident opportunism comes with the expected costs of riskier strategies: higher morbidity and mortality, as well as social

and moral consequences of antagonistic and exploitative approaches; for mental health, this means a greater likelihood to manifest the dark triad personality traits: Machiavellianism, narcissism and psychotism.

By contrast, higher metatrait stability in *slow strategies* (socially reserved, high commitment) increases the sensitivity of psychological defenses (i.e., traits like threat sensitivity, harm avoidance, risk aversion, sensitivity to fear conditioning, and attentional bias toward negative information and emotion) to avoid anticipated uncertainty and risk, which leads to a) greater motivation for mutual protection and cooperation, and b) perceived advantage in developing *somatic capital* – the extended developmental accrual of skills, talents and social roles attained through social learning and social investment. This makes for a more conservative “long game” approach that optimizes individuals for later social success that is secure on longer-time horizons.

Befitting congruence with the CB5T, it is thought that these two strategies are functionally defined by their relationship to metatrait stability, with fast strategies showing downregulated serotonin, and slow strategies showing upregulated serotonin activity. Similarly, the *active calibration model* (ACM) sees differences in stress reactivity including the hypo- (unemotional) or hyper-reactivity (vigilant) in fast strategies, while slow strategies can be reactive (sensitive) or moderated (buffered; Del Guidice et al., 2011; Ellis & Del Guidice, 2014). In summary, the initial two viable personality strategies likely evolved to capitalize on environments with different adaptive logic, and once enmeshed in a common social ecology, the strategies instead occupied different social niches instead. Each temperament has strengths connected to social and psychological

liabilities; the fast strategy pursues early positioning for status and rewards in a sometimes-exploitative fashion, while the slow strategy increases sensitivity to psychosocial injuries both real and imagined to encourage mutual protection and cooperation and over longer time scales as a group to attain together what they can't alone (Chiao & Blizinsky, 2009; D. S. Wilson, 2002; Wright, 2000). In both cases, evidence suggests biopsychosocial mechanisms implicated in mental health disorders are intimately involved in creating these strategies and niches. For instance, by tying impulsivity to adaptability in the case of fast strategies, and fear of the unknown to cooperation and cohesion in slow strategies, the latter of which has been shown to increase risk of mood and anxiety disorders as a trade-off when not culturally aligned (Chiao & Blizinsky, 2009).

### ***The Extended Model: Two New Fast and Slow Strategies***

In his *Fast-Slow-Defense model* (FSD), the *extended model* represents the more speculative half of the model that is nevertheless crucial to completing the taxonomy of life history strategies as they round out the nature of observed mental health syndromes. The extended model builds on the same basic fast and slow divide that exists on the stability continuum of temperament (imagine a left-right spectrum), by suggesting that later social evolution favored new niches along the plasticity continuum as well (a vertical dimension, adding new fast and slow strategies beneath the old). The emergent interaction between the familiar stability axis and the newer plasticity axis, however, would have created wholly new emergent qualities for the new niche strategies. These new strategies would echo DeYoung (2015) in that they would come to

see value and opportunity in the unknown, creating exploratory personalities (i.e., evolutionary search; H. Taylor et al., 2022), who could only arise to a significant degree by capitalizing on late appearing social niches produced by cultural evolution (ala agricultural and industrial revolutions). Accordingly, these may be considered the *cognitive niches*.

The developments of social evolution likely paralleled the rise of ongoing social interdependence and win-win social infrastructure (Wright, 2000), and competition for dominance gave way to competition for prosocial prestige including a variety of ways to attain it for these new niches in a social milieu: “displays of moral wisdom and political intelligence, artistic talent, and valuable technical skills—from hunting and tool-making to all sorts of specialized knowledge” (Del Giudice, 2018; p. 115). This would set the stage for a cognitive revolution toward empathic (mentalizing) and mechanistic cognition to exploit the new social niches for creativity, problem-solving and innovation. As with DeYoung’s model (2015), these exploratory strategies were governed by changes to the dopamine system to energize social and mental exploration rather than social and material exploitation.

There are likely several broad personality divides along this vertical plasticity axis, but it is important to note that how these differences are expressed in the context of the horizontal stability axis shapes how the plasticity phenotype is further expressed. That is to say, there are fast and slow versions of the plastic strategy, as being plastic or non-plastic (poles of metatrait plasticity) and fast or slow (poles of metatrait stability) are independent of one another. We will return to the major differences after sketching

their profiles individually.

**The fast/open strategy.** The fast/plastic strategy avoids the status pursuit of dominance, and instead gains prestige through high verbal abilities, improved mentalizing (cognitive empathy), and verbal or visual creativity. Correlations bear out the association between openness to experience and a fast strategy approach, including a short-term mating orientation and relatively later age of reproduction (related to preferences to sexual variety and reduced commitments, higher autonomy); however, in contrast to non-plastic variant, those high in openness to experience show less aggression and physical competition for dominance, and show markers of a relational disposition such as heightened oxytocin activity. The strategy may be optimized for the prestige of “popularity,” which is to say, an *eminent*, as opposed to *dominant*, leadership style (Gilbert & Basran, 2019), as well as aesthetic and/or verbal creativity. These strengths are related to the mental health costs including a higher risk of narcissism and some degree of Machiavellianism, increased risk of ADHD, as well as some of the more “exotic” mental health diagnoses such as schizotypal and delusional disorders, many of which are related to high exploratory and creative behavior in the absence of temperamental stability.

**The slow/plastic strategy.** The slow/plastic strategy takes on the increased defensive and introverted strategy of the original slow strategy, with the added curiosity of the open temperament. This makes the slow strategy geared less toward social opportunism, and more toward the slow accrual of embodied capital in the form of technical and knowledge proficiency, and more speculatively, a rich moral imagination

as an expression of a utility maximization applied to the problems of social living. As a slow, cooperative strategy, this temperament gains prestige through problem-solving specialization, which favors mechanistic reasoning and visuospatial abilities over social skills and artistic imagination, the latter of which might even potentially interfere with technical prowess. This strategy is generally high in openness to intellect and low-to-moderate in agreeableness (particularly low in empathy and social compliance facets), as defining personality traits. There should be downregulated oxytocin, a slow developmental trajectory and later sexual debut, which favors exploration of skills and interests. Accordingly, the costs of the slow/open strategy include a continuum of increasing autism-like traits with some subsets of ADHD.

There are a few things both strategies share in common that may be key to understanding the functional dimension to these niches, as well as the related challenges. We can explore the nature of these niche specializations through the CB5T personality constructs (Del Giudice, 2018; DeYoung, 2015). Considering each personality trait as a trade-off of the broader *exploration-exploitation trade-off* more generally will help the cost-benefit ratio make more sense.

**Introversion.** A plausible mechanism of the dopaminergic-BAS shift toward plasticity is the de-energizing social rewards and creation of a state of *reward insensitivity*. Trait extraversion is reward sensitive, while the opposite of extraversion according to DeYoung (2015) should be what he called trait *detachment*. By decreasing sensitivity to reward systems in general, one also down regulates social rewards specifically, giving the characteristic quality of *introversion* as most people conceive it.

Detachment as reward sensitivity may be a more useful lens, however, as it explains attentional differences and motivational challenges found in both niche strategies, including ASD and ADHD. A reason why this trade off may be worthwhile, however, is that it is necessary to create the *cognitive niches* by making for a slightly higher barrier to pursuing social action, and creating a lower barrier to cognition, i.e. taking people “out of” the social world and putting them “in their heads.” It should be noted, however, that the stability [threat-sensitivity] dimension will load heavily here. Being more emotionally stable, socially inhibited and reserved along the stability metatrait (the slow/plastic strategy) may synergize with detachment as a kind of “double introvert,” or true introvert, while being more impulsive and sensation-seeking (the fast/plastic strategy) may create an ambivert profile: detached overall, but socially curious and novelty-seeking, with a need to balance inner and outer worlds.

**Openness.** Downgrading the dopaminergic BAS may also be involved in heightening the personality construct *openness*, a cornerstone of metatrait *plasticity*. By decreasing reward sensitivity, motivation to pursue goal-directed rewards (the reward pathway of “wanting”) is downregulated, while the rewards of stimulation (the reward pathways of “liking”) is unchanged. This increases the perceived workload of rewards of pursuit, while making other forms of reward, like *cognitive novelty*, relatively more attractive and accessible; *curiosity* as a motivator increases as a way to maintain dopamine activity in the brain (avoid under-stimulation), which motivates engagement with the unknown as DeYoung formulated it (2015). However, the fast/plastic strategy expresses openness as *openness to experience* (aesthetics and imagination facets), while

the slow-open strategy expresses *openness to intellect*. That is likely because increased mentalizing cognition by the fast/plastic strategy naturally attunes to social input as a source of rich stimulation, while mechanistic thinking by the slow/plastic strategy turns down mentalizing while increasing social inhibition, channeling openness toward logic and reasoning instead.

**Agreeableness.** Both of the plastic strategies may be more disagreeable, i.e. is less cooperative and/or socially interested, because by downregulating social reward through reward insensitivity, one also increases the energy required to participate in dynamic social roles and expectations; this strains the costs of social engagement relative to the rewards (see: *ratio strain*). This may help explain why *masking* is such a challenge for ADHD and ASD, why intrinsic motivation is critical for any motivation at all (see: special interests), and why this can be advantageous in an *evolutionary search* lens by ensuring the decoupling from ideological and political games, and motivating idiosyncratic novelty-seeking, which is key to the formulation of *complementary cognition* (H. Taylor et al., 2022).

**Conscientiousness:** As goal-directed pursuit (“wanting”) is a function of reward sensitivity, it makes sense that conscientiousness would decrease with reward insensitivity. That is, the ability to reliably maintain regular goal-pursuits associated with stable role performance is impaired as insensitivity to rewards increases. This can be formulated as part of the exploitation-exploration trade-off, that high conscientiousness is an efficiency of resource exploitation optimization, while high plasticity compromises on this (through boredom sensitivity or excessive task switching) to privilege

environmental responsiveness, intrinsic motivation, and evolvability/adaptability.

**Neuroticism.** Neuroticism increases at both the extreme fast and slow ends of the stability spectrum (Del Giudice, 2018), but it should also be mentioned that neuroticism may generally increase in reward insensitive profiles as a facet of increased cognitive activity overall, as greater thought content may dispose one toward rumination in the face of threats or threat anticipation (again, the intersection with the stability axis is important here). What's more, social friction may increase from decreased reward sensitivity, disagreeableness, and potential eccentricity, all of which might contribute to social threats or anticipation thereof.

### ***A Quadrant Model***

Plotting each temperament on a grid (as shown in Figure 2), we see each temperament as a combination of temperamental elements with unique emergent biological, psychological and social properties. These temperamental “centers of gravity” are probabilistic, illustrating the most extreme ends of the poles to characterize the differences between them most clearly; it is quite likely that normally distributed traits see most people gathering toward the middle of these spectrums, with potential variation and overlaps across strategies, such as the ability for people to have mentalizing and mechanistic skills simultaneously (Del Giudice, 2018). After all, human nature encompasses all of these qualities, and only in the extreme may temperament act as a constraint that sees people heighten some aspects of a universal nature as both strength and challenge, including unique dispositions for psychopathological risk. Still, the temperament chart is likely illustrative of the basic niches and functional diversity of

strategies we find in the social world, including different trade-offs, vulnerabilities, values and norms of functioning.

We will now consider how Del Giudice (2018) has characterized the social niches of these life history strategies, but it is worth noting an incompatibility with his model and the one presented herein. He has characterized his strategies based on their initial *environments of evolutionary adaptedness* (EEA), which tends to emphasize individual fitness and reproduction strategies. Del Giudice explicitly dismisses MLS as adding to his analysis, and this serves to de-emphasize qualities of complementary cognition by dismissing the inseparable group context as an evolutionary selection pressure. Because MLS sees cultural evolution strengthen the relative importance of the group context over time, complementary cognition holds that these strategies should be seen as a major evolutionary transition; while they may have begun as individualistic survival strategies, they are ultimately co-opted at a higher level to be role dispositions, a logic that only gets stronger as exponential cultural evolution progresses. It is worth noting then, that Del Giudice's characterization of these niches will deemphasize the role dimensions of the strategies, and favor characterizations based on individualistic survival with a potentially reductive quality. Another way this is less useful for counseling is because counseling theory often takes people from survival mode to thriving as a goal (the following section will reintroduce this valence). Still, we will maintain the language used and bracket it with awareness that focusing on only survival and reproduction strategies misses their role as social meaning strategies. After all, an evolutionary mechanism need not reference reproductive fitness directly to be adaptive (Fox, 1986;

Gilbert 1989), and social meaning strategies register adaptive success on a faster scale.

In this case, *social meaning strategies* might speak to the way in which plugging into congruent social niches is also to plug into interdependent social reward systems that evolved to reward and maintain prosocial behavior, because that system aids survival at the group-level. However, in healthy sustainable groups, success in this regard is not experienced as survival at all, but as meaningful thriving - community, dignity, moral purpose, and so on - which is far more intuitively a measure of counseling success.

Del Giudice's life history strategies are as follows: the antagonistic/exploitation strategy (low plasticity, low stability); the prosocial/caregiving strategy (all mentalities; low plasticity, high stability); the seductive/creative strategy (affiliative & acquisitional; high plasticity, low stability); and the skilled/provisioning strategy (acquisitional; high plasticity, high stability; see: Figure 2). Each of these interact to express unique socio-ecological strategies through the landscape of buffers and injuries, and accordingly, each has a specific set of mental health challenges.

At the temperament level, a variety of genes target various neurotransmitters, neurohormones and neuropeptides pathways that interact to create some basic motivational systems (Del Giudice, 2018), and gene alleles may contribute to systematic differences in these systems as a basis for temperament. No one gene is likely disproportionately impacting, and the myriad of different genes still load in different ways on the same motivational systems; for instance, some dopamine genes may operate by affecting receptor densities (DRD4) and some may clear the synaptic cleft of dopamine faster or slower (MAOA), but both are ultimately altering the expressed

energy of the same motivational system through different dynamics. In this way, we can think of many distinct allele contributions as shaping two major continuums of the BAS and BIS along a grid, with the interactions between the two creating four basic “quadrants.” These quadrants may be probabilistic “centers of gravity” that should only be considered heuristic starting points; for instance, they fail to factor in the characteristic adaptations of experience that modify these pathways further. Finally, environments may use a variety of factors including stress to flip epigenetic “switches” that affect these strategies, often to prepare people for environments of conflict and stress by pushing people toward fast strategies based on early adversity (Biglan et al., 2020). This is one potential mechanism of the epigenetic effects of children who attain high ACE scores, for instance.

While exploring the full depth of this implication is beyond the scope of this review, we will consider some brief implications of their therapeutic presentation. It is worth noting that while this author is ambivalent about the DSM and medicalizing the embodied challenges faced by each life strategy, for the purposes of clarifying the relationship between functional strategies and mental health presentations, Del Giudice’s own taxonomy links strategies directly to their increased predispositions for psychopathology as captured by DSM-5-TR diagnostic constructs without engaging significantly in issues of construct validity. His approach will be replicated below, but it should be mentioned that much of the strength of the approach comes from a deep and comprehensive review of the mental health literature, which will not be explored here.

The following is information grounded in life history strategy research (which

might be called *life strategies* in this model) which comes from Del Giudice (2018), unless otherwise specified. The categories include: the name of the life history strategy presented according to Del Giudice's basic and extended model (which again, may be problematic from a complementary cognition perspective); an acronym for that name; and in brackets, the set point for each strategy based on where it falls on a) the behavioral inhibitions system (BIS), a psychosocial threat defense system and can be either fast/unstable or slow/stable, and b) the behavioral approach system (BAS), a psychosocial engagement system which can be either open/plastic or closed/non-plastic.

**Prosocial/caregiving (P/C; slow/stable, closed/non-plastic).** The high-stability, low-plasticity temperament is considered the *prosocial/caregiving strategy* (Del Giudice, 2018). The hallmarks of a heightened BIS - trait harm-avoidance, negative emotionality and fear conditioning - create a sensitivity to social threat, i.e. "avoidable social danger" such as negative social experiences that threaten social positions and social goals. Individuals insulate themselves from perceived danger through social cohesion and *moral tightness* (Mrazek et al., 2013), leading to traditional cultural groups that value social stability based on communal loyalty, norm-enforcement, rigid hierarchies and uncertainty avoidance. This promotes a conservative collectivistic orientation to provide group-level harmony and security (Chiao & Blizinsky, 2009). Not being oriented to risky opportunism means investing in *somatic capital*, where people seek to learn complex social roles to gain social prestige and access social investment. The P/C strategy is associated with Big Five personality traits like *agreeableness* (politeness aspect)

emphasizing social cohesion and conformity, and *conscientiousness* (industriousness aspect) emphasizing long-term goal persistence that favors dependability in social roles.

The prosocial/caregivers face unique mental health challenges. As a highly buffered strategy they are resilient while in harmonious social groups like collectivistic cultures, but the risks of a highly-tuned BIS such as fear, anxiety and neuroticism can lead to greater mood and anxiety disorders in Western cultures where social uncertainty and ambiguity is higher (Chiao & Blizinsky, 2009). The strong reliance on a social survival strategy may lend itself to the security and predictability of a strong group identity and unambiguous rank positioning, which may create strong anticipatory threat in environments of rank uncertainty and individualistic roles and identities, and where the psychosocial damage of social losses may be more destabilizing (see: sociometer and hierometer; Leary & Baumeister, 2000; Mahadevan et al., 2016). In summary, this strategy may “stabilize” on group factors and reflect group health, making individuals resilient to the extent that groups are, ala “dandelions” in Dobbs (2012) formulation. It may be when groups face vulnerability in toxic or unstable social conditions (i.e., populism, cults, fascism, etc.) that individuals conform to and express the group-level dysfunction in ways that dysregulate.

In terms of psychopathology risk, this group runs a higher risk for some forms of eating disorder and obsessive-compulsive disorder, which can be associated with high levels of *conscientiousness* (*industriousness* aspect) and *agreeableness* (*cooperativeness*; Del Giudice, 2018). However, by and large this temperament may be unique in that extreme self-regulation allows individuals to be flexible to the needs of the group,

making group-level vulnerabilities like extremism, populism, authoritarianism and dogmatism to be most toxic. For instance, the QAnon movement, antivax movements, and recent far right populism in the US, may highlight individuals who may become mentally unhealthy when expressing unhealthy group norms. At the individual level, ideological dogmatism and community-level resistance to change may make destructive beliefs particularly dangerous to these individuals, where one will sooner break bonds with reality than sever ties to their ideological community as the relationship to the group is most important for mental co-regulation.

**Exploitative/antagonist (E/A; fast/unstable, closed/non-plastic).** The low-plasticity/low-stability strategy is an exploitation strategy in the complementary cognition formulation (H. Taylor et al., 2022), with neither the openness to experience of the plastic strategies, nor does it have the sensitive BIS of the stable strategies. This is an opportunistic, responsive, risk-taking approach to resource exploitation (Del Giudice, 2018). Less social inhibition, decreased sensitivity to social threats and reduced fear of punishment can enable bold, competitive and opportunistic approaches. This is a fast strategy that thrives in conflict-oriented and stressful environments (Biglan et al., 2020), and the strategy can verge on anti-sociality under social conditions that do not ameliorate the potential for conflict and power disparities: unequal societies, honor cultures, or societies where the social fabric has been torn (Booth et al., 1989; 2006; Mazur & Booth, 1998). Personality traits may include high reward-sensitivity, which is associated with the personality trait *extraversion* (assertiveness aspect). This might lead to highly responsive and opportunistic strategies by motivating strong pursuit of

rewards even in opposition to others. This may motivate competition for personal gain, and a desire for social status as force-leverager to access all social rewards. The potential for strong competitive motivation particularly in social settings where conflict is normalized may lead to callousness befitting an exploitation strategy, and can be used to justify ruthlessness and domination in an absence of *social control* conditions - strong norms, beliefs, values and institutions which constrain self-interested behavior (D. S. Wilson et al., 2023).

The E/A strategy might be said to “stabilize” on meeting needs for achievement and status, and can become destabilized in their absence. The strategy may be prone to mental health difficulties associated with externalizing disorders. For instance, conduct disorders (CD) and oppositional-defiant disorder (ODD) during youth, antisocial personality disorder (ASPD) and anger management issues later in life, and *dark triad personality* traits such as Machiavellianism or psychopathy in the extreme. There is a risk for a fast life history version of eating disorders, as well as substance abuse issues due to higher reward sensitivity and less BIS activation. What many of these diagnoses share in common is a transactional and exploitative view of people as social resources and rewards, an emphasis on competition, power, coercion and dominance. Social context matter insofar as it can moderate this motivation through social control (i.e., a reverse-dominance hierarchy; D. S. Wilson et al., 2023), and there may be difficulty balancing drives against needs for prosocial connection, community and empathy.

**Seducer/creative (S/C; fast/unstable, open/plastic).** The high-plasticity, low-stability strategy is called *seducer/creative*, and may be considered one of the *cognitive*

*strategies* in the extended model of the FSD (Del Giudice, 2018), or an *exploratory strategy* in the complementary cognition model (H. Taylor et al., 2022). As a survival strategy, the S/C strategy uses high creativity (a property of openness to experience, aesthetic aspect) and increased mentalizing (i.e., increased empathy and theory of mind) to find opportunities for creative, imaginative or social utility in the social world, while seeking security through individual relationships. As a fast strategy, the S/C is considered uninhibited and unstable, pairing highly imaginative and highly verbal strengths with an empathic and relational demeanor. This suggests unique strengths that likely evolved late in social evolution, and a proneness to some of the more exotic disorders of the psychosis spectrum (Del Giudice, 2018).

The exotic disorders are likely a combination of a cognitive strategy trade-offs mixed with greater opportunity for environmental injuries and ecological mismatch that come from a minority temperament. For instance, a higher novelty-seeking personality can lead to novel solutions, ideas and insights, but most work environments reward this only at the highest levels of management; in employees where conscientiousness (i.e., role-based goal-persistence) is valued, “dreamers” may pose a problem. Looser connections and divergent thinking in general may lead to a rich imagination and sense of aesthetics with a variety of niche applications, but particularly in times of duress, can increase the risk for schizotypal and schizoaffective disorders (schizophrenia spectrum disorders; SSD). Eccentric loners may be more likely in this temperament from increased plasticity, which combines detachment (introversion), disagreeableness (a solitary nature) and idiosyncratic behavioral experimentation (high openness). Eccentric loners

are highly individualistic, and may receive social friction in the form of social punishment, rejection and defeat, leading to defense disorders and psychosis at a higher rate in unstable temperaments (particularly when timed with critical developmental windows; see: *the social defeat hypothesis of schizophrenia*; Selten & Cantor-Graae, 2005). More speculatively, an exploratory disposition (openness to new and better ways of doing things) in more exploitative social systems (such as capitalist economies) may create social antagonism. Traits that support non-conformity, the development of critical consciousness (ability to imagine better forms of social living) and perspicacity (awareness of exploitation; Hanna et al., 2000) may lead to a frustrated “progress” metaphor, social activism, counter-culturalism, radicalism and potentially, cynicism and misanthropy.

Indeed, high openness to experience and the cognitive niches in general might be thought of as highly individualistic by nature, which might be generally mismatched in traditional or collectivistic cultures and exploitative economies. Highly collectivistic cultures show evidence that the gene alleles that predispose people to high degrees of openness to experience passed through, but are no longer present, suggesting the trait was extinguished in the incompatible environment (Chang et al., 1996). Bipolar disorder (BP) is also a greater risk of the S/C. The changes to the dopaminergic motivation systems associated with the plastic temperaments, and the lack of the “stabilizing” slow-strategy BIS, may lead to a reciprocal relationship between exploratory behavior and the disruption of social structures (i.e., sleep hygiene, work, etc.) that play a role in starting manic episodes. The proclivity for social instability, sensitivity and vulnerability

may also play a role as a risk factor for borderline personality disorder (BPD), while the phenotype of individualism, social charm (mentalizing) and instability may contribute to narcissistic personality disorder (NPD).

The S/C strategy stabilizes on meeting needs for creativity and intimate relationships, and becomes unstable without channels for one or both. A common theme is the exploration of idiosyncratic and experimental paths with an impulsive fearlessness of the consequences can lead to negative feedback received sensitively by an unstable temperament. A proneness to exploration (ADHD) can erode direction and structure in the extreme (bipolar) and may make for reactionary and unsustainable strategies expressed along biopsychological (schizotypal) or biosocial (borderline personality) paths. Schizophrenia may be more common here if a temperament with unstable creativity intersects with agonic environments leading to chronic or significant social defeat at a critical developmental window, which may sensitize the already temperamentally sensitive dopaminergic pathways (Selten & Cantor-Graae, 2005).

**Skilled/provisioner (S/P; slow/stable, open/plastic).** The skilled/provisioner strategy (S/P) is stable (inhibited BIS) and plastic (insensitive BAS) for a unique coupling of cognitive exploration and relative social restraint. The S/P is a slow strategy (high trait *conscientiousness, orderliness* aspect), with an aversion to spontaneity and uncertainty, and socio-emotional inhibition; curiosity (*openness to intellect*) is channeled inwardly as mechanistic cognition and deliberative logic. The S/P fills a cognitive niche, where accruing knowledge, information and skill mastery pays off on a longer time horizon (late sexual debut; Del Giudice, 2018). The role would fill niches built on technology use

and advanced problem-solving that would have opened up late in human cultural evolution. The strategy stabilizes on a precise and logical inner world characterized by strong intellectual and ethical engagement to idiosyncratic interests (befitting an *evolutionary search perspective*).

The S/P is most prominently associated with ASD and a slow variant of ADHD, as well as a slow version of bipolar disorder (BD), obsessive compulsive disorder (OCD) and obsessive-compulsive personality disorder (OCPD; Del Giudice, 2018). The functioning of OCD in this temperament may make sense as unbuffered BIS sensitivity. While the P/C strategy and S/P are both stable strategies, the P/C strategy is buffered through social order (see: *moral tightness*), while the S/P is a solitary strategy (low *agreeableness*), and expresses the *orderliness* aspect of trait *conscientiousness* possibly as a higher need for control to compensate for the lack of social supports in coping with neurotic potential; OCD may make sense as an extreme expression of this general trend. This may also account for the nature of ASD as an unbuffered exploratory mindset that must use solitary coping styles such as routine and hyper-control to counter anxiety and stress more generally. Like the S/C strategy, the S/P shares an exploratory mindset that is turned inward through social inhibition, cultivating a rich inner world that is more likely to be rationally-ordered, rather than ideologically-ordered as with the buffered P/C strategy. As with the S/C, ADHD represents a general propensity toward hyper-curiosity as a source of distractions, though these may be more likely to be intellectually generated, while the slow-form of bipolar represents the potential for high highs and low lows having both extreme exploratory and inhibitory temperaments.

It is worth noting the theme that life strategies influence strengths and weaknesses as people move through a social landscape of social punishers and stressors. A recent study (Raymaker et al., 2020) exploring ASD and the term coined by the community called *autistic burnout* emphasized how the challenges of ASD manifested as compromised supports and heightened stressors. Autistic burnout was characterized by the absence of supportive factors, the over-presence of burdens, and a calculus whereby the remaining energetic load was unable to meet social expectations of role performance (see Figure 3). In other words, like the S/C, the cognitive niches must face a greater likelihood of psychosocial stressors and mismatch, which helps to define much of their relationship with poor mental health.

### **Neurodiversity Consilience: Contributions from Moral Psychology**

The contribution of complementary cognition (Hunt & Jaeggi, 2022; H. Taylor et al., 2022) adds to life history research by asserting a strong group-level context to neurodiversity by way of MLS evolution. Only by adding the group-level context can we speak of individual strategies playing roles such as neurocognitive generalists and specialists *in* something, which requires seeing neurodiversity as a major evolutionary transition as framed by MLS. Cultural evolution is an important level of MLS because it both produced the group-context of human evolution, and is the perpetual product of the group itself. That is, cultural evolution operates on human groups to increase their evolvability by producing knowledge, ideologies, values, institutions, systems and more, which adaptively regulates the functioning of the group as a superorganism. However, it is also increasingly the evolutionary imperative of social agents to practically and

politically shape the evolution of culture and systems as this can make a significant indirect impact on their own fitness, perhaps increasingly so (Heylighen, 2023; M. E. Price, 2023; Vidal, 2023; D. S. Wilson, 2023). In that context, neurodiversity is a major transition because it evolved to divide labor toward these ends and continues to inform the logic of cultural contribution along the exploration-exploitation divide: neurodiverse generalists maintain and conserve the best of the existing system, while specialists search for new ways to improve on the myriad of processes involved to move the needle in ever more sustainable and growth-oriented ways (Haidt, 2013).

Mental well-being is not incidental, but critical in the equation. Complementary cognition and moral psychology may help to explain why humanistic terms like “meaning” and “purpose” are important aspects of well-being. These seemingly spiritual concepts may be integral to deep life satisfaction as a kind of evolved feedback that occurs when humans play values-congruent roles in interdependent groups, where well-being is at least partially a byproduct of a group-level co-regulatory process (Beckes & Coan, 2011; Christakis & Fowler, 2011; Coan & Sbarra, 2015). This adds a new level of connotation to the concept of *niche construction*, a construct that captures the way an individual, group or species systematically modifies an environment to create an ecological pocket optimized to the traits they use to exploit it, and where the constructor and the niche often co-regulate one another for mutual benefit (see the life cycles of mutualistic species where both are interdependent for food and/or mating, such as bees and flowering plants). In humans, *social niche construction* (Bergmüller & Taborsky, 2010; Montiglio et al., 2013) might create social niches that are favorable to

one's phenotype, determine whether a given behavior is adaptable or maladaptive, and lends itself to creating social roles that optimize for win-win outcomes, which in turn provisions wellness factors such as a sense of control, predictability, support and prestige. Missing from the life history research, then, is the prediction that an alignment between social reward systems, individualized values, and real role contributions to evolutionary stability or change, can help explain the more humanistic and existential goals of mental well-being including a) a frame for the importance of deep alignment between moral values, ways of being and social niche-of-fit, and b) a reason why aligning one's values and ways of being with a meaningful social role can feel like a "calling." Specifically, that when optimizing across three biopsychosocial levels - subjective social reward systems, individualized life strategies, and social roles that feel important because they genuinely drive the cultural evolution of stability and change - one achieves a sense of "purpose" in "something greater than one's self:" the confluence of meaning-making systems, idiosyncratic strengths and a real function in driving the project of life itself to some unknown higher plateau.

All of this helps to update evolutionary theory to the goals of modern therapy, where therapeutic success should not feel like survival at all, but thriving in a healthy social group where people devote their lives to meaningful pursuits of collaborative utopian visions, goals and values. However, in the modern world, it is increasingly opaque how well-being is produced at scale through the intersection of dynamic forces in a complexifying world, much less how incompatible visions of the future may affect sustainable well-being across diverse people, agendas, systems and niches. What is

more, the reasons why people differ so deeply in how these moral visions should look increasingly seems less to do with facts and more about deeper intrinsic motivations, even as the stakes of global polarization are higher than ever. Here too, moral psychology can help to explain not just why the different neurotypes serve different evolutionary “purposes,” but why these functions may require different moral ecosystems to socially support their functioning and coregulate their well-being. This may set up a fight between neurotypes over incompatible visions of the future, and explain how some moral ecosystems can be hostile to the well-being of those neurotypes that find themselves under incompatible moral and political regimes. Moral psychology may also help explain how neurodiversity may be of singular evolutionary importance in solving the biggest existential threats facing the human project.

### ***Morality: An Evolutionary Frame***

Neurodiversity strategies may be involved in the curation of moral capital. For many years, Western moral psychology was dominated by Lawrence Kohlberg’s stage theory of moral development as an unfolding reasoning process that developed across the lifespan (Haidt, 2013). However, recent evidence shows morality to be guided by affective intuitions that can resist conscious justification, and thereby refute reasoning as the basis for moral decision-making (Haidt, 2007; 2013). These affective responses are universally cross-cultural, but vary systematically in how individuals embody them. This diversity of brain-based affective differences is now thought to be the natural basis for political differences along the left-right political spectrum (Haidt, 2007; 2008; 2013; Haidt & Kesebir, 2010).

The moral dimension of neurodiversity requires seeing morality as an evolutionary imperative which accomplishes two things: helping individuals adapt to social life by solving “the problems of social living” (Dean, 2012), and helping social groups survive in competition with other social groups (Haidt, 2007; 2008; 2013; Haidt & Kesebir, 2010). Because the scale of prosocial group life is humans’ signature adaptation to their environment (Atkins et al., 2019; D. S. Wilson, 1997; 2002; 2008; 2019; D. S. Wilson et al., 2023; D. S. Wilson & Sober, 1994), individuals’ ability to survive is determined by their ability to jockey for positioning and resources in the social group. Accordingly, one use of moral emotions is to use subconscious emotional responses that intuitively navigate social and political challenges, such as maintaining a positive social reputation in a community of gossipers (where gossip evolved to socially punish, and deter, those who violate group moral norms). From the groups’ perspective, however, harmony is most strategic especially in the face of well-organized rival groups, and moral systems often culturally evolve to subvert excessive individual self-interest and social friction (i.e., cheating, greed or conflict), which impair the group’s ability to effectively organize to counter rivals.

Socio-cultural evolution solved both dilemmas in shaping moral affective responses to generally solve social challenges with prosocial decision-making emerging deep in the intuitive subconscious. For instance, this can involve curating a prosocial reputation with one’s personal political “press secretary,” a part of the mind-brain that crafts self-serving moral justifications to “spin” self-serving behavior to the deception of everyone, including ourselves. The press secretary automatically deploys just-so moral

self-justifications to defend against probing gossip and maintain our good moral standing and prestige. In this way, morality helps to “bind” human groups together, but it also “blinds” us to uncomfortable truths and narratives that might be in our interest to understand. Thus, a consilience of evidence points to this affective basis for morality, including findings about moral judgments being located in the brain in areas dominated by emotion, psychopathy being characterized by emotional deficits, the ability to change moral judgment by manipulating emotion, the ubiquity of desire-motivated reasoning, increasing relevance of intuition in prosocial and political psychology, and a variety of other findings (Haidt, 2013; Haidt & Kesebir, 2010). It is the coordinated suite of intrinsic and extrinsic incentives and punishers that creates enough motivation to override self-interest and make group coordination and cohesion possible.

### ***Evolutionary Moral Models***

What makes an evolutionary account of morality different from traditional Western views is that an evolutionary account of morality is far more expansive than modern psychological conceptions. Western models of morality typically acknowledge the morality of avoiding harm or ensuring fairness, but evolutionary models address a wider array of affective intuitions across cultures that is more expansive, including a sense of fairness, loyalty, respect, tradition, care and autonomy as key players in regulating group dynamics (Haidt, 2013; Haidt & Kesebir, 2010).

Here though, the details vary and apply different nuances of evolutionary logic. For instance, Haidt and Kesebir (2010) developed moral foundations theory (MFT) and found in their cross-cultural testing, six kinds of automatic, preconscious affective

intuitions that respond to moral dilemmas that would have been common in the evolution of social groups: *care/harm* evolved as a motivation to care for infants but became a foundation for basic empathic motivations to avoid harming others; *fairness/reciprocity* motivates acts of altruism to others with an expectation of fair return in a tit-for-tat fashion; *authority/subversion* sees an orientation to respect and deference as the basis for social hierarchies based on prestige and leadership; *loyalty/betrayal* evolved as a way to build coalitions based on loyalty and avoidance of betrayal; *sanctity/degradation* likely began as an orientation toward purity as pathogen defense, but evolved into a basic orientation to neophilia (liking novelty) and neophobia (avoiding novelty) as either a defensiveness of traditions and rituals as sacred, or a willingness to break them; and *liberty/oppression* which evolved as a resistance to hierarchical over-reach as a desire to rise up under power deemed illegitimate or domineering. Alternatively, Curry (2016; Curry et al., 2019) employs the Morality-as-Cooperation (MAC) model with seven moral dimensions, which echoes many of the same moral solutions yet splits authority into two conflict resolution modules. Curry's model includes kinship (support and care for family), mutualism (coordination toward mutual gain and protection), exchange (norms of trust and cooperative reciprocity), hawkishness (conflict resolution favoring bold success) and dovishness (conflict resolution favoring deference in the face of loss), division (fairness in division of resources and labor) and possession (territoriality and ownership).

There are other models that could be included in this that overlap broadly in the evolution of prosocial organizational psychology, which often includes or overlaps with

moral psychology: for instance, the Prosocial model (D. S. Wilson & Hayes, 2018) that identifies 8 common principles of effective groups resting on evolved psychological mechanisms based on the work of Elinor Ostrom; and the PILAR model (Heslop et al., 2018; Heslop et al., 2021) that identifies five aspects of group dynamics and collaboration. But at this point, the diversity of model drives home a broad agreement, that there is common reference to an agreed upon footing in evolutionary theories of prosociality, altruism, morality, cooperation and cohesion with strong precedence in the evolutionary literature, including theories of kin-based selection, reciprocal altruism (strong and indirect), the evolution of punishment, mutualism/inclusive fitness, and group-selection/multilevel selection (Henrich, 2004; Heslop et al., 2021; D. S. Wilson, 2002; 2008; 2019; D. Wilson & Wilson, 2007; D. S. Wilson & Hayes, 2018; Wright, 1994; 2001). From this literature we can see that most authors arrive at broadly similar taxonomies that discretize the number of socio-moral intuitions in slightly different ways, yet with relatively similar premises and only minor conflicts in how they are embodied in the brain or expressed socially. Consequently, we can have relative confidence in scholarly agreement that there are common, but varying, “taste buds” of the moral imagination (Haidt, 2013), which form a robust dimension of evolutionary psychology that turns social animals into “moral animals” (Wright, 1994).

### ***The Neurodiversity of Moral Actors***

The moral “taste buds” are claimed to be universal and cross-cultural in scope, and diversity in the patterns of expression are equally robust (Haidt, 2013). MFT in particular has developed a variety of inventories to test the moral taste buds in

respondents across a variety of cultures, using moral vignettes designed to evoke a particular moral response, which can then be rated for strength or intensity. The result is not only broad agreement on the affective domains, but clear patterns of neurodivergent subgrouping with respect to how salient some groups find some moral domains relative to others. And as with the metatraits of personality, which organize lower-level patterns of difference at the trait-level, there tends to be sharp diverging patterns in how people respond to the moral domains as organized by this neurodiversity. For instance, one cluster of respondents tends to rank all six moral dimensions as equally salient across cultures and SES. By contrast, another group strongly prioritizes three domains – care/harm, fairness/reciprocity and liberty/oppression – as significant, while deprioritizing the other three: authority/subversion, sanctity/degradation and loyalty/betrayal. It was then found that these differences not only correspond to the temperament basis for political conservatism (the former pattern) and liberalism (the latter), but could be expanded to illustrate the differences between liberals and libertarians based on the relative strength of the liberty/oppression dimension. In other words, there is a reason that similar voting blocs to those found in America appear across all countries and ethnicities, and it corresponds to innate moral differences that are functional, even as they vary tremendously across time and culture.

These models do not exist in a vacuum but organize a long-standing evidence-basis in moral psychology. For instance, in “evolution and moral diversity,” Dean (2012) took it as a given that “individual differences exist because the very nature of the

problems of social living meant that evolution was not able to settle upon a single psychological type” and “a diversity...of psychological types working together tended to be more evolutionarily stable, thus maintaining the [diversity] of psychological types in our species over time.” What is the nature of these differences? In “Red Brain, Blue Brain: Evaluative Processes Differ in Democrats and Republicans,” Schreiber et al. (2013) found that liberals and conservatives operate different cognitive styles driven by biological influences in their political attitudes and beliefs. These differences run as deep as differences in brain structure, with liberals having more gray matter volume in the anterior cingulate cortex, and conservatives showing more gray matter in the amygdala; similarly, Democrats had more neural activity in the left insula, while Republicans showed the same activity increase in the right amygdala. The authors concluded, “these results suggest that liberals and conservatives engage in different cognitive processes when they think about risk, and they support recent evidence that conservatives show greater sensitivity to threatening stimuli.”

Personality differences are also found in the literature. In De Neve’s (2015) work on “Personality, Childhood Experience, and Political Ideology,” openness to experience predicts liberal ideologies, while conscientiousness predicts conservative ones; incidentally, these traits implicate opposing metatraits, the former plasticity/beta and the latter stability/alpha, and further reinforce that each of the major neurodiversity contributions are parallel echoes of the same underlying divisions. Hibbing et al. (2014) bore out the implication that liberals and conservatives differ not just in political domains, but in approaches to all other aspects of life, “from tastes in art to desire for

closure and from disgust sensitivity to the tendency to pursue new information.” In echoes of DeYoung’s postulation that a major human divide lay in opposing orientations to the unknown, a significant finding is that conservatives are biased toward the unknown as a source of threat, with strong physiological reactions and psychological resources devoted to negative information, while liberals are more motivated to pursue cognitive novelty to satisfy a greater motivation for exploratory curiosity.

A problem remains in that much of the moral psychology research, including MFT and MAC, posit two poles for liberals and conservatives, not the four found in the neurodiversity quadrants, and the addition of Libertarianism by MFT does not go far enough to achieve alignment. Robbins and Shield (2014) may have helped to bridge this gap in “Explaining ideology: Two factors are better than one.” The authors showed that while a negativity bias helps to explain a security motivation to organize against social threats, a feature of social conservatism (see: genetic threat sensitivity as a motivator for “moral tightness;” Mrazek et al., 2013), negativity bias does not explain the existence of a different factor, power motivation, as strongly associated with economic conservatism. Robbins and Shield went on to model how there could be two routes to conservatism (fiscal and social) and two routes to liberalism (fiscal and social) as shown in Table 2, based on two separate motivational systems: weak or strong negativity bias, and high or low empathic concern.

This model helps us synthesize the MFT with other moral and political psychology findings, by breaking liberalism and conservatism into social and economic variants. These are in turn expressions of the strong and weak poles of two motivational

spectrums—power/empathy and negativity/positivity—in a direct parallel to the other models of neurodiversity. This would see moral neurodiversity echo the other forms of neurodiversity as varying expressions of universal motivations as they give rise to a raft of downstream effects. Moral neurodiversity would align with the other models of neurodiversity, with conservatism resolving along the exploitation aspect of the exploitation-exploration tradeoff, and liberalism along the exploration dimension. Yet where H. Taylor et al. (2022) would consider this complementarity along the exploration-exploitation tradeoff, Hibbing et al. (2014) set it up as a fight: “the supporters of tradition and stability, sometimes referred to as conservatives, do battle with the supporters of innovation and reform, sometimes referred to as liberals.”

### ***The Functions of Moral Neurodiversity***

Neurodiversity may be significant to evolution as a “moral pluralism” that has been centered in cultural evolutionary accounts (Haidt & Kesebir, 2010). The evolution of morality is specifically to “bind and build” (Haidt, 2007; 2008; 2013; Haidt & Kesebir, 2010) which captures evolved moral functions such as facilitating tribalism, building coalitions, organizing toward shared challenges and generally suppressing self-interest to boost social trust and group cohesion. In this way, human moral psychology offers prosocial motivations for individuals to function as an interdependent whole. The story of multilevel selection has amplified this theme over time, with group-level selection pressures (such as intergroup competition) making interdependence a target of selection. This puts moral evolution at the heart of a major evolutionary transition, facilitating groups to become increasingly indivisible social superorganisms that operate

as if they were a single organism (Christakis & Fowler, 2011; D. S. Wilson, 2002, 2008; Wright, 2000).

Such an evolutionary account reframes the individualistic life history strategies as serving moral social roles that help co-regulate “something larger than themselves.” This vision of neurodiversity is no longer an epiphenomenon (a causally-irrelevant secondary property) of evolution, but centers neurodiversity as a purposeful feature of this change. The fact that cultures invariably express some manifestation of [social and economic] conservatives and progressives is part of the evolutionary story, as moral and political neurotypes antagonistically co-regulate the “moral commons” that are key to the cultural evolution of high-functioning groups. They do this by exerting differing cultural influences on the law, institutions, beliefs, lifestyles and so forth, to push and pull at the adaptive evolvability of the superorganism in the hopes of increasingly non-zero-sum benefits.

In humans, the social glue of moral communities is *moral capital*, which is “the degree to which a community possesses interlocking sets of values, virtues, norms, practices, identities, and technologies that mesh well with evolved psychological mechanisms and thereby enable the community to suppress or regulate selfishness and make cooperation possible” (Haidt, 2013, p. 341). From an evolutionary perspective, the function of morality is group cohesion of a pack/group/tribe, and *moral capital* is the degree to which a group can harness shared trust, synergy, agreement, conflict-resolution, expectations, understanding and intentionality at the group-level (importantly, the Western frame of morality as a kind of reasoning and primarily seen as

revolving around issues of harm/care is rejected as a feature of WEIRD countries, while most other countries disavow this narrow morality in favor of a richer view of what can be sacred; Haidt, 2013). It follows that moral neurodiversity sees each life strategy as contributing a different function to moral capital, or perhaps, diverse kinds of moral capital altogether through the operation of the respective subcultures.

It has already been shown that life history strategies predict responses to the six moral foundations (Gladden & Cleator, 2018). For instance, political and personality psychology show a strong serotonergic defense system (BIS) to be attuned toward threat sensitivity, uncertainty avoidance, a higher need for order and structure, and lower self-esteem, all of which defines the stable strategies shared by social conservatives and libertarians as social liberals (*neophobia*; Jost et al., 2003; McCrae, 1996). From a social functionalist standpoint, the stable strategies embody a defensive orientation to experience that provides a social function: to conserve tradition, respect authority, police ingroup loyalty and sanctify rituals to maintain a given way of life. Here, mental health challenges themselves serve a prosocial function: a basal neuroticism promotes anxious uncertainty, which is countered by *moral tightness*, i.e. reliance on a rigid hierarchy and ingroup for security, promoting a stable collectivistic response (Mrazek et al., 2013). However, an externality of this strategy is that new and innovative solutions to problems may be systematically peripheralized, which can make the group brittle in times of environmental change where it is new group-level approaches that are needed (J. Williams & Taylor, 2005). Liberals, then, balance this equation with a shifted dopaminergic approach system (BAS) that promotes the personality trait

*openness to experience (neophilia; McCrae, 1996; Settle et al., 2010)*, which characterizes the plastic strategies. Liberals and libertarians exhibit a greater emphasis on values of care/harm, fairness/reciprocity and liberty/oppression, which facilitates an openness to change in service of new social configurations that might ultimately yield even greater moral capital at the group level at the risk of short-term disruptions. Note that libertarians (social liberals) embody both the plastic and stable configurations of the BIS and BAS systems, and fiscal (economic) conservatives occupy the non-plastic and unstable configurations, conserving the way a quadrant model can use set points of the BIS and BAS to model moral and political neurodiversity.

Functionally, there are several dynamics to moral neurodiversity, but at the highest level there is a similar bifurcation to the Big Two in personality psychology. Here, metatrait plasticity is associated with *individualizing values* (harm/care and fairness/reciprocity) while metatrait stability includes those as well as three *binding values* (binding of ingroups; ala authority/respect, ingroup/loyalty, and sanctity/purity; Gladden & Cleator, 2018; Haidt, 2013). Thus, the neurotypes aligned with metatrait plasticity embody more individualistic values, while those aligned with metatrait stability embody more collectivistic values (and social liberals, who are in both conditions, embody both sets of values, as value system should be thought of as two separate continuums; Oyserman et al., 2002). An alternative system by Sinn and Hayes (2017) casts the differences between the two groups as *universalizing values* and *dominating values* (i.e., dominating toward outgroups). That is, another logical implication of individualizing values like harm/care or fairness is that they should be universally shared

on the basis of being individual rights; similarly, binding values like authority/respect, ingroup/loyalty and sanctity/purity lend themselves to dominating outgroups as collectivistic social orders create a strong group strategy that can be formidable in intergroup competition. Both, then, lend themselves to different group-level moral orders and cultural strategies in the extreme.

While the US represents the world's most individualistic cultural strategy (more liberal) and China the most collectivistic cultural strategy (more conservative; Hofstede, 2001; 2011), neither is monolithic, and modern democracies tend to be inclusive to all political strategies at a subcultural level. Consequently, all moral neurotribes come to represent political blocs found in most countries with remarkable cross-cultural consistency (i.e., Europe has versions of America's left, right and libertarian blocs, including a right with fiscal and social wings). This likely reflects their respective social function as a kind of social yin-yang at the group-level: broadly speaking, a tension between stability and change. Yet each subgroup likely embodies a moral function that attends to different dimensions of the moral ecosystem at an even finer level, offering unique moral perspectives and contributions that offset the costs and blinders of another political bloc (Haidt, 2013). Within these ecosystems, plastic values would contribute *individualizing/universalizing* values, values that frame ethical issues individualistically, including promoting diversity, egalitarianism and universalism to resist within-group exploitation (Sinn & Hayes, 2017), while stability values would embrace both *individualizing* and *group binding* values - values that center tradition and culture to conserve the hard-won moral capital-building institutions of the group life,

encounter threat through ingroup order and loyalty, and unify in domination or exploitation of outgroups (Haidt, 2013; Sinn & Hayes, 2017).

### ***Moral Neurodiversity as Evolutionary Purpose: Trade-offs, Niches and Mismatch***

Each of the neurodiverse morality strategies “binds and blinds” members into “ideological teams.” Moral neurotribes have unique styles of moral self-regulation, while contributing specific forms of moral capital to the larger diverse superorganisms of which they are a part, often as a dynamic tension with other moral communities that is partly antagonistic, partly complementary. In addition to their contributions, each neurotribe has moral and social liabilities owed to their blind spots. From a certain vantage, every culture and society is an experiment to find the best way to harmonize their diverse moral contributions, lest the blind spots of one or more neurotribes contribute to imbalance and downfall of the whole.

The plastic neurotypes are devoted to the plight of individuals against monolithic and oppressive groups, but can approach change with reckless abandon for what might be lost when rending the social fabric (Haidt, 2013). Non-plastic neurotypes center the maintenance of the group’s traditions and systems at the cost of oppression and marginalization, a dynamic tension that may promote cohesion and cooperation, at the cost of great suffering in the arc of cultural evolution (Haidt, 2013). Sinn and Hayes (2017) cautioned against false equivalency between the two, however, making the case that MFT should be replaced by *evolutionary coalitional theory* (ECT), which tracks evidence that conservatives also rate higher on social dominance orientation (SDO) and right-wing authoritarianism (RWA). They argue that while the dominance and

exploitation of outgroups was a viable reproductive strategy for prehistorical alpha males, the strategy has clear moral costs in the modern world (Sinn & Hayes, 2017). However, there is some evidence that societies have different “modes” of operation depending on whether they face times of scarcity or abundance, peace or threat; different types of conservatism may be suited either to bureaucratic order suited to times of abundance, or the hawkishness suited to times of conflict (Drew & Kriz, 2012; Wright, 2009). Controversy aside, moral and political neurodiversity assumes that moral pluralism is evolutionarily necessary, as curating diverse forms of moral capital is critical to managing collective change sustainably. It follows that each moral neurotype serves an *evolutionary purpose* in a larger moral cosmos.

***Summary: Evolved Morality in “Something Greater Than One’s Self”***

Integrating the life history quadrants with moral diversity, we see neurodiversity to be a story of moral and political actors, with a partially innate basis for their differences (i.e., soft-wired preferences for political and moral ideologies; Haidt, 2013; Jost et al., 2003; McCrae, 1996; Settle et al., 2010). Building atop life history research, moral and political psychology repurposes niche strategies into niche contributions. The slow stable strategy turns prosocial/caregivers into social conservatives. They conform and exclude to protect their hard-won moral capital, and in the process, facilitate a “binding” moral imagination that conserves cultural norms, values and beliefs. The fast non-plastic neurotype is associated with fiscal conservatives who repurpose the antagonist/exploitative strategy. These economic conservatives conserve power structures as an externality of maintaining their own status and influence. The fast

plastic strategy counters conservative influences with liberal/individualizing values.

Building on the seducer/creative strategy, a progressive moral imagination stems from seeing people as individuals, with trait openness as the empathic motivation to universalize improvements to individual rights, or else seek systemic changes to the underlying social barriers. Finally, later refinements of MFT (Haidt, 2013) brought the slow plastic strategy into the fold by introducing the Liberty/Oppression moral domain, which sanctifies autonomy as a resistance to abuses of power while being less empathically oriented toward harm/care. Social liberalism is consistent with the skilled/provisioner strategy and is associated with libertarian movements in the US. On the one hand they are politically independent and resistant to social control over freedom of thought; on the other, there is a conservative streak in preserving the cooperative problem-solving of the social order, which supports role specialists to act as hyper-rational utility maximizers. It should also be noted that while the above taxonomy emphasizes innate differences, consistent with life history research, moral psychology is also accommodating of environmental factors. For instance, experiments show that fewer early friendships and reduced social network size predicted whether someone high in trait openness was more likely to become libertarian versus liberal (Settle et al., 2010).

### ***Moral Neurodiversity and Epistemic Injustice***

Importantly, the complementarity of moral neurodiversity resists reduction to social Darwinist stereotypes such as intelligence, strength, moral character, or normality. Each neurotype serves an evolutionary role when achieving niche

congruence, largely by failing to achieve “Übermensch” status in any other way. For instance, “intelligence” is a trait that is a stereotype threat (Priscott & Allen, 2021) because it is often ascribed to social status and success. Yet what we think of as intelligence is likely a tradeoff with several mental health downsides, most prominently associated with the cognitive niches and their mentalizing and mechanistic cognition, but potentially including motivational and social challenges as well (Del Giudice, 2018). In fact, some important evolutionary roles such as culture conservation (i.e., social conservatives) are likely best performed by embracing an anti-intellectual disposition: conformity, groupthink and dogmatism help to resist challenges to the ingroup narratives that coordinate moral capital (Henrich, 2016). Going further, no neurotype needs to understand their evolutionary logic to function, much less requires some kind of ultimate intellectual grounding with reality; traditionally, it is mythic relationships with reality (see: *practical realities*; D. S. Wilson, 2002) that have been both sufficient and common to social and mental functioning (Henrich, 2016; Ratnayake, 2022; D. S. Wilson, 2002).

Alternatively, the question of “what is normal” has always been in dialogue with neurodiversity and mental health, in part because long before neurodiversity was a construct, the social diagnosis of neurodiversity was “being weird.” However, moral neurodiversity offers us some relative context here too. Conservative neurotypes place a premium on policing normalcy because they care about what is normal as a mechanism for social conformity, cohesion and moral tightness that helps fulfill their group-binding function. In contrast, individualistic “weirdness” has a contrasting moral

capital that requires change agents to antagonize the system by disrupting those group norms as a feature, not a bug. In other words, there is a reason some people care about what is normal, but that should not be considered evidence that all people should be; as with all things, the relative power imbalance between these two subgroups becomes the real issue.

### ***Moral Psychology and Complementary Cognition***

We return to complementary cognition to illustrate its parallels between moral psychology (visualized as a social change process in Figure 4). Broadly speaking, social and economic conservatives exploit existing resources with systems that make past ways of life sacred and unchangeable so as to conserve their hard-won moral capital across generations. Conversely, social and economic liberals explore new ways of improving moral capital outside of the existing tradition, including better solutions to our social, intellectual and technological problems. To speak of liberal values like “progress” or “truth” is to make a values-based frame for this evolutionary imperative; after all, societal progress is the ultimate goal of all exploration, another way of saying that evolutionary search seeks to improve group evolvability (H. Taylor et al., 2022). Indeed, despite major therapies advocating for the importance of values-based change, the literature says very little about what human values *are*; the evolution of moral neurodiversity may offer a unique explanation as to why moral frames regarding diverse ways of being are significant to human narratives and behavior.

Moral neurodiversity is relevant to understanding all levels of neurodiversity, and not just a pollyannaish coating on an otherwise science-based model. For instance,

the strong implication for seducer/creatives is that biopsychosocial traits associated with costly trade-offs are nevertheless functional; they may even aid in their sociomoral role to seek out novel information for the purposes of evolutionary search. Everything from a novelty-seeking attentional style, a mentalizing (imaginative & empathic) cognitive style, and a highly responsive (sensitive) behavioral style support this purpose, even when they contribute to an ADHD-like profile of social, mental and behavioral challenges. All moral neurotypes have moral and cognitive blinders, and include a range of intrinsic and extrinsic factors that resist conscious self-control. Moral neurodiversity tells us that aligning with a *moral niche-of-fit* - values-aligned work, community and esteem - are what align the factors outside of one's control to energize psychosocial resources and exert effective self-control over prosocial agency. This is *moral niche construction*.

Moral psychology highlights that there is a political dimension to complementary cognition, as contributions toward exploitation and change are necessarily in social opposition to one another. Liberal explorers must fight the cultural status quo to drive social change against the cultural grain, while conservative exploiters are tasked with defending against such change. Often it is simply who has the balance of power as expressed by neurominorities and majorities, that determines whose behavior, cognition, or affectivity has become "the problem." Similarly, ADHD or ASD are often framed as a problem by corporate or school settings that value industrial settings optimized for the economic purposes of the other neurotypes (D. Price, 2022), and stereotype threats are primed in work environments that over-represent neurotypical

signposts (Priscott & Allen, 2021). When neurotypes self-organize into neurotribes built from their differing values to construct the prevailing environment of punishment and reward, they are creating a moral or political niche. Corporations, churches, schools, artist collectives, and social justice groups each attract, and sustain, different neurotypes; they also punish those who cannot resonate with the subcultural values, norms and mores that regulate the institutional goals in question, creating environments deeply stressful and injurious to those who do not naturally align. Moral niche construction is about moral niche alignment.

Groups embody different forms of moral capital to coregulate their shared activities, and we can assume these subcultural differences can be quite stark and impactful to people with contrasting biopsychosocial needs. Social environments organized along specific neurotribe values may vary significantly: in terms of social hierarchy versus relational egalitarianism; assumptions about competitiveness versus empathic support; ideological conformity versus intellectual autonomy; unpredictability versus structure and routine; role perseverance versus role creativity. Values-organized moral niches may offer variable levels of social resources and support, or adversity and punishment (see: biosocial models, agonic and hedonic environments), shaping patterns that bear on what can be mentally sustained according to different neurotype needs. Put another way, when a given neurominority faces an environmental mismatch, they may confront environments of defeat, alienation, disenfranchisement and moral injury (see: biosocial models' section). As we will see, this bears heavily on the etiological gradient of neurominority well-being as a function of external and internalized

oppression, including epistemic injustice (see: biosocial models).

Alternatively, finding a moral niche-of-fit may scaffold a path of growth to life's most important answers: meaning, purpose, morality, belonging and worldview. Niches are supra-individual, social preconditions to individual thriving as they align intrinsic and extrinsic factors and place them under individual control. When someone is treated as they yearn to be treated within a values-aligned community, for instance, they feel safety and belonging (J. T. Cacioppo & Patrick, 2008; Leary & Downs, 1995), and so congruent community is an important form of moral niche construction. Being seen and respected for one's strengths and competence, and not judged for one's liabilities, is a source of niche-congruent esteem and prestige that confers confidence (Mahadevan et al., 2016). Esteem is also related to one's ability to perform the values-aligned activities their strengths lend themselves to, which is rewarding and motivating, creating the importance of *meaningful work* (Hari, 2018) as a moral niche activity. When factors like these and more (see: biosocial models; Hari, 2018) come together, it may register as a holistic form of well-being associated with both individual happiness and prosocial purpose in something bigger than one's self (M. Larsen et al., 2023). Succeeding according to cultural evolution is not to play games of survival and self-interest, but to thrive playing a values-aligned role in a healthy group. Accordingly, moral neurodiversity turns life survival strategies into *evolutionary meaning strategies* that reverberate when one's subjective meaning-making machinery is values-aligned with social reward systems in "something bigger than one's self." Framed with the moral valence of important values, the alignment of these dimensions can offer purpose and direction in

life, which may be important life organizers of particular importance to fast strategy neurotypes that struggle with life commitments.

There is an evolutionary truism of social life in a global, interdependent world: we are all in the same [evolutionary] boat (Wright, 2000; 2009). It is likely in the best interests of all neurotypes that we increasingly recognize the moral dimension of complementary cognition as a game where we only win when we all win. To that end, a logic to be parsed out further is: to what extent should each neurotype be afforded its own niche organized for its own needs and activities, and to what extent should each neurotype compete or negotiate to influence the shared moral commons to exert influence over other neurotypes and offset one another's blinders? These are likely equally important goals: on the one hand, greater recognition and allowance for discrete, semi-autonomous moral niches to coexist at every scale as a mediating factor in numerous social problems; on the other hand, the need to harmonize political antagonism and polarization into a constructive yin-yang coregulation and complementarity. Neurotribes must live and let live, and learn to listen across deeper divides than we realize.

### **Neurodiversity Consilience: A Speculative Synthesis**

We will end this section by incorporating information about neurodiverse survival strategies and meaning strategies for a more complete picture and speculate about some of the biopsychosocial dynamics (see Figure 5). Think of this as a broad functional analysis that lacks total scope, variance or depth, but may hint at general patterns. Most importantly, it can usefully tease the biopsychosocial complexity of a

consilience frame, which will be relevant to later exploring ADHD and ASD. The titles include: an acronym for the survival strategy; a values-based archetype; and in brackets, the set point for each strategy based on where it falls on a) the behavioral inhibitions system (BIS), a psychosocial threat defense system and can be either fast/unstable or slow/stable, and b) the behavioral approach system (BAS), a psychosocial engagement system which can be either open/plastic or closed/non-plastic.

**P/C as Cooperative Conserver (CC; slow/stable, closed/non-plastic)**

The CC takes the prosocial/caregiver survival strategy – increased social cohesion driven by the harm-avoidance of a slow-strategy BIS – and gives it moral direction as a cooperative strategy (Mrazek et al., 2013) that is ideal for conserving cultural solutions across generations (Haidt, 2013). Conversely, a *less* sensitive BAS makes the trade-off of reduced cognitive *openness* (plasticity as exploration) in favor of greater *industriousness* (i.e., the goal-persistence aspect of *conscientiousness* that lends itself to resource exploitation). The *more* sensitive BIS means being sensitive to “*avoidable social danger*” through traits like harm-avoidance, negative emotionality and sensitive fear conditioning, which can proactively avoid threat and injury (DeYoung, 2015).

Such a disposition views the unknown of an uncertain future as threatening (DeYoung, 2015), which triggers pulling together to face threats collectively akin to the *tend-and-befriend* threat response (S. E. Taylor et al., 2000), which motivates ally-seeking as a response to threat. At scale, however, this is done through a more passive preference for increased social cohesion called *moral tightness*, which ameliorates uncertainty in advance through perceived access to social resources. Moral tightness is

the result of strong conformity to norms and mores and low tolerance for divergence therein as morally justifiable (Haidt, 2013; Mrazek et al., 2013). In this way, individuals with more defensively-oriented temperaments, such as carriers of one or two copies of the short allele of the SERT gene, create a group-level strategy associated with *moral capital*: synergistic threat orientations result in strong group-level cooperation as an adaptive strategy to defend against rivals and challenges, which requires heavy policing of rules and norms to protect social harmony (Haidt, 2013; Mrazek et al., 2013; Oyserman et al., 2002). Connecting the dots, then, a high threat of the unknown, including the attendant predilection for this temperament to suffer mood disorders and anxiety only in individualistic societies (Chiao & Blizinsky, 2009) is a functional group-level interaction that motivates strong social cohesion with which to counter this threat. In other words, mental health challenges en masse can be functional in an MLS framework when they help individuals at one level, turn into an adaptive superorganism at another.

As a moral strategy relevant to cultural evolution, this is a *cooperation and conservation strategy*, where the CC neurotribe sees the group itself as sacred (Haidt, 2013). This leads to another cultural evolutionary dynamic, where the CC neurotribe builds, then maintains or protects, a group culture that enshrines much of the secrets of their success in shared myths, beliefs and values (Haidt, 2013; Henrich, 2016). Adaptive functioning is not primarily a function of reasoning abilities, but loyalty to shared ideologies, narratives and myths shape a *practical reality* with a few truthful elements, and even more motivating elements; this comes to structure a deeply adaptive

relationship with the land through a trans-generational process of cultural evolution (Harris, 1974; Henrich, 2004; D. S. Wilson, 2002). A key adaptive feature of a practical reality is the moral capital it engenders reduces social friction and maximizes social harmony. This can lead to negative trade-offs at the group-level when strong impulses to eliminate all uncertainty, anxiety, ambiguity, threat and friction promotes cognitive and moral blinders like conformity, groupthink, authoritarianism and xenophobia (i.e., high *ingroup/loyalty, authority/subversion*; Del Giudice, 2018; DeYoung, 2015; Haidt, 2007; 2008; 2013; Haidt & Kesebir, 2010). Such societies can be particularly devastating for the plastic temperaments, who thrive in more individualistic, loose and autonomous environments. In terms of downstream social well-being, then, the trade-off for *cooperative conservers* is that a traditional, closed and ingroup biases maintain their collective success, but it can also maintain the roots of rigid social dysfunction, inequalities and injustice (Del Giudice, 2018).

At the trait-level, cooperative conservers are defined by being reliable and persistent, and working well with others; that is, the combination of high *conscientiousness (industriousness aspect)* and high *agreeableness (politeness aspect)*. They are low in *openness to experience*, and thus, are incurious about different or better ways of doing things, which contributes to sanctifying the existing practices, norms, beliefs and values as wise, respected and pure (high *sanctity/degradation value*). Of the stability strategies, the CC is a group-level strategy almost entirely “buffered” (offsetting of stress) by cultural collectivism, or political conservatism in Western countries, where the collectivistic moral capital mediates against ambiguous threats (Chiao & Blizinsky,

2009). As a corollary, when this temperament is in a society that lacks these collectivistic features, such as higher cultural individualism, short-term orientation and/or low power-distance (Hofstede, 2011), the increased threat perception can go unbuffered and becomes associated with a risk for depression or anxiety (Chiao & Blizinsky, 2009). It follows that the greatest mental health risks for this temperament are found in its unique connection to group-level factors like a congruent culture and healthy society, as a need to function in a well-adjusted socio-moral environment. In other words, the CC neurotype is highly self-regulated to be flexible to the needs of social roles and groups, but when the culture as a whole becomes unhealthy – inequities, low moral capital, loss of institutions, and so on – it may contribute to populism, extremism or any cult-like movements that feature shared neuroses: delusion, paranoia, aggression, volatility and militarism (see: QAnon).

A feature of moral tightness is co-regulating the group through gossip and reputation, where social information is shared, reputations and social positions adjusted, and norm violations indirectly policed. Rules and norm enforcement is important. High conscientiousness, which makes for reliability and persistence in goals and roles, can also make for intellectual rigidity and incuriosity; a less intellectual or critical approach, coupled with deference to authority may make for clients who struggle with experiential or intellectual therapies, and instead prefer therapists who present as culturally-congruent authorities. Rigid gender norms, behavioral inhibition, excessive deference to authority and the social order, are all features of the underlying strategy that may be pathologized in some models, but which should be avoided here;

these characteristics are necessary features of the strategy despite coming with some individual costs. They should be seen in light of the function of the strategy, and rebalanced in ways that creatively avoid dysfunction rather than being pathologized or changed outright (as this likely will only set the therapist and client up for failure).

Cooperative conservers are found in roles that reward reliability, cooperation, duty, consistency and persistence. The values that follow are perseverance, duty, honor, deference, purity, respect, loyalty and sacrifice on behalf of the group. While deeply meaningful, these values may also enshrine the moral blinders of this strategy: the costs of justifying the existing ways, including systems that marginalize and oppress; making it heretical to question the righteousness of tradition and identity; groupthink, authoritarianism, xenophobia and a callousness to outgroup members; the tendency to externalize and escalate conflict between groups when a way of life is threatened; the tendency for collective mental ill-health if the group as a whole becomes dysfunctional (see: the Q anon phenomena). As a slow strategy, then, it can be tempting to idealize its conformist, obedient, and rule-following ways as a path to social success, but this should be avoided for the reasons above (Del Giudice, 2018). The temperament can be associated with neurodiversity in expressing an introverted and neurotic disposition, but this is typically buffered in the correct group setting, which presents as a strong impetus to conform. Pathologizing this or other features would be to lose sight of the social function as a valid evolutionary strategy, or “purpose,” and its primacy in well-being. As with all neurodiversity strategies, therapists that can ally with the strengths of the strategy, speak the moral language of the strategy, and find ways of highlighting costs

and framing alternatives, will have the most success.

***E/A as Heroic Protector (HP; fast/unstable, closed/non-plastic)***

The life history strategy called E/A seeks to adapt through competition and exploiting resources and social status (Del Giudice, 2018). In a modern cultural context, HP strategies are pushed to use their power and achievement motivations in a variety of prosocial niches. In the Morality-as-Cooperation framework (MAC), heroism is the value ascribed with hawkish strategies that often find prosocial use when directed toward an outgroup or toward rule-violators and free-loaders (Curry, 2016). Here, a value in bold, risky action can be found in service of protecting, enforcing norms, eminent leadership, opportunism and achieving, all of which can be given moral valence that can be rewarded in a prestige hierarchy. Alternatively, honor is the dominant value as one who avoids losing face by rising to perceived challenges swiftly and aggressively, despite the chance for violence (Mazur & Booth, 1998; Sapolsky, 2017) Assertiveness as a power-motivated strategy can be prone to antisocial exploitation in the extreme, but modern roles for achievement and competitively-oriented people might find prestige as (athletes), protectors (police), fighters (soldiers), self-sacrificers (firemen), gamesmen (lawyers), and gamblers (traders).

One frame for this is “honor” as a value. Honor cultures are a group-level strategy that traditionally emerge in harsh environments, and require competitive escalation and the saving of face (never backing down from a challenge) as necessary survival tactics. HPs may be uniquely suited to surviving the honor cultures of chaotic, harsh environments (Booth et al., 1989, 2006; Mazur & Booth, 1998), with analogs as far

back as baboon primate societies (Sapolsky, 2017). However, when the social fabric evolves on a more prosocial footing (Wright, 2000), HPs may be ideally repurposed into meaningful roles motivated by the pursuit of excellence, strength, and victory. However, this duality embodies a potential trade-off for the strategy: prosocial HP community members may be capable of great callousness toward other neurotypes if the others, when failing to play the same status games or make demonstrations of “strength,” come to be seen as weak, losers or generally deserving of disrespect and exploitation.

The HP strategy may stabilize on achievement and power, as their needs are predominantly met through competitive achievement and status, which becomes an intuitive channel for buffering stress. The strategy seeks external feedback of power and respect, which is internalized as self-respect and self-image, and helps cope with adversity. However, living in an antagonistic mindset for too long, especially in unequal social conditions that makes relative status differences more salient (Wilkinson & Pickett, 2011), may be uniquely bad for mental health in this population. That is, excessively priming the social world through a lens of power and status can lead to a “mentality” imbalance of spending too little time in an empathic frame of mind with which to relate to others, or the self, with compassion (see: biosocial models; Gilbert, 2000b; 2005c; 2014). If compassion and empathy are seen as a weakness, the effect may be further magnified. In early environments of adversity, or current environments of scarcity, inequality and threat (see: agonic environments), a need for respect may become callously expressed as a need for domination and fear as status feedback, making for bullies who seek to instill defeat on others (Björkqvist, 2001), and who can

justify any injury to the weak as a morally righteous “natural social order” (Haidt, 2013)

Accordingly, the most common diagnoses for HPs are externalizing disorders (Del Giudice, 2018). That includes antisocial personality disorder or conduct disorders; dark triad personality traits like Machiavellianism, psychopathy and to a lesser degree, narcissism; and anger disorders and substance use disorders. The substrate may be simple *extraversion* as reward sensitivity (DeYoung, 2015), which maps onto power motivation as power is a leverager of all other social rewards (Del Giudice, 2018). Converting power motivation to sacred values may lead to the worship of domination and “strength,” leading HPs to play a significant role in “toxic masculinity” or patriarchal subcultures that become salient in times of conflict. CCs can synergistically reinforce such cultures through their own enforcement of hierarchy and gender roles in a “hawk and dove” strategy (see: MAC; Curry, 2016; Curry et al., 2019). As features of a fast strategy more generally, the profile also includes impulsivity and risk-taking, meaning a propensity to react with volatility and impudence. HPs may need to sometimes need to manage the negative social consequences of risky and impulsive decision-making. In general, an HP is seen as being neurotypical, as it is primarily an insensitive, externalizing strategy.

Politically, the strategy is most likely to be a form of fiscal conservatism (Robbins & Shields, 2014), with a “winner-take-all” mentality that seeks to justify and conserve existing power structures as a function of trying to protect their own social positions and successes, or with the hope of someday achieving them. The result can be a callous “bottom-line” fiscal attitude that is mentally corrosive to other neurotribes by enforcing

toxic political narratives and economic and workplace environments. When expressed selfishly, cynically or misanthropically, the HP may be particularly dangerous, particularly if they have power and influence, for being more inclined than most to justify dehumanization, coercion, bullying, or exploitation especially when they have little prosocial accountability or cannot find a path toward respecting those affected.

The tendency to see life as a competition, or to seek power for its own sake, may require leaning into the “heroic” dimension of prosocial prestige hierarchies for balanced well-being. Therapies that are comfortable with confrontation and are not as experiential, excessively compassionate or intellectual, may be useful, and avoidance of excessive narratives of victimhood or vulnerability may be important to curating a story of strength in the face of adversity.

#### ***S/C as Prosocial Visionary (PV; fast/unstable, open/plastic)***

The S/C survival strategy (Del Giudice, 2018) adopts a moral valence when *mentalizing* strengths (aesthetic and verbal creativity, theory of mind; Del Giudice, 2018) come to serve social functions: to spread creativity and compassion, envision new goals or ways of life, or else use individualizing and universalizing values to resist within-group oppression and make social progress (Haidt, 2013). This is accomplished when a BAS geared toward *plasticity* (trait *openness to experience*) is coupled with a BIS adjusted for less *stability* (a “responsive” profile of risk-taking and impulsivity). The resultant PV meaning strategy is unstable for better and worse, and occupies an ambivert middle-ground of prosocial motivations that affords a unique role as a social specialist in the cognitive niches (Hunt & Jaeggi, 2022).

The strategy is more unstable in two ways: PVs are chronically under-stimulated due to increased novelty-seeking (reduced reward sensitivity, increased *detachment*), and emotionally unstable as a reactive fast strategy. This may make for a trade-off in having the potential for extreme adaptability and growth, at the cost of extreme instability of mood and perception (Del Giudice, 2018). Socially, PVs are less *extraverted* than neurotypicals, and therefore more *detached* (DeYoung, 2015) with a range of implications. First, PVs may be less warm and cooperative (trait *agreeableness*) due to being less reward sensitive, with the upside of a greater latitude for individualistic, idiosyncratic and intrinsic motivational interests befitting a cognitive explorer (H. Taylor et al., 2022). Second, PVs are introverts but not strong introverts. An “ambivert” profile may result from the intersection of reduced *extraversion* (trait detachment) alongside reduced social inhibition (a “responsive” fast strategy). Rather than social reward-seeking (seeking status or belonging as primary motivations), social stimulation-seeking is the goal; when *openness to experience* is combined with a capacity for social intuition (i.e. mentalizing as empathy and theory of mind; Del Giudice, 2018), trait novelty-seeking can be channeled outward toward social niches like helping behavior, social exploration, communication and performance roles. Finally, a higher need for novelty, stimulation and exploration can be expressed creatively (mentalizing as verbal and aesthetic creativity; Del Giudice, 2018) both behaviorally – as art, crafting and performance – and cognitively, as a range of implications flow from having a flexible imagination as a kind of cognitive holism (Carrol, 2020) for a cognitive niche. Taken together, PVs may make for natural roles as creatives (artists), helpers (therapists),

visionaries (entrepreneurs), meaning-makers (gurus), social critics (comedians), change agents (activists), story-tellers (journalists), performers (actors) and explorers (travelers).

In contrast to CCs, PVs exploratory motivation can lead to divergence from traditional socializing influences as an innately individualistic, non-conforming way of being. PVs are oriented toward personal growth over socialization (Digman, 2007), more engaged with inner and outer worlds (Olson, 2005), and therefore show a preference for personal dynamism rather than social self-regulation (Saucier et al., 2013). This affords PVs the scope one needs in an explorer role, to influence and telegraph potential new directions in culture, language, media, technology, business and entertainment. The trade-off of this strength is a risk-prone corollary – a lack of psychological defensiveness may make bold strategies possible, but it also makes social risk unavoidable. Individuals experimenting with lifestyle and worldview, especially in opposition to those protecting the status quo, may find themselves vulnerable to destabilizing mental and social influences. One might characterize the PV trade-off as a “high risk, high reward” strategy for creative exploration, and one that necessarily requires an unstable, fluid way of being to enable rapid growth, yet making rapid deterioration just as likely. Alternatively, PVs may carry an externalizing risk when used as a survival strategy in adverse environments if social detachment becomes a risk for callous self-interest in high-conflict environments (see: heightened risk for narcissistic personality disorder; Del Giudice, 2018). Here, strengths in mentalizing may justify social manipulation as an adaptive tool, a profile that may also partially explain the related risk of borderline

personality disorder (Del Giudice, 2018).

Given a sociomoral valence, an exploratory approach requires individual freedoms (*individualizing* morals) to experiment with life, and sees social progress as a *universalizing* of these rights for all, while resisting social harm, unfairness and control that can be domineering at the group-level (Haidt, 2013; Haidt & Kesebir, 2010). This is political liberalism, which may include other values such as efficiency/waste (Graham et al., 2013). A left-leaning mentalizing strategy at the intersection of social and cognitive niches is uniquely suited to thinking critically about oppressive social systems and ideologies that entrap and disenfranchise, with social justice as a natural moral endpoint (i.e., *critical consciousness*). This broad phenotype is behind the intellectualism of the humanities and social sciences, with an inclination toward curating “social facts” (Haidt, 2013) to foster social meta-awareness. Hanna et al. (2000) talked about a similar quality as *perspicacity*, which sees past the dominant social narratives to the hidden rules and realities underlying oppressive systems. The risk of the perspicacity in cognitive niches may be *depressive realism*, where being aware of life-limiting oppressive factors that entrap, alienate and subjugate, naturally makes one feel powerlessness, cynical and misanthropic about an individual’s chances to change systemic barriers and injustices (Hanna et al., 2000). As a moral niche, perspicacity as critical consciousness can be institutionalized in various cognitive niche roles, and such roles may even be necessary to offset the powerlessness of perspicacity as a depression risk. Yet it should be noted that justice goals are not without their moral blinders. PVs with a strong justice ethic may morally over-police themselves and other neurotribes who do not virtue signal

*harm/care* values, and PVs may self-righteously undervalue other moral contributions like tradition, competition or truth in their efforts.

PVs thrive in safe environments, where their differences can be valued and idiosyncrasies tolerated, and where their pursuit of experimental ways of life can be oriented toward independence, self-development and creative expression. There may be a greater strength of need for social support through individual relationships over group belonging (*agreeableness, compassionate aspect and individualizing, not binding, values*). Stimulation-seeking (trait *openness to experience*, novelty-seeking) may be channeled idiosyncratically through a mentalizing cognitive style that is experiential and intuitive, using the implicit learning of pattern-recognition geared to mining patterns in sensory data (DeYoung, 2015). A PV profile that is eccentric, and that eschews norm conformity as a precondition of social support, may find friction in the neurotribe world of conservative collectivism, which is exemplified by the East Asian proverb: “the nail that sticks up will be pounded down.” Individualism is seen as immodest and unjustifiable as a persistent motivator to violate norms and mores (Mrazek et al., 2013). It is perhaps no coincidence that the gene allele associated with PV novelty-seeking, the DRD4.7r allele, seems to have passed through China, but was selected out of the population specific to their culture region, possibly as a function of environmental mismatch (Chang et al., 1996).

In general, the downside trade-offs of a *cognitive niche* lie in idiosyncratic strategies in rare niches, and that may make for common mismatches in traditional and economic niches that etiologically contribute to mental health risks. However, it is worth

contextualizing the role of mismatch itself. Traditional conservative niches are punishing to a PV way of being at multiple levels. Capitalist economies embody the values of exploitative strategies, offering consistent moral injury, a lack of moral niches, and a general moral mission that PVs struggle against (recall that such resistance may be an innate moral “purpose” of sorts; Haidt, 2013). Capitalist economies also withhold monetary support for those that have not proven their economic value, yet exploratory strategies are a life-long experimental process, where vulnerability, and the importance of support, are front-loaded. In summary, PVs can be misaligned to the neurotypical world in multiple ways.

PVs may face significant passive adversity and mismatch, but they are also vulnerable as a high-risk, high-reward strategy built atop an unstable and sensitive profile of varying intensity. The psychopathology profile of open/plastic temperaments begins with ADHD-like foundation of divergent thought, loose connections, imaginative beliefs and emotional instability, and extends through some of the more “exotic” mental health diagnoses of the psychosis spectrum (Del Giudice, 2018; Hunt & Jaeggi, 2022). This includes bipolar disorder, schizotypal personality disorder, schizophreniform disorder, delusional disorders, schizoaffective disorder and borderline personality disorder. This profile is predictable in that a PV fast strategy is doubly unstable along the BIS (emotional and motivational stability) and BAS (creative instability; high *openness*, mentalizing and novelty-seeking). As one increasingly expresses one or both forms of instability along the phenotypic spectrum, one may turn up both the strengths and challenges associated. Imaginative potential may lead to delusional beliefs, for instance,

which may create group friction in the wrong niche, but make for an ideal social niche as a messianic figure (see: group fission), or a shaman who serves social and healing functions (Del Giudice, 2018; Hunt & Jaeggi, 2022); these are also traits that benefit visionary entrepreneurs, story-tellers, artists and entertainers in the modern world. Extraordinary creativity as an over-expression of the strategy, the likes of which might be found in profoundly eccentric historical figures like Salvador Dali, may illustrate two principles: first, that a high-risk, high-reward strategy does not guarantee evolutionary success by definition, only a commitment to an experimental strategy that must be deployed across a range of unknowable environments, where social factors are key; second, that as one increasingly expresses a strategy in terms of its strengths and costs, one only increases the importance of niche-congruence to leverage one's strengths and offset one's challenges. Finally, just as instability may be functional as the lynchpin of exploratory plasticity and growth, social plasticity may have similar trade-offs that are centered in some etiologies. Plasticity may lead to a chameleonic adaptability to multiple social niches, but it may also lead to *identity diffusion* if overly used in a critical developmental window. The extreme relational poles of BPD may make sense as specifically an unstable PV strategy that faces early abandonment and complex trauma. Schizophrenia may be when an unstable PV strategy meets chronic or profound social defeat in a critical developmental window (Selten & Cantor-Graae, 2005).

The PV strategy may do well with more creative, expressionistic and social therapies over more intellectual or manualized approaches, though this may depend on whether it occupies a more behavioral or cognitive sub-niche. One therapeutic goal may

be the struggle for purpose. Novelty-seeking and adaptability may lead to a reactive disposition that hops between niches to avoid life commitments that are feared to be a boring loss of autonomy and opportunity. Layered on this is the perpetual struggle to balance enough structure to support a dynamic and sustainable way of being, without so much structure that life feels boring, oppressive, constraining and stifling to one's autonomy. It becomes important to frame these tensions and how they may be resolved through uniquely sustainable, if rare, PV niches. For instance, some niches that build in sufficient role-complexity can sustain novelty-seeking as a commitment, while avoiding the costs of niche hopping, where a lack of commitments can lead to painful, hollow and shallow life engagement over time. Fast-strategy impulses will be helped in this regard with life commitments that center on core strengths and moral values, which, it should be stressed, can be difficult to find in a capitalist economic environment.

The stabilizing need for PVs has two dimensions – relational and creative – and may fluctuate accordingly through dramatic upheavals in individual relationships and support networks, or in environments that stifle creativity or chaotically destabilize. PVs may face a variety of unique challenges on this front, such as the struggle to balance relationships and manage diverse networks. PVs may grapple with the paradox that time spent investing in social pursuits may feel as though it competes with self-investment and personal goals, while under-nurtured relationships may leave PVs feeling a disproportionate sense of social danger and vulnerability. Some PVs may find danger in leaning into the hedonic expression of a fast-strategy (trait novelty-seeking) that

struggles with narcissistic emptiness and meaninglessness; others may use relationships instrumentally to achieve personal goals and damage relationships and reputation beyond repair. Fast strategies may be shaped in part by developmental influences from chaotic, stressful, abusive and neglectful environments early in life (Biglan et al., 2020), and those that struggle with trauma or other developmental disruptions may feel stuck in a survival strategy, and unable to access the PV *meaning* strategy. Thus, appreciating how mental health struggles interact with the long-term niche construction of meaning, role and purpose is a core therapeutic goal, framed in part by therapeutically reducing fast strategy costs through more sustainable moral niche commitments.

There is a history in mental health of seeing PVs as unstable, eccentric and abnormal, and it can be easy to pathologize the self-aggrandizing tendencies or loose connections of creatives. The field can hyperfocus on the instability of manic episodes, psychotic breaks, delusional beliefs or relational instabilities including a sometimes at-all-costs pharmacological goal of medicating PVs toward “normality,” where the need to dull or extinguish all excitable energy may be assumed. The costs of these narratives should be weighed in the context of this functional analysis. The risks of this strategy are part of what makes it meaningful, and the strategy may require experiential data about real world costs and opportunities to experimentally learn a sustainable exploratory path through it, where fast strategy excess is reined in by life wisdom earned authentically over long time-scales. Ultimately, the goal may be not to suppress fast strategy characteristics therapeutically or pharmacologically, but to channel them into values-congruent meaning strategies and role commitments, where an optimal balance

of novelty and sustainability can be iterated upon.

***S/P as Truth-seeking problem-solver (TP; slow/stable, open/plastic)***

As a meaning strategy, the S/P adaptive niche may see mechanistic strengths (logic, reasoning and explicit learning) bent toward a meaning strategy of pursuing knowledge and truth, solving problems realistically, and maximizing ethical utility. TPs have the exploratory openness (trait *openness to intellect*) of the cognitive niches as well as the psychological defenses of the stability strategies (harm avoidance, risk aversion), with unique properties emerging at the crossroads. The combination makes for cognitive independence as cognitive exploration (plasticity and *openness to intellect*). A possible downside is the lack of group stress-buffering enjoyed by the CC strategy, or the relational stress-buffering of the mentalizing PVs. The result is a kind of “double introvert,” with a socially-detached BAS and socially reserved BIS, where both meaning-making and stress-coping are a solitary affair, channeled through an increased sense of personal control. Mechanistic cognition is stabilized through access to one’s inner world of systematic, logical and “bottom-up” thought that can also be deeply introspective and imaginative, and requires social niches to afford one the ability to access this way of being. The affective influence of the social world is peripheralized (increased mechanistic cognitions is also reduced mentalizing cognition) to resist intrusions on personal interests and goals, but there can be ambivalence about the trade-off: what can be sustained as an enriching social circle built on parallel intellectual interests, all too often finds the mismatch of solitude, alienation, misunderstanding, and rejection instead.

The fundamental trade-off of the strategy is to be valued as rational and skilled (trait *openness to intellect*), with a potential to struggle relationally in the social mainstream (low trait *agreeableness* in both reward detachment and social inhibition). A slow strategy influence on personality may be the *orderliness* aspect of *conscientiousness*, presenting as a strong need for personal control to pursue personal goals and cope in their own style. TPs may find moral valence in problem-solving, truth and justice (specifically, ethical utility maximization) as metaphors for life, meaning and social progress. This may make for equal parts confusion, cynicism and alienation when discovering that the social contract pays lip service to these ideas, but is typically far less interested in intelligent optimization of the moral commons than dogmatic adherence to religious myths and political ideologies (Henrich, 2016; D. S. Wilson, 2002). Like the PVs, TPs may be more oriented to personal growth (Digman, 2007), engagement with inner worlds (Olson, 2005), and an inner “dynamism” (Saucier et al., 2013), but befitting a more stable slow strategy, they also exhibit greater self-control (Olson, 2005) and social self-regulation (in terms of explicit rules, less than norms and mores; Saucier et al., 2013). TPs need for intellectual autonomy may run afoul of a social world built on more than just explicit rules, which they are happy to adhere to, but often runs equally on implicit rules of cultural norms and mores, which are harder to grasp. A higher need for “bottom-up” intellectual stimulation and a mechanistic cognitive style oriented to reason, logic and explicit learning, and may be more disposed to autism, subtypes of ADHD, and obsessive-compulsive disorder (Del Giudice, 2018; DeYoung, 2015).

Problem-solver strengths revolve around high mechanistic cognition which makes

them effective systematizers, problem-solvers and prone to hyperrationality. Moral intuitions center on their being a more intellectual exploratory strategy rather than social or behavioral (see: PVs). The values that follow are individualizing/universalizing values centered on *harm/care*, *fairness/reciprocity* and *liberty/oppression* (Haidt, 2013). These values orient TPs to protecting people from within-group oppression, but may skew toward freedom of thought and speech, which is their primary point of social friction (note the congruence with socially liberal political positions in the US). Some evidence suggests that less early social exposure among individuals genetically disposed toward *openness to experience* has been shown to predict the shift from liberal to libertarian political allegiance (Settle et al., 2010), showing an environmental pathway that may push in a similar direction.

A paradoxical prediction might be that a TP slow strategy lends itself to a strong moral binding dimension despite its cognitive individualism (Haidt, 2013; see also: *moral tightness*; Mrazek et al., 2013). Yet while the CC slow strategy expresses a strong sociomoral order that conforms to shared myths and ideologies for moral capital, TPs may express a binding morality more idiosyncratically. TP religious or spiritual orientations may be more fringe or intellectually oriented, with robust personal philosophies, codes and ideologies; part of the function of such beliefs is nevertheless the same as CCs: to motivate self-regulation, self-inhibition and guide moral emotions like guilt and shame. TPs show a vulnerability to “high-control groups and cults” (D. Price, 2022), which may offer a sense of belonging alongside control as a coping style; alternatively, they may find a healthier expression in “nerdy” subcultures where people

can bond over similar intellectual interests, hobbies and subcultures (Silverman, 2016, D. Price, 2022) Contrary to stereotypes, the temperament can be sensitive to the plights of others, particularly the thought of committing moral injury by causing unintentional harm to others. Their own sensitivities and vulnerabilities to social injury may allow for a robust point of reference to understanding the pain of others, but this is more likely to be cognitive empathy rather than affective. Unlike CC's, TP universalizing values (Haidt, 2013) will extend moral considerations beyond a narrow social ingroup, and instead applies to all humans as individuals, where the goal is to intelligently and rationally optimize ethics for all. Returning to the paradox, TPs can be simultaneously individualistic and morally "tight" by expressing as a significant value in "personal responsibility" in a further echo of social liberalism. TPs may be less interested in connecting to people, but often highly interested in doing right by them.

TPs are cognitive explorers in the truest sense, and a moral value in cognitive autonomy (openness to intellect) and insensitivity to social punishers (trait disagreeableness, reduced mentalizing cognition) is a strength: to embolden the pursuit of realistic problem-solving and knowledge by ignoring the social friction caused by divergence from the mainstream. The trade-off, however, is that emotional pain is turned down, not off, and a perceived deficit in empathic understanding and social cue sensitivity may lead to painful and bewildering social feedback. The difficulty of processing this pain may be laborious and require explicit effort and intention; as a "compensatory strength," however, it may also contribute to cognitive models of understanding people that far outstrip normal affective empathy. Those who must

intellectually navigate the social world may naturally generate, and be uniquely suited to professionalizing, complex social models of hidden social rules (anthropology and sociology), understanding how the mind-brain works (biopsychology), or the complex interplay of social forces at great scales and depths (MLS evolution).

Social insensitivity may systematically contribute to moral blinders when it scales to discounting the social problems that economic liberals understand intuitively. Discounting social problems becomes easier when problems can be attributed to individuals who fail to “play by the rules” or do not intelligently optimize for “the long-game;” effectively, social ills become failures to live up to TP values. This is a particular danger when TPs offset the pain of social injury by leaning into their primary positive social identity as intellectuals, leading to a toxic schema of rank ordering people by “intelligence” as effectively a superiority narrative that provides ego protection. Taken to extremes, a misanthropic view of people as “stupid” can ameliorate the pain of loneliness in the short-run while reinforcing that loneliness in the long-run, and further entrench such moral blinders. Toxic vulnerabilities may be a particular problem as social vulnerability is at its height in adolescence, a critical developmental window where the late sociosexual debut of slow strategies (Del Giudice, 2018) is most vulnerable to the abundance of psychosocial injuries (Selten & Cantor-Graae, 2005). When social struggles extend to romantic struggles, a lack of adequate stress-buffers can be compounded with blows to the ego, and the stakes of rejection and exclusion become higher. The synergy of adolescent social struggles, inadequate buffers and slow strategy developmental vulnerability may uniquely align to reinforce a reputation as being dispositionally

negative, i.e. “cranky,” which can reinforce challenges later in life (Shackman et al., 2016).

Concurrently, these same social barriers provide ample reason to avoid the opportunistic attention-seeking of fast strategies, and motivate self-investment in *somatic capital* and Self-development. This is another trade-off, where social friction or even social pain is perhaps functional as a compensatory strength. Inhibited social temperaments may struggle with feelings of shyness, social sensitivity, struggles with friends and romance, and ultimately later sexual debut (Del Giudice, 2018). The utility of these struggles may require resolution later in life, if relationship-development fails to break trajectory. Forging connections may always feel hard, and this may make it even more difficult to break down defenses learned in adolescence, particularly as low psychological defenses are a prerequisite for trust and connection. The tenuousness of relationships may lead to people-pleasing (D. Price, 2022), which can create a sensitivity to guilt when disappointing others, or a persistent frustration at subsuming one’s own needs. Struggles with friendships and romance throughout the lifespan may engender: a persistent drive to mask to attain short-term social rewards at the expense of long-term authentic and congruent relationships; a sensitivity to feeling unattractive or low status; an uncertainty about one’s social reception and fear of rejection; and a susceptibility to loneliness, anxiety and depression.

Diagnoses common to TPs include ASD, a slow-variant of ADHD and OCD (Del Giudice, 2018), and a high likelihood of psychosocial injuries and mismatch (see: *autistic burnout*; Raymaker et al., 2020) is typically ignored, but must be assumed. The logic of

these challenges, social and otherwise, align with a variety of trade-offs. TPs cognitive style is slower, conscious and deliberative, which is useful for processing complexity, but not optimized decisional efficiency (which, it should be mentioned, sacrifices depth and complexity). This may contribute to chronic decision-fatigue and unpredictability avoidance. A need for orderliness and preparation to create a sense of comfort also makes for painful discomfort when chaos and uncertainty cannot be avoided. A negativity bias may result in processing painful social experiences in ways that generate excessive rumination, while dispositional worry and stress to proactively anticipate threats may become neurotic when real threats loom large. A “slow-to-warm-up” temperament may see lost social and relational opportunities pile up, and introverted masking in an extraverted political environment may lead to social burnout (Raymaker et al., 2020). Hierarchical environments and integrated teams may make for exhausting masking at best, and present dangerous social pitfalls at worst.

TPs occupy a moral niche where pursuing knowledge, evolving technology and maximizing ethical utility are moral goods that are fundamental to cultural evolution and the human project. Yet niches that minimize unnecessary socializing and maximize cognitive autonomy may be precious and rare, befitting these niches as typically being frequency-dependent specialists (Del Giudice, 2018; Doyle, 2020; Hunt & Jaeggi, 2022). A specific work culture or role that is non-hierarchical, egalitarian, or at least provides license for decisional autonomy may feel freeing, particularly when work politics are absent. Niche construction may be a challenge of professionalizing a special interest, which may also require no shortage of luck and optimal positioning, and social

gamesmanship like networking is rarely an ally. Many traditional capitalist niches may pose a challenge to plastic temperaments more broadly: jobs can stop being interesting or stimulating past an initial period; opportunities for growth may be limited if promotions go through middle management; long-term specialization may feel high risk if the quality of fit is not guaranteed; typically, jobs are geared for exploitation, not supporting an “orchid” for a long-game payoff. Ultimately, jobs that offer unique roles that are adjunct specialists to larger teams and organizations may be useful if they require niche skills and knowledge and allow some decisional autonomy. Thriving may be found as professionals: experts (information technologist), mechanical problem-solver (engineer), practical problem-solver (builder), knowledge authorities (teacher/professor), imagineer (writer), experimenter (scientist), and specialist (sommelier).

For all slow strategies, being in the right niche and role unlocks resilience and potential social attractiveness, and TPs may be a particularly “late-game” payoff (their niches can be deeper, and require more development) that is secure over longer horizons. The adolescent period can be particularly vulnerable to the psychosocial injuries of loneliness and defeat; unsafe environments that may create unsustainable political dynamics that load on neurotic potential. TP stabilizing needs require time spent in salient personal interests, solving meaningful problems, using and developing skills, exploring intellectual worlds, and ultimately, the niches that value and sustain these qualities through respect, safety and autonomy. An excess of stressors and impoverished supports, plus excessive social expectations, can lead to *burnout*

(Raymaker et al., 2020). In the culture of mental health treatment, TPs may be seen as strange, hyper-rational, and under-emoting people who intellectualize their problems as a neurotic defense (i.e., over-thinkers; Del Giudice, 2018). However, this would pathologize a meaning strategy that lacks the proper framing to be understood on their terms; TPs are smart, ethics-driven optimizers seeking to systematically evolve to the moral commons.

### **Part III: Biosocial Niche Dynamics**

The *extended evolutionary synthesis* (EES) showed that human beings offer a range of individual adaptations (bipedalism, opposable thumbs, language, and so on) that add up to unprecedented behavioral plasticity. This pays off socially as the group as a whole becomes more *evolvable*. Humans can cooperate, cohere and coordinate in ways that far surpass humanity's nearest evolutionary cousin, but what's more, they can progressively hone their *prosociality* through cultural evolution. A downstream consequence of prosocial selection pressures may be selection for particular kinds of roles, including generalists and specialists, but others too; for instance, the major evolutionary transition known as *complementary cognition* (H. Taylor et al., 2022) may be an early, fundamental resolution of the exploitation-exploration trade-off. Far from personality dispositions undergoing selection pressures toward a singular ideal human type, personalities may have functionally evolved as social niche specializations that are critical for adaptive group organization and change. Personalities as *social niche specializations* - for instance, social and creative roles, or knowledge and problem-solving roles - may also highlight a striking functional relationship to the trade-offs underlying

psychopathology, and account for diagnostic variance therein (Del Giudice, 2018; Hunt & Jaeggi, 2022).

To understand social niche specialization and its relationship to psychopathology, one must understand social niches, which are composed from the human social dynamics that specific roles co-evolved within. Niche-construction is where an organism actively modifies its environment to shape its own selection pressures (Laland et al., 2016), and collectively, humans have done so to tremendous success, allowing humanity writ large to adapt to any ecological niche. Individually, however, people must also construct social niches, which use only a portion of the total behavioral plasticity available to humans (Montiglio et al., 2013). Social niches are critical to avoiding excess conflict (for instance, competition in the job market) and are generally costly to change (Bergmüller & Taborsky, 2010). Evolved niche specializations are premised on this, and constrain behavior in key ways; as these specializations are largely heritable, the trade-offs involved are made in advance of individual agency. Individuals, then, are forced to find social subgroups, environments and dynamics where their strategies are prosocial to leverage success, lest they undergo negative selection pressures that may register as psychological pain and dysfunction.

In summation, human social niches may be fundamentally understood as mental health feedback about the psychological sustainability of current social conditions, and this feedback may be critically important for individuals to understand and use in optimizing their well-being. Niches in the aggregate may be atomized into a variety of discrete pathways and substrates relevant to mental well-being, while managing the

data of these substrates in the aggregate may be a life task: to curate emergent psychological sustainability by optimizing niche construction across the lifespan. However, to the extent that this feedback is real and intelligible, it is currently obscured by modern mental health which is, to reverse a quote by Garson (2022), “all pathology, no purpose” (an updated view of the potential role of biology in mental health disorders is provided in Figure 6). As a critical extension of evolved neurodiversity, we must learn to understand, and listen to, well-being feedback at this level.

### **Mental Well-being as Social Niche Feedback: Hari's *Lost Connections* model**

In section I of this chapter, we eschewed a simple and reductionist view of mental health and well-being as narrow theories of biological reductionism, or in the case of some evidence-based practices, cognitive deficits. We could just as easily extend the case of problematic reductionism to other etiological attributions: family dynamics, attachment injuries or and/or trauma have all become convenient scapegoats for the origins of all human distress. Here we will consider that a social niche is composed of multiple streams of information, actions, needs and biopsychological substrates that allow for complex, multi-dimensional meaning in life, or etiologies when it is missing. These pathways in turn track various relationships to one's social environment as feedback about their present congruence or mismatch with an ideal niche or niches, which vary across one's many intersectional identities and their multitude of niche ecologies.

An illustrative model of well-being as a social niche does not come from a social scientist, but a science journalist who aggregated key findings in challenge of the

medical model. Johann Hari (2018) wrote the book “Lost Connections” to put forth a model of eight causes for depression and anxiety that repudiate the simplistic notion of an intrinsic, uncontrollable chemical imbalance. Offering his own experience with depression, alongside a variety of criticisms of the medical model akin to those cataloged in section I, Hari then presents research for eight pathways to depression as framed by interviews with the leading researchers. Hari posited these as 8 “connections” humans, as social animals, have with their social world.

These connections are also invariably a source of depression when these relationships are severed or injured: 1) disconnection from meaningful work; 2) disconnection from other people, 3) disconnection from meaningful values, 4) disconnection from childhood trauma, 5) disconnection from status and respect, 6) disconnection from the natural world, 7) disconnection from a hopeful or secure future, and 8/9) the real role of genes and brain changes. It is worth noting that one could make compelling additions to this list – disconnection from a balanced diet, which could be framed by research on the gut microbiome; disconnection with physical activity and exercise, which could include research about the dangers of excess sitting; disconnection from sleep hygiene, which often compounds worsening mental health; and even disconnection from daily “structure,” which might speak to the background importance of environmental, social and occupational routines and roles obligations that meta-regulate all sleep and activity in the above activities, and seems to contribute to mental dysregulation (Levenson et al., 2015).

Hari’s contribution is that there are eight substrates for well-being that can be

framed as natural relationships or “connections” with the social world to coregulate our brain, mind and spirit. Alternatively, Hari’s account could be said to be a formalized model of human “meaning” where metaphysics is eschewed for the science of meaning: as an evolved, multidimensional, and physically tethered relationship with one’s environment that is purposive and socially embedded. On both counts the conceptual frame is uniquely well-suited to being modeled as an evolutionary social niche which serves as the meta-regulator of biopsychospiritual well-being. Hari flirts with the same idea by returning again and again to the conceptual framing of people as social animals: “You aren’t a machine with broken parts... You are an animal whose needs are not being met” (Hari, 2018, p. 311); and on humanity’s groupish nature: “So every human instinct is honed not for life on your own, but for life like this, in a tribe... Humans need tribes as much as bees need a hive” (Hari, 2018, p. 91). Though Hari approached evidence that suggests a causal role of these factors in depression, we suggest that framing them as an evolved social niche adds further weight to their polemic value by providing an epistemic footing for further research and development. For instance, framing the lost connections as a social niche allows us to answer Tinbergen’s four questions about the causation, development, function and evolution of each domain (Nesse, 2018), which may prove a fruitful direction of inquiry.

Let us expand on the case of “lost connections” as a key substrate of an evolved social niche by exploring Hari’s own connections.

**Disconnection from meaningful work.** Meaningful work is about the importance of a sense of control and an optimal ratio of effort-to-reward in staving off stress,

particularly in a work setting. Hari cites the work of Michael Marmot, author of the seminal Whitehall I and II studies (Marmot, 2006; Marmot et al., 1984; Marmot et al., 1991) which showed that: a) as one's degree of control over their work increased, one could predict reduced risk of depression and lower emotional distress, and b) the lower one's rank in the British Civil Service, the higher their mortality risk across multiple health metrics including angina and chronic bronchitis, because lower power makes for lower control and effort-to-work balance. Meaningful work, then, also captures factors related to social hierarchy – which reduces control and the effort to reward ratio down the social gradient - as disempowerment and social devaluation.

**Disconnection from other people.** Drawing heavily from the work of John Cacioppo, Hari highlighted his seminal work in loneliness to show that perceived, not actual, disconnection from other people was more dangerous for mortality than smoking and obesity, and predicted extreme stress, and depression through controlled experiments (J. T. Cacioppo & Patrick, 2008; J. T. Cacioppo et al., 2013; S. Cacioppo et al., 2015). Loneliness, J. T. Cacioppo argued, is a survival drive to motivate reconnection with one's tribe as a survival mechanism, but one that can backfire. He further tracks Robert Putnam's (2001) work on the loss of the “third space” in American social life, which historically included places of community gathering like churches or bowling alleys, and shows loneliness to have ballooned from social trend to Western epidemic.

**Disconnection from meaningful values.** Hari draws on the work of Tim Kasser (2002) whose “Aspiration Index” measured the degree to which someone endorsed “junk values” as a singular pursuit of materialism and social status. Higher scores

predicted higher rates of anxiety and depression, while finer grained measures revealed day-to-day experience to be oriented toward anger and despair, away from joy and meaning. This was partially a factor of being extrinsically, rather than intrinsically, motivated, with research showing that externally-motivated achievements – money and status – failed to promote lasting changes in well-being, unlike intrinsically-motivated achievements (Pink, 2018). External benchmarks for success likely had four mechanisms of toxic effect: a transactional approach to relationships, excessive social comparison, intrusive perceived social judgments, and a way of life that actively encouraged people away from the real sources of life satisfaction, meaning and connection. Consequently, Western cultural messages of a “keeping up with the Joneses” mentality become a meta-problem: while good for capitalist economics, they actively derail those individuals who fail to identify core values as a guide toward lasting well-being.

**Disconnection from childhood trauma.** Hari explores the correlations discovered by Felitti et al. (1998) from the Adverse Childhood Experiences (ACE) study, which found childhood emotional abuse to significantly predict adult depression and anxiety, and Felitti’s prior work where he discovered adult obesity was commonly a subconscious protective mechanism to avoid sexual advances due to early childhood sexual abuse. Hari’s broader thesis was that children commonly use self-blame to maintain a sense of control rather than acknowledge their fundamental powerlessness, and that a range of psychological problems may share similar pathways - ways of seeing the world that entrench maladaptive patterns of relating to the world that load on many of these other factors.

**Disconnection from status and respect.** Hari pulls from the work of Robert Sapolsky (1994; 2017), who studied baboons in Kenya for the better part of his career. Baboons organize along a strict social dominance hierarchy where absolute power allows the alpha to bully all those beneath them, while alternatively, one's absolute powerlessness allows anyone in the group to bully them (see: displaced aggression). The physiological consequences of being on the bottom of the pecking order are stress-based disorders of the endocrine system that leave no part of physical health untouched - ulcers, poor sleep, hair loss, immune system dysregulation, appetite loss, social avoidance and submissiveness, and symptoms eerily resembling depression and anxiety. At its root are two status-based problems, insecure status (which can affect anyone up and down the power gradient), and low status, with humans suffering both particularly in societies that exacerbate class inequalities. Paul Gilbert's seminal work (1992b) emphasized this view of depression as a human submission response to signal defeat in the face of conflict. In a larger context, Wilkinson and Pickett (2011) showed modern societies offer social hierarchies of unprecedented scale due to capitalist economics, which offer regular humiliating signifiers of one's lowly or insecure status, which is relentlessly primed by social media. Wilkinson and Pickett (2011) made their seminal contribution to show that at least eleven modern social epidemics - including violence, poor social trust and mass incarceration - are worsened in a dose-response fashion as power inequalities expand, including all forms of mental illness.

**Disconnection from the natural world.** This research shows that people who leave green spaces become more depressed, and people who move to them show a

reduction in depression. Other research highlights that city areas with relatively more green spaces reduce stress and depression, and those that show the clearest benefit are depressed people themselves, with a five fold increase. Human biophilia, an affiliation for our ancestral habitat, which is broadly speaking, the natural and varied earth biome, makes natural environments confer energy and resilience that can be lost in its absence.

**Disconnection from a hopeful and secure future.** Hari tracked Michael Chandler's (Chandler & Lalonde, 1998) research about the relationship between suicide among native North Americans and the loss of their way of life through culture-destroying reeducation efforts and the subordination in the confines of their reservations. The fewest suicides were among those groups who had high control over their cultural way of life, while the most were in those groups who were over-controlled by the surrounding US or Canadian governments. Connecting this with research on depression, and people who must work patterns of insecure work or who struggle to find any work at all, a thesis emerges that people who cannot find a path forward for a hopeful or secure future are at a heightened risk for depression. This echoes long-running research about the resilience-conferring effects of hope and purpose in life (Erickson et al., 1975).

**The real role of genes and biology.** Hari tracks two separate stories regarding genes and biology. The first is neuroplasticity, which dismantles the idea of a static brain defined by genes and flips it on its head, showing the brain is constantly reflecting one's changing relationship with the world. Indeed, neuroplasticity also works with depression and anxiety, but to entrench the effects of the deleterious life factors mentioned

elsewhere, transforming psychosocial factors into biology. Secondly, when gene variants do impact risk of depression, they seem to do so only in certain environments or in the face of certain adverse life experiences, questioning the nature of pathology genes akin to the work of Dobbs (2012) and Belsky et al. (2009). Most of the scholars researched for Hari's book felt that the number of people who likely had "endogenous depression" were "vanishingly small," and when asked to guess at their numbers, provided answers ranging from 1 in 20, to only a few hundred worldwide. Evidence from a study by Brown and Harris (1978) challenged the concept from another direction, showing that when efforts were made to compare patients with reactive versus endogenous depression, both groups had similar life circumstances, but the endogenous group simply did not have their life circumstances taken into account.

Hari ends with four reasons the brain-based myths might remain: a) that people may find their depression mysterious if they currently have everything they should have according to the standards of the culture, where the cultural standards themselves may be broken or inaccurate; b) that a disease-model seems as though it would reduce stigma, though evidence shows you are more likely to experimentally shock someone with a chemical imbalance than someone who is depressed for life circumstances (S. Mehta & Farina, 1997); c) it is politically challenging to suggest that the way we are collectively living may negatively impact our mental health; d) because entire industries such as pharmaceuticals are massively financially invested in the narrative status quo. Hari also mentions some implications of a possible paradigm change: people require empathy, not sympathy, because a model of universal human vulnerabilities means

depression and anxiety can affect anyone; that being “insane” is a rational response to a “mad” world; and that changing the social status quo becomes a logical consequence of biopsychosocial suffering when we understand it to be feedback about the way we live.

Hari’s model is a useful starting point for the idea of social niches as configured out of mental health feedback for a variety of reasons. First, Hari’s model draws on prominent research in their various fields, from John Cacioppo, Michael Marmot, Robert Sapolsky and others. While the biomedical paradigm de-centers these individual contributions as outliers, Hari provides an explanatory frame - a social animal perspective - to hold them together as a consilience that can stand against the zeitgeist. Second, it shows that a social niche model of mental health is, in the words of Gilbert (2019) “integrative, contextual, evolutionary and biopsychosocial,” allowing us to see people in a multi-dimensional way not just for what might be there - active injuries and adversity - but what might not be there in the form of missing resources and relationships with the social world. Third, many of Hari’s connections encroach on one another: meaningful work brings in the role of power in curtailing control and satisfaction; junk values take us away from social relationships; a hopeful future is improved by a sense of control, which is the focus of meaningful work. Each dimension is perhaps interconnected with the others, and while they should be individually understood, they must also necessarily be referenced against the larger indivisible social niche complex. Finally, each connection necessarily brings in some larger backdrop of cultural, economic and political forces as bearing on the immediate factors of a social niche. Consequently, when we speak about social niches as feedback about how we are

living, they are quite likely feedback about how we are collectively living as well, which has political implications that might help shift the conversation about mental health and social change (see: agonic and hedonic social environments).

### **Mental Health and the Substrates of a Social Niche: Mechanisms and Models**

Hari's model sacrifices data depth for persuasion and impact, which, it should be noted, is effective. It might be worth exploring some of the best contenders for mechanisms among the existing literature to formalize the model in question and bear out the implications for conceptualization and treatment. We will start with the mechanisms that highlight why there is the potential for three of Hari's lost connections to be injurious: disconnection from a hopeful and secure future, disconnection from other people, and disconnection from status and respect. We argue an understanding of the second order cybernetics concept *relational agency* (Heylighen, 2023) is key to understanding three aspects of individual human niches: the resources and injuries of goal-directedness, the resources and injuries of community relationships, and the resources and injuries of games for status and prestige.

#### ***Cybernetics: Goal-directedness, Direction and Motivational collapse***

Cybernetics is a useful science to understand how human beings might be "connected" to their environment in purposive ways. Cybernetics comes from Greek roots, meaning "to steer, navigate or govern." The field is a study of goal-directed behavior, and a branch of systems theory that explores goal-directed agents in a systemic environment. A later evolution of the field, second-order cybernetics, became important in modeling the social agency of living complex adaptive systems (Heylighen

& Joslyn, 2003). This was in part by recognizing that observers of a system (such as scientists) are organisms with goals themselves, and limit their understanding of a problem-field under observation based on their own narrow goals and models. Consequently, second-order cyberneticians began to disentangle their own goals and models as distinct from those of the research subjects, and ask questions about agency itself.

Second-order cybernetics integrates across the fragmented social sciences to build a non-reductive understanding of humans in context and in motion. While Western positivists spent much of the twentieth century modeling research subjects as objects rendered passive and pre-determined by biology, cybernetics tried to understand how goal-directedness worked: how can an organism be motivated by something that, by definition, has not happened yet? The answer has much to say about the science of “free will” or nature versus nurture, and brings a number of topics into dialogue such as autonomy, self-organization and subjectivity. It is uniquely poised to comment on human nature, mental health and well-being, as *social agency* - centered by second-order cybernetics - is what may be compromised in mental dysfunction (DeYoung & Krueger, 2023).

The cybernetic ontology for human nature and life in general is one of one of *relational agency* (Heylighen, 2023). In contrast to thinking as old as Aristotle and Newton, the universe is not composed of inert objects, but “networked agencies,” which make up every constituent level of reality from atoms, to molecules, to cells, to humans. With the advent of agent-based modeling and reactive network methodologies, there

has been progress in clarifying ideas on a way of thinking about the world as old as prehistoric animism. Organisms are both: a) interconnected networks of agents that are co-evolving and co-adapting to produce a higher-level whole or *super-agent*, and b) each is agentive in its own right, which is to say, *teleonomic*. Teleonomy speaks to organisms built for cybernetic, or goal-directed, functioning that is directed toward some ultimate attractor state, or states, reflected en masse in utopian thinking. Attractor states are qualities of the environment that draw the organism's agency toward it. In the case of organisms, the teleonomic meta-goal is *self-maintenance*, or self-propagation of one's own life process across time and space, and this organizes a variety of adaptive sub-goals: for instance, resource pursuit and threat avoidance.

Ultimately, then, purposive agency requires a goal of goals, a meta-goal that organizes all sub-goals strategically and efficiently, and that process is one of *niche construction*. Niche construction is the ultimate co-regulator of sustainable self-maintenance, where an organisms' adaptive tool kit is maximally synergistic with one's environment. In the case of humans, one's individual niche is social, made up of other social agents and symbiogenic cooperators networked into a higher agency, or *super-agent* - i.e., the agency of an emergent team, tribe or society. In summary, the ultimate teleonomic or purposive meta-goal of a relational agent is to seek a social niche-of-fit, which engages the individual in soliciting ongoing feedback about their success or failure to steer toward this progress. Humans have evolved the hard-wiring to register this feedback along a variety of key social substrates, registering success as subjectively meaningful, rewarding and sustaining; while set-backs and failures are demoralizing,

with signs of agentive collapse proving to be psychologically unsustainable when a niche-of-fit feels forever out of reach. For this reason, the default condition of social animals is to a) seek purposive agency to stave off agentive collapse (mental health issues), and b) curate relational networks to carve a social niche capable of sustaining one's agency.

**Agency and mental health.** Goal-directedness speaks to a variety of principles with respect to mental health. First, that motivation is not to be taken for granted, as it is a physical substrate which can collapse (DeYoung & Krueger, 2023). This is a departure from the stance that motivation is based on pure will, an endless resource that can only be missing due to brain dysfunctions, so we must understand how cybernetics reframes our understanding of motivation. Complex living systems like humans minimally require three components to be cybernetic: first, that goals, and their values, be physically embedded in the system, though their form may change and evolve; second, a way to represent the current state and compare it against the ideal state via feedback; third, an operator can facilitate bringing the current state toward the goal state. Note, that cybernetic conceptions of psychological goals are quite broad. They might range from goals that are subconscious and automatic (for instance, the autonomic nervous system) to conscious and deliberative; they are inclusive to constructs like needs, drives, emotions, cognitions and behaviors; and they require seeing all parts working in concert to energetically propel an individual toward an outcome across time and space to organize adaptive behavior. The physical instantiation of goal-directedness is a cybernetic cycle (DeYoung, 2015) and it includes: goal-activation (a need becomes sufficiently motivating; action-selection (a decision is made about a strategy); action

(behavioral strategy); outcome interpretation (information as feedback); goal comparison (register the success or failure of the effort).

**The embodiment of agency.** *Anticipation-control theory* (Heylighen, 2005) effectively models the brain as a physical system that embeds the cybernetic cycle. The theory proposes that the brain is tasked with a) representing the environment through patterns of sense data, which is then organized as a hierarchy of senses up through concepts as a mental model of the world, or “worldview,” b) the model is held in memory to compare it against incoming experience, c) “prediction errors” are noteworthy as they offer feedback to the model to refine subsequent predictions, d) positive outcomes to achieve, and threats to avoid, are predicted, prioritized and decided upon, e) behavior “steers” toward the positive and avoids the negative across time and space, and f) the results of success or failure are used to reinforce successful behavior or learn from failure, and generally provide for the needs and drives of self-maintenance.

A uniquely integrative theory by Hawkins and Blakeslee (2005) accounted for both anatomy and function of the brain effectively bore out the anticipation-control theory in the way the model would expect, including thinking and conscious attention being largely devoted toward prediction errors - the unexpected - as serving to refine models toward predictability. Work like this is exemplary of a broader convergence on the view of the brain as a prediction machine across neuropsychology and related fields, including perspectives outside of cybernetics (Clark, 2016). They have been bolstered by a consilience of evidence from everything from Bayesian mechanics (Friston, 2010) to

dopaminergic functioning as anticipatory motivation (Bromberg-Martin et al., 2010; Sapolsky, 2017; Schulz, 2016; Wise, 2004). The predictive brain has been useful in formalizing theories of depression, anxiety, ADHD and autism (Del Giudice, 2018) as embodying a physical relationship to expectation as a physical substrate of motivation, threat avoidance, prediction-error, and cognition.

Recall that DeYoung's cybernetic theory of personality is one where personality traits are the evolved parameters of the cybernetic cycle. The behavioral activation (BAS) and inhibition systems (BIS) work by altering orientations to goal stability (inhibition) and goal plasticity (approach). Here, there are echoes of social niche specialization - that strategy trade-offs are heritable, and therefore made in advance of individual choice - as inherited components of personality (i.e., temperament), specifically as cybernetic parameters over which one has little control. The rest of personality, called *characteristic adaptations* - where people learn goals, strategies and interpretations throughout the lifespan - is the learned component which helps refine personality and bridge the gap between temperament and the immediate social environment. Characteristic adaptations might include adopting new goals, learning new interpretations, reprioritizing sub-goals, experimenting with new strategies, and so on.

**Embodied feedback: motivational collapse.** Within this frame, DeYoung and Krueger (2023) argued that all psychopathology can be framed as a failure of characteristic adaptation to achieve important goals (in the cybernetic sense). This is true even in less obvious forms of psychopathology; for instance, while depression has

obviously been framed as a catastrophic loss of motivation, obsessive compulsive disorders' repetitive behaviors can disrupt goal-directed efficiency, while narcissistic personality disorder impedes relational goals. The authors also maintain that cybernetic dysfunction is not synonymous with "brain disorder." Many etiological pathways can impede cybernetic goal-directedness, including biological, psychological and social. Even in the case of extreme personality traits and their corresponding neural sensitivities and trade-offs - differences in motivation, emotion, cognition, and behavior - extreme trait values only imbue risk for particular forms of psychopathology, and are never pathological in and of themselves. Meanwhile, all people are at risk of *some* form of psychopathology, in that all people can have characteristic adaptations break down, leading to cybernetic compromise.

The primary shift in this equation is that we can model the conditions of cybernetic collapse as a dynamic relationship with one's environment which can be either more or less sustainable. The functioning of dopamine illustrates the basic nature of a goal-directed circuit. Dopamine is released in anticipation of a motivating outcome to facilitate energetic pursuit of a behavior, and if one experimentally inhibits the dopamine, one does not get the behavior (Bromberg-Martin et al., 2010; Sapolsky, 2017). Dopamine, then, is "gas in the engine" for an organism that releases gas in anticipation of the journey, and specifically, the rewards of the destination. From this, many implications for psychopathology follow.

First, because motivation is fundamentally tied to cybernetic expectation and prediction (again, physically embodied by representations in the brain), all people are

vulnerable to motivational collapse when there a) is insufficient positive expectations available, and b) when there is no hope of escape from psychological threats. This explains a variety of phenomena. For instance, the learned helplessness experiments, where animals without hope of escape stop trying to help themselves even after escape became possible (Seligman, 1972); and the importance of hope as a psychiatric variable (Erickson et al., 1975), as hope is motivation tied to the realistic possibility for change and achievement of important goals. It also explains why people are not realistic in sustaining good mental health, but have a delusional positivity bias because long-term realism is less important to agency than short-term motivational “fuel” (Henrich, 2016; Ratnayake, 2022; Sharot et al., 2012).

The connection between realistic goal-attainment and motivation means that attenuating the chance of success is paradoxically a demotivator. This points to a key cybernetic “injury” called *entrapment*: when one is stuck without a realistic behavioral pathway to chase the good or escape the bad, it can shut down all motivation (H. Choi & Shin, 2023; Gilbert & Allan, 1998; Gilbert et al., 2004; Griffiths et al., 2014). This becomes a pathway for cybernetic dysfunction when the loss of either a) a sense of control or b) realistic hopes for the future (i.e., motivators) predictably leads to energetic collapse, i.e., the depression of agentive collapse (see: *depressive realism*; Alloy & Abramson, 1988). By contrast, the difference between depression and anxiety may be one of probability. A high probability of a negative outcome (inability to escape a threat) or absence of a positive one (nothing to look forward to) is depression (DeYoung, 2015; Gilbert & Allen, 1998; 2001a); a less probable or controllable sense of

threat (or riskier opportunity) would be anxiety, which increases as one's chance of success becomes more uncertain (DeYoung, 2015; Erickson et al., 1975). Here, operationalizing a "sense of control" may be one's probabilistic prediction of success using their best behavioral strategies.

The nature of cybernetic or motivational collapse sketches a view of a spiral dynamic intrinsic to the nature of goal-directedness, wherein anxiety and depression increase as chances for success in important goals dwindle. The nature of this feedback loop has a variety of implications for viewing the spiral dynamics of depression and anxiety as inevitable, predictable, normal and even necessary, all in contrast to the diathesis stress model of mental health.

Let us layer onto this model the personality factors that create individual differences in the operation of this circuit. Here are three examples.

First, individuals with high trait *detachment*, may see motivational resources become "thinner" as a trade-off of decreasing reward-pursuit and increasing novelty-seeking, and this disposition may spell greater vulnerability to depression risk when a) one is generally under-stimulated and therefore motivationally sensitive to boredom, and b) by being more sensitive to the effort-to-reward calculation known in behaviorism as *ratio strain*. Ratio strain determines what degree of effort is justified for a particular reward as a "ratio" of reward size to effort. For people with fewer motivational resources, there may be greater sensitivity to goal-directed barriers of all kinds as these individuals arrive at an unsustainable ratio more quickly; i.e., they have "less gas in the tank."

Second, higher trait *detachment* may also lead to higher *openness to experience/intellect* as these individuals are more open to new information. Whereas the single-minded efficiency of a *reward-sensitive* person can lead that individual to screen out information unnecessary to their goals, a more *detached* person can be less attached to a single goal (see: *plastic*), and able to consider alternative goals, perspectives and information (see: *openness*), at the cost of motivational efficiency (see: trade-offs). However, in addition to boredom sensitivity, taking in more information may have its own risks. As increased openness leads to taking in more information and perspectives, there may be a greater risk of *perspicacity*, i.e., the ability to perceive the oppressive conditions of social systems to one's own goals, and this may increase susceptibility to *depressive realism* (Hanna et al., 2000).

Finally, novelty-seekers may also struggle with the goal selection part of the cybernetic cycle: a bias toward immediate stimulation and novelty-seeking (see: time discounting), even when in service of an exploratory disposition (H. Taylor et al., 2022), and this may make it difficult to "find a sense of purpose in life," i.e. to effectively orient to a long-term teleonomic meta-goal that can organize life's sub-goals toward a long-term moral and sustainable niche. In other words, detached people may struggle with direction in life, and this may lead to chaos on immediate thoughts, feelings and goals by failing to organize the meaning of life events relative to a long-term arc or story; i.e. create a persistent sense of meaninglessness.

In each of these three examples, the personality trade-offs made in advance of the individual's agency predictably led to risks for specific forms of psychological pain.

Critically, however, one of the lessons of an epistemic injustice framework is that despite the increased likelihood of cybernetic breakdown, personality does not equate to an inherent risk for psychopathology. The *purpose* of the cybernetic parameters is to create functional roles (see: moral psychology) and strategies (see: life history research) that are necessary for cultural evolution (see: complimentary cognition); i.e. they embody important evolutionary trade-offs.

Goal-directedness and the dangers of motivational collapse help to substantiate Hari's model as an embodied relationship to one's niche. Specifically, cybernetics helps us to understand the "lost connections" of meaningful work and a hopeful and secure future. A cybernetic frame might essentialize the embodied psychological substrate as: a) a sense of control, which is the probabilistic efficacy of a mental and/or behavioral strategy for bringing about a desired goal, b) realistic expectations of a positive outcome to either avoid a threat or pursue an opportunity, and c) a teleonomic sense of purpose as a life organizer of all sub-goals, cognitions, emotions and motivations. The more general shift underlying these propositions is that humans' adaptive capacities are as relational agents. Agents make a variety of trade-offs: they can build accurate models of the world and future to anticipate real threats and opportunities, or less accurate models that better motivate agency; they can optimize for decisional efficiency or behavioral flexibility; and so forth. Personality factors show many of these trade-offs have been made in advance, and this is normal, despite a clear role in psychopathology (Del Giudice, 2018; DeYoung & Krueger, 2023; Hunt & Jaeggi, 2022). The downside of all relational agents is that a goal-directed relationship with the world that transcends time

and space has the propensity for cybernetic collapse. As a corollary of a super-powered ability to model ideal niche conditions, one can also realistically model the real hurdles of a difficult path forward. Indeed, we might extend an argument by Henrich (2016) that intelligence is not all it is cracked up to be. Just as being less rational was more adaptive in prehistory because poking sacred cows was only a path to exclusion, seeing the world more clearly is a psycho-motivational risk as one takes on more burdens the more one "sees."

### ***Relational Agency: Community Networks, Status Hierarchies and Social/Status***

#### ***Collapse***

No agent is an island, and the relational nature of agents is that they exist in an ecosystem of interaction and social interconnectedness (Heylighen, 2023). Two of Hari's niches are social or relational in nature: the disconnection from other people, and a disconnection from status and respect. These may be said to reference two kinds of social dynamics that compose a social niche - the dynamics of intimate relationships that link to form community, which references safe trustworthy relationships and collaborative support networks; and the dynamics of status hierarchies, which can correspond to prosocial prestige and eminence, or antisocial competition and dominance. Both social dynamics have their own unique evolutionary function and development, with different dynamics that are more or less sustainable; both have unique forms of social feedback and positioning, and both share a special interplay between them.

A social ecology can be modeled as a social *complex adaptive system* (Heylighen,

2013; Preiser et al., 2018; D. S. Wilson et al., 2023) or *superorganism* (D. S. Wilson et al., 2023; D. S. Wilson & Sober, 1989; D. S. Wilson, 2023) independent of scale or complexity. Whereas other social animals have relatively fixed group sizes and dynamics, a key feature of the human story is that groups are malleable and evolvable, and cultural evolution has increasingly toyed with social dynamics, structure, complexity and group size over time. Over the last 300,000 years (Hublin et al., 2017), human cultural evolution reorganized the principles of social life based on cultural inheritances – ideas, beliefs, norms, practices, and values – which made it possible to explore different potentialities for group organization, coordination, cooperation and cohesion (Del Giudice, 2018). Early band forms of organization, based more on kinship relations, came to be reconfigured around new principles: mutualism/coalitions, exchange/reciprocity, and various forms of conflict resolution, including hawk and dove contests, division/fairness, and rights of possession (Curry, 2016). Bands of 30-50 people came to be nested into large tribes of thousands, with intermediate clans or villages of 150-200 (Del Giudice, 2018; Dunbar, 1993). This relatively rapid expansion of human social organization (in evolutionary terms) was made possible by the *human adaptive complex*, a suite of co-evolved adaptive traits – social coordination, transmitted knowledge, cause-and-effect problem-solving, tool-use, and linguistic communication – and this allowed humans to transcend to a new *cognitive niche* that dominated all other species in their respective ecologies (Pinker, 2010; Tooby & DeVore, 1987).

By playing with the form and function of human social life, cultural evolution allowed human social groups to experiment with the social order and its goals

(Christakis & Fowler, 2011). New social niches were created, and new psychosocial mechanisms evolved to support ever more prosocial group configurations (Hayes et al., 2020; D. Wilson, 2002; D. S. Wilson et al., 2023). Unprecedented group flexibility, however, necessitated the resolution of various trade-offs at the group-level, including the balance between conformity and innovation (Del Giudice, 2018), exploitation and exploration (H. Taylor et al., 2022) and generalism versus specialism (Hunt & Jaeggli, 2022). This leg of cultural evolution likely led to the systematic differentiation of cognition and personality to adapt to, or support, different sociocultural ecologies and strategies (Del Giudice, 2018). Other novel capacities allowed for the rapid re-configuration of group life: for instance, humans evolved biological sensitivities that enabled them to shift from a social life of relative independence to one of strong interdependence very quickly (see: *the hive switch*, Haidt, 2013; Wright, 2009). It follows that many of the genes associated with mental health disorders are those associated with the heritable trade-offs linked to these new capacities (Del Giudice, 2018; Haidt, 2013). One reason may have been interactive: that despite the benefit of new social roles and dynamics for human evolvability as a whole, evolutionary innovation comes at great cost to individuals. Experiments in social living make for social friction and mental anguish when they go against the grain of group life.

Some of these trade-offs may express themselves in relation to two common pathways of social organization. *Network communities* emphasize proximal relationships that propagate into webs of cooperators who can dynamically coordinate and cohere to solve different group-level problems (Christakis & Fowler, 2011). *Status hierarchies* are

typically associated with dominance in many primates (Sapolsky, 1994; 2017), but were co-opted by humans to reward valuable knowledge, skills and contributions with prestige and allow the expansion of varying role specialists – healers, artists, tool-makers, teachers and others. Network communities and status hierarchies each add something valuable to a social complex adaptive system, while creating positional challenges to social agents; for instance, the need to “get along” or “get ahead” (Del Giudice, 2018).

**Network communities.** Network communities are groups of people who are more connected to one another than to other actors in a social network (Christakis & Fowler, 2011). Within social networks, all relationships propagate outward up to six degrees of separation and three degrees of influence, and have both local (relational) and global (community) consequences that capture different qualities of life in the network. For instance, networks have *contagion* - the spread of everything from emotion to germs, money, obesity, violence and fashions - which varies based on one's *transitivity* - the degree to which one is a part of groups where everyone knows each other (high transitivity), or whether they are unlikely to know each other and be nodes that connect different groups (low transitivity). Christakis and Fowler highlighted four properties of life on the network: 1) individuals shape their network, 2) networks shape the individual, 3) one's friends affect them, 4) one's friends' friends' friends affect them, and 5) the network has a life of its own (i.e., *emergent properties*).

Such networks are the basis for cooperation, coherence and coordination, and importantly, they tend to function optimally in relatively egalitarian forms. Both excessive

power inequalities (excess aggression, competition, bullying), and excessive self-interest (free-riders, cheats, defectors as lower-levels of selection undermining higher levels) can produce a toxic effect on a groups' adaptive flexibility (Junger, 2016; D. S. Wilson et al., 2023). This has historically led to the evolution of social controls on such behavior – moral norms regulated by gossip, ostracizing, and reputation-systems – that reward prosocial behavior and punish antisocial behavior (D. S. Wilson et al., 2023). In aggregate, these forms of social control have been called a “reverse dominance hierarchy” (Boehm, 2012) as a group-selected protection on moral capital to inhibit excessive self-interest or power-seeking. Consequently, community relationships are built on mutual trust, safety, support and reciprocity, and include relationship types such as romantic partners, friendships, coworkers and allies that thrive on a “win-win” logic (Wright, 2000). These “horizontal” relations of *relative equals* (it should be noticed that status differences are normal, but constrained in healthy small band societies known to be effective in these areas; D. S. Wilson et al., 2023) are disrupted by the stress of more “vertical” power relations, which can complicate relationships with social comparison, conflict, competition, and the stress of social evaluative threat (Wilkinson & Pickett, 2011).

**Social hierarchies.** Hierarchies likely began as dominance hierarchies, where social status was conferred by the threat of social violence, and won by those most able to enforce their will in the face of resistance from others. Such hierarchies, exhibited strongly by primates like baboons (Sapolsky, 1994; 2018), have a number of principles: a) they are governed by one's *resource-holding power* (RHP) to secure social rank and

pursue higher status to access resources like food and sex in service of self-interest; b) one's rank determines one's ability to bully others - a common stress relief tactic and tool to enforce rank (see: *displacement aggression*; Chance, 1984; 1988) – meaning those at the top bully all beneath them, and those at the bottom are bullied by all above them; c) all contests and conflicts are zero-sum (or “win-lose”); a loser can reconcile with a winner by showing deference and submission following defeat, allowing the victor to attain status and the loser to remain in the group; d) rank uncertainty creates persistent stress, fear and conflict throughout the hierarchy, while low status confers the worst bullying and fewest rewards, resulting in depression-like features: stress, anxiety, social avoidance and submissiveness, hair loss, heart arrhythmias, and immuno-compromised disease susceptibility (Björkqvist, 2001; Chance, 1980; 1984; 1988; Gilbert & Allan, 1998; Gilbert & Basran, 2019; Sapolsky, 1994; 2018). One's survival is always at stake in the social games of a dominance hierarchy, as being outside the group confers a high risk of death in the wilderness, while low status is little better: a miserable life of constant bullying, no social support (grooming), no chance of mating or intimacy, and early stress-induced mortality.

Alternatively, as social interdependence and complexity increased, *prestige hierarchies* arose as freely given status to those with special knowledge, skills and expertise (Henrich & Gil-White, 2001), expanding a prosocial path for role specialists and prosocial cooperators to gain status through contributions to the group and prosocial behavior. Status evolution had shifted in evolutionary prehistory by co-opting *rank*, a mechanism of dominance, and transforming it into the “carrot” of prosocial prestige; by

the time of band-level human groups, prestige was a reward for filling a variety of prosocial roles including social roles (chiefs and shamans), crafters (potters, basket-weavers, boat-makers, tool and weapon makers), performers (story-tellers, dancers), teachers and experts (in hunting, geography; Hunt & Jaeggi, 2022; Sugiyama & Sugiyama, 2003). With the rise of agriculture and industry, the increasing stratification of society created a multitude of new niches requiring specialized skills and knowledge. A majority of successful strategies with which to compete for mates could now be based on something other than violence and domination (Del Giudice, 2018; Gilbert & Basran, 2019). Indeed, the efficacy of domination as a path to status likely decreased as social interdependence evolved, making one's good standing in the group to be paramount as early as prehistory. Competition has since been channeled into other forms such as organized sports and politics, while the adaptive value of political prowess, social intelligence, prosociality and specialism has increased exponentially (Locke & Bogin, 2006; Puts, 2010).

By the time humans reach modernity, most disputes had shifted to a new form of social capital: the goal of competition was to be perceived as having superior competency in some social role – ally, friend, sexual partner, employee, community-member, and so forth. This new currency was based on capturing social attention in an *attention hierarchy*, where one's prowess was based on their *social attention holding power* (SAHP; Gilbert & Basran, 2019). Such hierarchies better synergize with the logic of community networks and the need to maintain relationships, and thus they are compatible with people being friendly, supportive, altruistic, and prosocial. That is,

people compete for ways to provide for one another's needs most effectively or else, find new ways of providing for people's needs. Even to the extent that one is self-serving, they must appear to be friendly and altruistic to be socially rewarded with prestige, and thus, all roads end in selection pressures to strengthen the prosociality or non-zero sumness of prestige hierarchies (Gilbert & Basran, 2019; Wright, 2000). This is not the case where the social fabric has decayed; here *honor cultures* arise that revert back to dominance-based organizing principles (Booth et al., 1989; 2006; Mazur & Booth, 1998).

Prestige hierarchies offer a variety of group functions, such as organizing group-decision-making and coordination based on experience, expertise, and eminence (prosocial leadership); conflict resolution; maintaining cooperation and social order; and scaffolding the development of younger generations by motivating skill development, i.e. modeling role-based behavior and making it attractive (Gilbert & Basran, 2019; de Waal, 2013; Hunt & Jaeggi, 2022). It follows that a key prosocial psychological mechanism is a motive to curate prestige, reputation and esteem (Hari, 2018; Mahadevan et al., 2016; Zink et al., 2008), which in turn unlocks access to a variety of social, sexual and physical resources (Del Giudice, 2018; Sugiyama & Sugiyama, 2003). Accordingly, one view of neurotypes might see role-based trade-offs as broad prestige strategies geared toward specific kinds of prestige capital.

As niche feedback, one cannot easily extract prestige from feedback about community or meaningful work: a dimension of meaningful work is no doubt the prestige of prosocial role contribution, and a dimension of community is to relate to one

another based on the roles we play, and the esteem we are afforded. There has been some debate about whether self-esteem is feedback about community belonging – the *sociometer* theory of self-esteem (Leary & Baumeister, 2000; Leary, 1999; 2004) – or whether esteem is a separate form of feedback about “winners and losers” – the *hierometer* theory of self-esteem (Mahadevan et al., 2016). However, it makes sense that there would be separate substrates for the non-zero sum (“win-win”) relationships of a more “horizontal” nature versus the zero-sum (“win-lose”) dimension of “vertical” relationships. Each form of relationship has a different game theoretic calculation (Wright, 2000), has been converged at by others theorists as distinct types of affiliative and antagonistic relationships (Gilbert, 1989; 1992a; 1992b; 1995; 2000b; 2005a; 2005c; 2017), and corresponds to different neurotransmitters, peptides and hormones that play to each form of social logic (Booth et al., 1989, 2006; J. T. Cacioppo & Patrick, 2008; Mazur & Booth, 1998; Zak, 2012).

Despite the shift from zero-sum “win-lose” competition to non-zero-sum “win-win” type competitions (Wright, 2000), prestige relations are still *vertical* relations and both dominance and prestige draw on common substrates of competition and power. Though prestige supports a win-win interdependence at a community-level, individuals are often hierarchically ranked with regard to respect (Hunt & Jaeggi, 2022). The perceived zero-sumness, scarcity and opportunism of status shifts is nevertheless associated with high social stakes, and prestige competition may trigger a strong stress response regardless of whether a given social hierarchy is based on attention or dominance. *Social evaluative threat* sees stressors with a social evaluative dimension

produce high levels of cortisol and a pro-inflammatory cytokine response when compared to equivalent stressors without the social evaluative dimension (Dickerson et al., 2009). A variety of mental health related phenomena are related to the dimension of status: in a context primed by differences of power, status and respect, low status may confer biopsychosocial stress vulnerability; high status individuals may trigger deference, submission, insecurity and stress responses in lower status people; and an ongoing struggle to attain the recognition of status can lead to feelings of inferiority and marginalization, which are related to loneliness, depression, and anxiety (Gilbert & Basran, 2019). It is also the case that where people have a variety of mechanisms to detect status differences, the lines of dominance and prestige blur, and status-based psychopathology risk can be common. Social media propagates common signposts about social inequalities, and in societies with large differences in social stratification, feelings of defeat can emerge automatically from subconscious signifiers about relative status differences (see: *social comparison*), status insecurity, low status, competitive or reputational loss, and social evaluative threat (Wilkinson & Pickett, 2011; Zink et al., 2008).

**Social mentalities: meaning-systems that embody social relations.** As with goal-directed agency, there are pathways to internalize the feedback of social relationships. This has been framed by Paul Gilbert (1989; 1992b; 1995; 2000b; 2005c; 2017) as *social mentality theory* (SMT). Social mentalities are modular cybernetic systems that configure to the circumstances and goals of different kinds of social relationships, roles and dynamics. Mentalities are built for roles such as care-giving, care-elicitting,

cooperation, competition and sexuality, and Gilbert (1992b, p. 120) frames their function as creating “a nucleus of meaning around social interaction.” Social mentalities directly correspond with the major dynamics of social life – i.e. goal-directed acquisition, community networks and social hierarchies – or else with the various roles one plays within them, i.e. care-givers and receivers. We can surmise social mentalities have co-evolved alongside social roles and group dynamics; mentalities offer a psychological suite for preparing, attending, processing and strategizing for the social logic needed for common social challenges and situations. For instance, the cooperative mentality prepares one to think in terms of non-zero-sum outcomes, emphasize belongingness, and think in terms of social ethics and morality; the competitive mentality prepares one to think in terms of one’s place in the hierarchy, zero-sum wins and losses, and conflict escalation.

Aspects of mentalities correspond to cybernetic systems, including a) a biosocial goal, b) an information-processing algorithm, and c) a behavioral strategy, which simplifies the cybernetic cycle to the three broad domains of psychology: affect, cognition and behavior. However, these are not inseparable: biosocial goals energetically orient an individual toward a class of goal; cognition recruits feedback to steer toward progress in one’s goals; and behavior implements a strategy of pursuit across varied circumstances and terrains. Most mysteriously are biosocial goals in the domain of affect. Biosocial goals refer to what Del Giudice (2018) called *motives*, which are distinct from *emotion*. Biosocial goals or motives are “biologically significant goals” which humans are evolutionarily prepared to pursue in a need/drive dynamic. Biosocial goals

help one position themselves to achieve social success or avoid failure depending on the salient social role or context (Gilbert, 1992a). Alternatively, emotions are modular, transient and responsive, flexibly modifying the goals set by motives in temporarily activated states to rapidly coordinate subordinate mechanisms of perception, attention, memory, learning and physiology (Tooby & Cosmides, 1990; 2008). For most purposes, emotions can be classified into three basic systems which modify one's mentalities at any given time, energizing or de-energizing one's motives: a) one of positive affective system that is stimulated by seeking and acquisition (see: the *behavioral activation system*), b) one of negative affect that is stimulated by threat and avoidance of social danger (see: the *behavioral inhibition system*), and c) a positive affect system for safety and affiliation (see: *rest and digest*; Gilbert, 2014). Thus, while emotions are more transient and context-dependent, biosocial goals are enduring *evolved social motivations* (Gilbert, 1989; 1992a; 1992b; 2005a; 2005c; 2014) that compose the basic needs and drives of human nature. Outside of CFT, little of the literature has addressed a therapeutic role for biosocial goals.

Biosocial goals motivate strategies in pursuit of specific classes of social goals and roles. They do so in response to social needs – such as safety, respect and control – which orient biosocial goals to the social information and strategies required to meet immediate social needs, as well as long-term strategies to attain *social positions* (for instance, becoming pair-bonded, ingroup positioned, or of high social status). This basic feedback loop has proven such a reliable proxy for social success, it is likely a proxy for evolutionary success, and one need not reference a separate reproductive logic as a

measure of “fitness” (Gilbert, 1992b).

Such biosocial goals are likely tied to the basic functioning of neurotransmitters, neuropeptides and neurohormones, which act as energetic resources in service of specific motives. Contrary to common assumptions, these biological systems can be modified: a) based on social learning that shapes one’s predictive model of the world, as biological substrates are cued based on anticipated actions in one’s environment (see: cybernetic agency), and b) through social feedback that activates states to modify these neurotransmitter/goal systems directly. This latter system is perhaps least expected, as biological agency with regards to mental well-being is often framed as unidirectional and genetically-determined by the medical model. In contrast, biosocial goals incorporate a direct pathway from social input to the modification of key biological systems (see: *social injuries*). Specific mentalities solicit forms of salient social feedback using rule-governed algorithms to determine success or failure according to the type of biosocial goal, feedback that is registered automatically and subconsciously (Leary, 2004; Leary & Baumeister, 2000; Mahadevan et al., 2016; Zink et al., 2009). Thus, human beings embody cues of social success or failure as different energetic states that feel either positive and energizing, or negative and de-energizing, creating a physical substrate for social meaning with nuanced consequences for well-being. Gilbert (1992, p. 121) sums up the relationship with mental health succinctly: “Hence the need for love, a sense of belonging and purpose make life meaningful and are associated with positive affect. While rejection, a loss of social place and marginalization can make life seem meaningless and are associated with negative affect.” In other words, biosocial goals

help invert a common mental health assumption: bad biology does not make someone depressed and irrationally socially pessimistic; normal biology makes someone sensitive to social struggles, which depresses physiology, and feeds back into social struggles in unsustainable ways.

### ***Biosocial Niche Resources: Energy, Meaning, Strengths and Resilience***

The operation of biosocial models sets up a key understanding of the internalized resources of internalized social experiences, and the costs as directly related to their injury or absence.

*Social baseline theory* (SBT) frames these costs and resources in ways that are useful. The brain is seen as having a “social baseline” because it assumes proximate access to biosocial resources as a baseline for a social creature (Beckes & Coan, 2011; Coan & Sbarra, 2015). These expectations for social support and high-quality relationships discount the perceived costs of the environment. For instance, if a subject is bio-energetically taxed and then asked to assess the expected difficulty of climbing a specific mountain, the mountain is perceived as further away and steeper; however, when standing next to a friend, the mountain is perceived as closer and less steep (Schnall et al., 2008). The brain’s resources, then, are endogenous, bound in physiological, cognitive and neuropsychological mechanisms, yet they are co-regulated by proximity, access and expectations of a supportive social milieu. Cues of support include physical touch, but include more abstract relational processes as well. Within the brain, the feedback of social interdependence, joint attention and shared goals operate as “indistinguishable” from physiologic resources like glucose, and are

considered prerequisites for optimal functioning and normal effort discounting. Inversely, attenuating one's access to these resources strains cognitive and physiological loads to provide both acute and chronic stress and distress, including emotional de-regulation, as the loneliness literature attests (J. T. Cacioppo & Patrick, 2008). Further, one's perception of themselves as having access to social, and therefore endogenous, bio-energetic resources can shift individuals either toward strategies of general energetic investment, or those of energy conservation. In summary, bio-energetic and emotional coregulation is physiologically tied to one's social positioning and access to social resources.

Here we will explore three examples of neurotransmitter, peptide and hormone systems as a way of understanding the "bioenergetic resources" of different social experiences and their effect on well-being, as well as ways of curating such energy for resilience. These resources correspond to the logic of different forms of social mentalities, and by extension, the supportive resources of a social niche as a social baseline. Importantly, the goal is to be able to frame goals of well-being in terms of pursuing a range of niche-based social relationships and roles – a balanced social life – that can optimally co-regulate one's bio-energetic resources, while also deconstructing narratives about one's relationship to their biology that create helplessness, hopelessness, stigma, defeat and alienation (MacDuffie & Strauman, 2017a; 2017b).

For our purposes, we will consider how these substrates feed off of specific social feedback for better and worse. This information can be used in a variety of ways, including validating, externalizing and universalizing nuanced social experiences and

their “costs” as contributors to negative affect, social injury, and spiral dynamics that end in depression, anxiety or other “defense disorders” (Del Giudice, 2018; Gilbert, 2014).

We will frame these classes of social experience as having four kinds of positive benefit when present and regularly rehearsed: they b) act as internal resources in energizing behavior, c) confer specific psychosocial strengths, d) confer resilience, and e) feel subjectively good and meaningful in ways we associate with optimal mental well-being. Alternatively, their absence or injury can induce spiral dynamics by reversing these four benefits (see: next section). Consequently, we can distill three types of rules, experiences or dynamics for energizing behavior associated with resilience, and three kinds of experiences and states that are associated with a range of psychopathological states. We will consider what this means in terms of the “cost” of both a lack of resources, and an increase in allostatic load from stress and traumatic stress in the next section. We will then consider the goals of attaining resources and the therapeutic encounter, as well as framing experience in ways that frame relational agency to re-energize deleterious states of anxiety and depression. Finally, we will emphasize the importance of framing ultimate attributions to validate unsustainable conditions, frame sustainable conditions, and create purposive goals as moral contributions toward social sustainability.

**Dopamine bio-energetic resources: motivation & curiosity.** Dopamine functioning corresponds to what Gilbert calls the “seeking and acquisition” domain of positive affect. Positive affect within any mentality is attained by reasonable expectations of attaining a salient goal-state (reward), which is tied by embodied states

of motivation as it feeds off of a realistic path to goal attainment. This corresponds to the basic neural pathways of hope and faith, as positive expectations energize psychosocial resources in the present. Motivation is proportionate to one's perceived probability to successfully achieving a given goal, a phenomenon illustrated by dopamine "ramping," i.e. when dopamine is released in anticipation of attaining a goal separated by space and time, and increases with increased proximity to the goal-state (Berke, 2018). In other words, dopamine is a resource that provides more motivation the greater one's chance of success in the goal being pursued, so hope and faith are optimized when they have some probabilistic relationship to the real world (McGuire-Snieckus, 2014). This also means that dopamine functioning *captures one's relationship to their goals*. Inversely, dopamine is blocked by perceived barriers – of time, effort, resources or distance – to a reward. This is illustrated in the behavioral phenomena called *ratio strain*, where the ratio of rewards to effort is "strained" when there becomes too much work for not enough reward. This is studied by neuroscientists as an "effort-to-reward" imbalance, or the automatic perception that a goal is "too much work" to be "worth it," as one becomes demotivated in their thoughts of pursuit. Therefore, dopamine firing also *captures one's barriers to, or distance from, their goals*. Ratio strain leads to perceiving the environment as more costly, and harder to navigate, which can act as a physiological demotivator; when barriers stack as accumulating demotivators, this feeds back into the cybernetic cycle, putting all goals further out of reach. In this sense, dopamine has an inborn downward spiral dynamic we can call *motivational collapse*.

Dopamine has another function in its relationship with learning. Dopamine firing rates respond to violations of expectations about expected rewards relative to encountered rewards. A positive *reward prediction error* (RPE) occurs when a reward is better than expected, and dopamine the firing rate increases. A negative RPE occurs when a reward is worse than expected, and the firing rate decreases. The system shows no change by simply attaining a reward that is exactly as expected. Scholarship has tended to view this as a reinforcement learning signal, but an updated view sees that as only one function in a broader category: midbrain dopamine neurons respond to “salient” events that include unexpected rewards, but also novel stimuli, aversive stimuli, and highly intense visual and auditory events, while suppressing activity when these are not present (Horvitz, 2000). The more general function, then, is to orient individuals to “salient,” i.e. requiring one to be “response-ready” for good or ill in the environment. That includes cognitive novelty, which may or may not have value, and depending on one’s environment or cognitive strategy, may signal new opportunities for rewards, strategies and information that may be worth the opportunity costs (Del Giudice, 2018; DeYoung, 2015; H. Taylor et al., 2022). Thus, the brain also optimizes for not just for known rewards, but for exploring for new opportunities: opportunism might include rewards, but also, information-seeking to update prediction models (i.e., curiosity), threat-responsiveness (responding quickly when taking risks), and a general preparation for ecological unpredictability. Thus, dopamine also *captures a relationship to unpredictability and the unknown*, including *motivating curiosity to pursue the unknown* in search for information to update predictive models.

Importantly, individual differences in dopamine functioning seem to trade-off the relative value of exploiting known rewards and resources against the value of behavioral flexibility, which allows one to explore for new and potentially better information and strategies (DeYoung, 2015; Humphries et al., 2012; Keeler et al., 2014; Natsheh & Shiflett, 2018). The latter corresponds to individual trait *novelty-seeking*, which is geared toward reward-independent exploration and behavioral flexibility (Li et al., 2017; Natsheh & Shiflett, 2018). The former is the trait *reward sensitivity or reward dependence*, an opposing pole to novelty-seeking which favors activity that has been established as rewarding (the former; DeYoung, 2015; Li et al., 2017). While conventional wisdom is that one ought to balance these trade-offs against one another (Natsheh & Shiflett, 2018), it is also thought that extreme poles therein may make for cognitive specialists (H. Taylor et al., 2022). Alternatively, environmental cues may help shift strategies, as the overall balance of tonic firing may be set by the average reward rate in one's environment as a capture of the relative risks and opportunity costs of exploitation versus exploration (Costa et al., 2014). Much of this can be synthesized with a relatively simple dopaminergic mechanism to capture this trade-off in the brain, which involves a balance of activity between the dopamine receptor subtypes, the “phasic” D1 receptors responsible for “preparing” potential actions, and the “tonic” D2 dopamine pathways responsible for “selecting” behaviors from the prepared options (Keeler et al., 2014). Dopamine genes that reduce tonic activity or over-activate the D1 pathway may push people toward an exploration strategy by tipping the balance between these systems (Keeler et al., 2014; Sethi et al., 2018), while high tonic dopamine activity is

associated with an exploitation strategy (Humphries et al., 2012). This has a range of implications including creating more perceived options for decisions and making decision-making, including exploration strategies being relatively less efficient but more flexible to change, biasing one toward proximal rewards while reducing long-term motivation, and creating a “boredom sensitivity,” capturing just some of the trade-off costs and benefits (Keeler et al., 2014; Malkovsky et al., 2012; Natsheh & Shiflett, 2018). This also goes some way to explaining the exposed dopamine deficit hypothesis of ADHD as an exploratory strategy (M. S. Gold et al., 2014).

Dopamine functioning thus captures two potentially diametrically opposed relationships to the environment, one to exploit resources through the rewards of behavioral-pursuit, the other to explore for stimulating novelty by satisfying curiosity in realms of imagination, intellect or curiosity, i.e. information-pursuit in service of behavioral flexibility and social contribution (DeYoung, 2015; H. Taylor et al., 2022). However, one could equally frame another trade-off in dopaminergic functioning, between cognitive realism, which helps one achieve real-world success through accurate problem-solving and goal-pursuit, and cognitive idealism, which creates a bias toward delusional optimism as a way of creating psychosocial resources in the present, such as a positive state of mind and embodied motivation, willpower and resilience (McGuire-Snieckus, 2014; Sharot et al., 2012). Such trade-off dynamics can be equally extreme, with excess idealism becoming so delusional as to jeopardize basic survival or mental health (McGuire-Snieckus, 2014), while other evidence shows a positive mindset also confers some survival benefit (see: positive psychology); indeed, evidence suggests

that early cultural evolution was built on delusional beliefs that helped coordinate large groups (Henrich, 2016), and to the extent that such beliefs were “delusional”, may alternatively be framed as biasing entire groups toward shared psychosocial resources (Coan & Sbarra, 2015). Regardless, within a given individual, one is always trading off the need to be accurate, which may make carry downside risk of perceiving numerous demotivating barriers (see: depressive realism; Alloy & Abramson, 1988; Hanna et al., 2000), versus the need to delusionally bias toward the positive as a way to curate psychological positivity and its various embodied resources (Sharot et al., 2012). Given that insufficient positive affect can lead to motivational collapse and behavioral inertia, both dimensions of this trade-off must be considered with equal survival value, and various strategies and cognitive specializations that lean toward one or the other (see: openness to experience vs openness to intellect), must likewise be valued.

Let us review the four ways in which dopaminergic energy is a cognitive and social resource for sustaining positive affect.

*Dopamine energizes behavior.* Dopamine energizes motivation toward goal-directed behavior and information-seeking behavior, which is critical to enacting important adaptive behavior.

*Dopamine feels good (and meaningful).* While dopamine used to be considered a “pleasure chemical,” more recent research suggests it is more associated more with “wanting” than “liking.” The association with dopamine and pleasure may instead be the subjective pleasure of being energized and motivated towards one’s goals, as states of excitement, hope and control. The positive affect of stimulation-seeking is associated

with joy, fun, pleasure, humor & exploration (DeYoung, 2013).

*Dopamine is a resource/psychosocial strength.* When one is positive, optimistic and hopeful, or stimulated and engaged, one can draw on states of willpower, persistence, drive and tenacity. Dopamine, and by extension, the social experiences that provide it, is a *bio-energetic resource* that confers *psychosocial strengths* which facilitate further goal-directedness or novelty-seeking, i.e. dopamine provides “fuel for one’s mental gas tank.”

*Dopamine confers resilience.* When one has positive affect of phasic or tonic dopamine activity, one can inhibit negative affect and stress, including more bio-energetic resources with which to employ more sophisticated coping strategies and embodied strengths.

The bio-energetic resource of a hopeful and secure future, or meaningful work, is

about energetic resources, strengths, resilience and pleasure that makes life

meaningful, while the world can injure these same pathways in ways that require

understanding, validation, externalization, normalization and re-energizing.

Identification of the classes of intrinsic motivation that can be satisfied to confer resources, meaning, energy, and resilience, allows one to be strategic in curating a social niche. At the same time, by understanding when such resources are damaged or cut-off, we can validate or justify the pain of compromised role-functioning for the purposes of healing. As an added level of control, this knowledge is useful for curating energizing experiences, as well as shaping one’s predictive model to provide greater anticipatory resources (i.e., increased hope and control). We can recenter the importance of hope as

a key therapeutic variable (Erickson et al., 1975) – the physiological energization of behavior via a realistic path to a long-term supportive niche – while “hopelessness” suffers from the lack of such a vision or resources. Alternatively, unpredictability and uncertainty are deleterious because they engender a lack of control, which cuts through resources with worry and anxiety, and reduces motivation; tools and strategies are needed that increase control at this important level.

**Oxytocinergic bio-energetic resources: safety & connection.** Oxytocin is a bonding chemical, initially recruited during child-birth to bond mother to infant in an attachment bond. Children will develop a secure and safe base with which to explore the environment when set up correctly, and will become distressed when out of proximity to attachment figures. Children who are deprived of this bond can undergo a failure to thrive and develop a range of psychopathological outcomes including autism-like symptoms, persistently dysregulated HPA axis, stress dysregulation, face-blindness, and an inability to respond to trusting physical contact or social pleasure from a primary attachment figure, among others (Cochran et al., 2013; Fries et al., 2008; M. A. Mehta et al., 2009; Nelson et al., 2011). Social and monogamous species show significant amounts of oxytocin in the reward centers of the brain, while more solitary species do not (J. T. Cacioppo & Patrick, 2008). *Oxytocin captures a need for social connection.*

As people age, oxytocin bonds transcend mother-infant connections to support all significant friends and relationships, and social baseline theory suggests it should subsume attachment theory as a broader frame of how and why all intimate relationships provide social co-regulation (Beckes & Coan, 2011; Coan & Sbarra, 2015).

Indeed, oxytocin may scale to support the functioning of entire network communities, increasing social alignment by using the neuropeptide as a social glue. Apes spend ten percent of their social life grooming one another to facilitate social bonding and stress reduction to facilitate “social harmony” (J. T. Cacioppo & Patrick, 2008). Weddings see oxytocin levels surge after a ceremony, not just in the wedding party, but in a radiation out through family, friends and guests, moving down a gradient of effect the further one is from the bride and groom across their social networks; the bride sees the highest oxytocin rise, then the bride’s mother, the bride’s father, and finally the groom (whose rise in testosterone inhibits some oxytocin relative to the bride’s family; Zak, 2012).

Oxytocin may also be a key biological mechanism that flips a “hive switch” turning relatively independent people into a highly interdependent superorganism, by facilitating de-individuation – where individual identities fall away and one begins to feel connected to “something greater than themselves” – during mass events like raves and communal dance (Haidt, 2013). *Oxytocin captures an ingroup effect*, as evident that a rise in oxytocin not only increases trust in a relational partner, it increases suspicion of those framed as an outgroup (De Dreu et al., 2011).

Oxytocin is recruited for non-physical bonds in the establishment of all relationships built on psychological trust, safety and connection. The chemical is part of a constellation of psychosocial mechanisms in the brain such as mirror neurons, which track micro-expressions and body language for signs of comfort and social feedback, as well as a representational brain, which models one’s self-concept as “extended” by relational partners: an individual “budgets” bioenergetic resources as if familiar others

were part of the self (Noakes, 2007), while the brain responds to threats directed at connections as if they were directed at oneself (Beckes et al., 2013; Coan & Sbarra, 2015). Oxytocin machinery works in concert to model social interdependence physically in the brain *across barriers of time and space*.

Oxytocin acts as a socially co-regulating, “win-win” feedback loop. As one engages in a virtuous cycle of positive interactions, bonding activities and relational depth, oxytocin increases feelings of attachment and connection through a sense of *trust*. Studies showed trust can be experimentally induced using oxytocin: in ultimatum games where a person can give their money to an anonymous stranger to have it tripled, and then the stranger decides how much to give back to the investor, oxytocin overrides the rational fears of cheating and betrayal (see: the *prisoner’s dilemma*); and across variants of the experiment, oxytocin infusion can lead both the investor, and the anonymous stranger, to be more trusting and generous (Kosfeld et al., 2005; Zak, 2012). Indeed, the handshake likely evolved as a basis for cooperative intergroup trade to lubricate cooperation across social divides, in part by overriding rational fears of defection in both partners, and creating sufficient bilateral trustworthiness – moral behavior – to make intergroup trade possible in human prehistory (Zak, 2012). Consequently, trust is a potent dynamic at the heart of oxytocin’s effect, creating subjective rewards of peace and comfort while turning down perceived social danger, as a win-win outcome of social attunement between two people. *Trust and trustworthiness are embodied resources that facilitate connection and psychological safety.*

The win-win of oxytocin occurs through a virtuous cycle of psychosocial

attunement. As psychosocial feedback of intimacy, openness and authenticity is reciprocated in both partners, these conscious and unconscious social cues trigger peptide release that iteratively facilitates further connection. The rewards are two-fold: a gain in resources, rewards and resilience, and a decrease in psychological costs.

Oxytocin calms the threat-sensitive amygdala, inhibits fear-conditioning, and quiets social fears and worries; importantly, oxytocin is also a potent stress inhibitor, as the traumatic stress of loneliness can attest, causing significant impairment social cognition and leading to paranoia and agoraphobia in extremis. *Oxytocin reduces physiological and perceived social danger.* Concurrently, oxytocin activates the “rest and digest” system promoting a subjective sense of peace, calmness and comfort; oxytocin also primes the release of dopamine and serotonin, which increases social motivation and social pleasure, while desensitizing social threat (J. T. Cacioppo & Patrick, 2008; Gilbert, 2014; Zak, 2012). Oxytocin also increases pain tolerance, and improves social cognitive capacities: it upregulates social attention (screening out non-relational distractions), increases facial recognition, sensitizes social cue responsiveness, and facilitates social openness and generosity. *Oxytocin improves a harmonious sense of connection that makes the world feel safe and manageable, but only during states of interdependence.*

Consequently, one can make a bold claim: psychological safety is a relational construct. For instance, the data about who gets PTSD on the battlefield also implicates a strong social valence. It is not simply those who are exposed to the violence of war who become traumatized, but those who feel unable to help their comrades, or have a childhood trauma that affects their ability to form trauma bonds, or those who lose the

comrades they were trauma-bonded to, or those who feel connected to the innocents who lose their lives (see: moral injury), all of whom are at a far higher risk of developing trauma (Junger, 2016). Some trauma research suggests that the acute psychosocial damage of trauma is to drive a sense that the world is unsafe which compromises the ability to feel safe in relationships, impairing both the relationships and the ability to socially co-regulate. This process becomes a self-organizing feedback loop that can prevent the ability to feel trust and safety, injure and disrupt important relationships, and impair social coregulation. As stress rises, social motivation falls away, a protective impulse takes over, hypervigilance is reinforced, and social stress cues repel others, all of which puts social connection further out of reach the longer the spiraling continues (J. T. Cacioppo & Patrick, 2008). *The downward spiral of oxytocin is the traumatic stress of social collapse.*

There is an evolutionary reason for why psychological safety and peace are facilitated through relationships: if you set up the stress system in this way, humans presented with a stressor will be naturally oriented to seek social support as a subconscious physiological stress relief tactic (Kikusui et al., 2006; H. Taylor et al., 2000), and this serves to bring people together in times of duress. In human prehistory, stressors often came in the form of rival outgroups, where it would be useful to rally with allies to protect children and mount a defense (Crockford et al., 2017; S. E. Taylor et al., 2000). This is a passive stress system in the body works, the *tend-and-befriend* response, and it makes stress regulation, including one's global sense of threat in the world, a measure of one's connectedness in their social environment. Indeed, one's

likelihood to both recover from, or grow from, a traumatic social injury like bullying, has everything to do with whether they are soothed directly following the encounter, a process called *social buffering* (Carnevali et al., 2020; Crockford et al., 2017; Heinrichs et al., 2003; Kikusui et al., 2006). *Stress- and threat-management are relationally managed.*

Loneliness shows a different side to the same dynamic – when insufficient social connection is registered through low oxytocin levels, a switch flips wherein individuals prepare for the harsh reality of life outside the protective embrace of the group. The result is a physiological cascade across bodily systems: the immune system shifts away from socially transmitted diseases toward a proinflammatory bacterial defense against potential physical wounds; sleep dysregulation and heightened vigilance; loss of social attention and increased social suspicion from the heightened sense of danger, and a variety of other downstream self-regulatory consequences (J. T. Cacioppo & Patrick, 2008). The *social collapse* of trauma and loneliness can look very similar, in part because a social distancing can self-organize in both the victim and their social network, as self-protection self-organizes into a spiral dynamic where one avoids social influences, or repels them, making it increasingly difficult to disrupt the cycle of self-organizing loneliness. In sum, *oxytocin captures a need for trust and safety through relationships as a basic orientation to perceived threat which is encountered socially by a social species; the loss of relational co-regulation can be framed as an increased exposure to negative threat stimuli, and the absence of protective factors to social thriving.*

A note on individual differences. By disengaging *reward sensitivity*, as is implicated with neurodiversity, one creates the strength of *openness*, but may

compromise the trait *agreeableness* to varying degrees. The result is less social motivation, which can impair a) the motivation to connect, b) the ease with which one feels connection, c) the stability of the perceived connection, and d) the effort associated with connecting. This general profile of introversion, which DeYoung suggests should be rebranded as *detachment*, may also make for a dispositional struggle with relational co-regulation in times of adversity or due to trauma. Neurodiverse people may generally struggle with co-regulation and effort-discounting because all relationships feel “higher barrier” to maintain, leading to a profile of fewer, richer relationships (greater *transitivity* in social networks), but also one of potentially greater precariousness if these few relationships become strained or in times of duress. A further note. Most neurodiverse social “deficits” have less to do with absolute, then relative, differences. Research shows autistic people can be effective conveyors of information, and that social deficits go away in congruent communities where authentic communication styles and perceived differences are reduced (D. Price, 2022). In this way, *oxytocin captures the environment of connection*, and whether one can connect in their preferable style.

Let us review some ways in which oxytocin is a social and cognitive resource for sustaining positive affect:

*Oxytocin energizes behavior.* Oxytocin motivates trustworthiness and generosity, as well as social motivation and pleasure by priming the body for dopamine and serotonin, which inhibits social threat. Social motivation is critical for the openness, curiosity and good humor on which relationships thrive, and the motivation to maintain

these relationships to rehearse baseline social resources like social safety and effort-discounting.

*Oxytocin feels good (and meaningful).* Oxytocin feels subjectively calming, comforting and peaceful. It inhibits social danger to maintain the rewards of staying in this space. It reinforces the feeling through dopamine to enjoy someone's company and make it motivating to pursue, as well as to get the well-being of turning down threat-perception.

*Oxytocin is a resource/psychosocial strength.* Oxytocin facilitates states of trust and safety by creating the psychosocial resources to attain them. It motivates trustworthiness, openness, dynamism and generosity, which are socially attractive, and inhibits stress reactivity, which can socially repel others. Oxytocin creates the motivation to pursue and rehearse relationships to secure future security and safety. Oxytocin is a *bio-energetic resource* that confers *psychosocial strengths* which facilitate further relationship building.

*Oxytocin confers resilience.* Oxytocin inhibits stress reactivity and calms the fear centers of the brain, while priming the body to share the resources of others which creates effort discounting; i.e. makes the world feel more manageable in the face of stressors.

The bio-energetic resource of a relationship with friends, allies and intimate relationships is about energetic resources, strengths, resilience and pleasure that makes life meaningful, while the world can injure these same pathways in ways that require understanding, validation, externalization, normalization and re-energizing. Identification

of the spheres of relationship – intimate, friend, ally and community – that can be satisfied to confer resources, meaning, energy, and resilience, allows one to be strategic in curating a social niche. At the same time, by understanding when such resources are damaged or cut-off, we can validate or justify the pain of compromised role-functioning for the purposes of healing. As an added level of control, this knowledge is useful for curating energizing experiences, as well as shaping one's predictive model to provide greater anticipatory resources (i.e., increased connection and belonging). We can recenter the importance of relationship and belonging as a key therapeutic variable – the physiological energization of peace and comfort – while “hypervigilance” suffers from the perceived danger of social threats absent the social resources with which to counter them. Tools and strategies are needed that increase control at this important level.

**Serotonergic bio-energetic resources: esteem & respect.** Serotonin is a neurotransmitter that moderates energy allocation in support of behavioral inhibition, emotional stability, self-regulation and defense-oriented motivation systems. There is a logic to the systems coordinated by serotonin functioning, and why they are also associated with social status, confidence and self-esteem.

First, Serotonin facilitates a cognitive “brake” that acts in conjunction with a “drive” system to create behavioral flexibility: the ability to both pursue desired goals and avoid negative outcomes (see: *behavioral inhibition system*; BIS). A cognitive brake is engaged automatically when there is an uncertainty regarding the relative risk of danger and reward, and this is a useful way to passively avoid danger by creating an

automatic risk-avoidance system (Del Guidice, 2018; Gray & McNaughton, 2000). The brake operates in part by inhibiting emotion, which is why those who are high in serotonin are associated with emotional self-regulation and self-control, but at the personal cost of higher emotional inhibition and shyness. *High serotonin captures behavioral inhibition, both voluntary (self-control) and involuntary (shyness).*

There are two versions of trait neuroticism corresponding to extreme differences in threat sensitivity, i.e. high and low basal serotonin. A highly attuned *withdrawal* system, for instance, is a *passive avoidance* system lowers the threshold for an individual to automatically inhibit their goals, interpretations and strategies in the face of uncertainty or error (DeYoung, 2015; Gray & McNaughton, 2000). Alternatively, a sensitive *active defense* system is associated with trait *volatility*, which more easily triggers a “response-ready” activation of the fight-flight-freeze-fawn system (FFFFS) in the face of conflict and adversity. These in turn correspond to the extreme high and low poles of serotonin functioning as geared toward passive avoidance (BIS) or being response-sensitive (FFFFS), and are heavily implicated in individual personality differences (Del Giudice, 2018; DeYoung, 2015). Of the two, the behavioral inhibition system (BIS) is the less well known. The BIS is a risk-averse approach to “*avoidable danger*” (Gray & McNaughton, 2000, p. 113) which is to say, “*avoidable social danger*” among members of a social species facing social stressors. The BIS works to generally promote a security motivation by upregulating anticipatory anxiety around scenarios that are seen as punishing (bad for goals) or threatening (cues for punishers; Del Giudice, 2018). In other words, the BIS works to generate fears of social rejection,

status- or role-loss, humiliation, defeat, entrapment and so on, and it seems a prime culprit in fueling existential angst and worry combined with an overactive profile of thought and imagination, and in high conflict or stress environments. All of these, in turn, are threats to positive goal-directedness, and specifically, a sense of *hope as opportunity*: a sense of possibility that one's life path might realistically find a meaningful, rewarding, and sustainable life, where the positives reasonably outweigh the prevalence of threats and punishers. Meanwhile, those with a less sensitive BIS may be less haunted by existential woes and a pessimistic outlook (less of a negativity bias toward the future), but more prone to situational moodiness, irritability and anger, but with a more generally positive outlook. *Serotonin captures an anticipation, and avoidance, of risk, danger, threat and punishment.*

Finally, bringing these together, higher levels of serotonin are associated with greater emotional stability, self-control, inhibition and risk-aversion, as well as reduced *time-discounting* - i.e. a preference for delayed reward (Del Giudice, 2018). Lower levels of serotonin are associated with greater emotional instability, reduced self-regulation, impulsivity and risk-proneness, as well as higher time-discounting, i.e. a preference for immediate gratification. It would be tempting to see this as a spectrum of pathology, but from a cybernetic perspective, these are adaptive profiles suited to different environments: those that trade-off the need for goal persistence against goal flexibility. Unstable environments with fleeting opportunities and unpredictable risks favor a response-ready, risk-tolerant flexibility at the cost of self-control, stability and reactivity. More stable social environments require delaying gratification to build up *embodied*

*capital* (socialization, training and knowledge suited for social roles) over time, and this recruits greater emotional self-regulation in service of cooperative goals (DeYoung, 2015; Digman, 1997; Saucier et al., 2013), at the cost of higher emotional inhibition and risk-aversiveness (i.e. temperamental reservedness). In other words, serotonergic differences are implicated in the differences between fast and slow life history strategies (Del Giudice, 2018). The fast strategy uses less emotional stability – more emotional reactivity – as a trade-off for greater goal flexibility and opportunism, as this creates ecological responsiveness at the cost of social self-control (DeYoung, 2015; Digman, 1997; Saucier et al., 2013). The slow strategy uses emotional stability to conserve existing goals, interpretations and strategies in support of goals across bigger time horizons while avoiding the risk of opportunism. *Serotonin captures individual differences to preferentially relate either to the present moment (fast strategy), or to the past and future (slow strategy), depending on whether threats and punishers are received as more or less stable.*

Serotonin is often considered a neurotransmitter related to “feeling good” because it is associated with mood regulation, sleep, appetite, and overall well-being. However, much of this benefit may come from the way serotonin deactivates the cognitive brakes when threats and punishers are taken to be well in hand; that is, to be manageable, predictable and controllable. When negative outcomes are predicted to be unavoidably bad, motivation can be “withdrawn,” which is to say, one’s cognitive brake inhibits motivation (DeYoung, 2015). When negative outcomes are uncertain relative to positive ones, uncertainty generates anxiety, inhibition and avoidance (Gray &

McNaughton, 2000). Alternatively, the absence of threat – and by extension, the absence of threat-sensitivity – is associated with a stable, manageable mood. The question is: if one can never live a life free of threat, what can convince the brain that one's stressors are in hand? A plausible mechanism is a form of control one gets from *social esteem*, which is itself a proxy for various kinds of social status (Mahadevan et al., 2014) as social prestige, attention or dominance.

Social status is calculated automatically from an algorithm that gathers signifiers of social esteem and rank from social feedback (see: *hierometer*; Mahadevan et al., 2014; Zink et al., 2008). Social status is processed automatically by the brain, and can up- or downregulate mood even when participants are manipulated so that social status carries no real social information. In a study by Zink et al. (2008), participants were told they were playing a game against bots, so social status differences were meaningless, and their scores were arbitrarily allocated to be doing better or worse on a scoreboard. Participants attended this data and EEGs revealed evidence of physiological consequences, depressed mood and affect, and psychological pain centers being activated in the losing condition; the inverse was observed in the winning condition. This holds true across social hierarchies in monkeys, lobsters and humans, where higher serotonin levels are correlated with high status and self-esteem and confidence, and low serotonin was correlated with low social status and esteem (Raleigh et al., 1984; Wright, 1995). However, as with dopamine, low basal serotonin may instead motivate stronger esteem-seeking behavior, and so individual differences correspond to more (slow strategies) and less (fast strategies) *stable* serotonin levels.

Serotonin levels thus fluctuate based on social feedback about social status as a proxy for general threat exposure in several ways. First, one's social status predicts the frequency and intensity of threats, social and otherwise, that people might be vulnerable to given their reputation, and depending on whether one is in a stable or unstable hierarchy; for instance, in a stable hierarchy, threats may decrease as one achieves higher rank, while in unstable hierarchies, bullying threats may decrease while status-challenging threats increase (Booth et al., 1989; 2006; Mazur & Booth, 1998).

*Serotonin captures the landscape of threat.* Second, one's social status can offer a protective quality when status and reputation are a proxy for social resources that one can draw on to mitigate those threats; for instance, greater access to money or alliances to protect one's station. *Serotonin captures one's resources to deal with threats.* Finally, status is social feedback about our perceived competence and prestige, which in turn energizes confidence as a resource to deal with threats either directly or indirectly; i.e. respect is a social signal that we have useful skills to directly deal with threats, or indirectly by providing a social contribution that can be exchanged for support to deal with threats (i.e., *social capital*). *Serotonin captures one's perceived self-efficacy.*

In summary, threats occur when people navigate social scenarios where role performance is evaluated or conflict outcomes are assessed, and a person can fail and lose station; when an individual succeeds despite these threats, serotonin is boosted as a “level up” or “win” signal to capture how the social landscape has changed in the way it makes the world seem less threatening and thus, more rewarding. *Serotonin captures our esteem, confidence and place in the prestige hierarchy as feedback about*

*how threatening – or not threatening – the world may be given our station.*

As prestige exists on pyramid-like hierarchies, we can say that *serotonin is capturing one's vertical relationships in their respective groups* (see: hierometer; Mahadevan et al., 2014). However, there are multiple paths to vertical ascendance, and serotonin captures them all. For instance, one pathway is likely the “win-win” of prosocial prestige that comes from membership in, and contribution to, an interdependent community. We see this reflected in the functioning of oxytocin to prime the body to release serotonin (along with dopamine; Zak, 2012) as a threat and stress reducer, and the partial mediation of self-esteem from group belonging (see: *sociometer theory*; Leary & Baumeister, 2000). Following an episode of bullying, for instance, a defeated animal that is immediately soothed and groomed shows far less risk of converting social defeat into a pathological state, and here, the phenomenon called *social buffering* likely reflects a signal that there has not been a catastrophic loss of status or ejection from the group altogether (Carnevali et al., 2020). However, there are at least two other kinds of relationship to vertical social dimensions and stress mitigation. One is an increase in personal control, confidence and decisiveness related to victories in win-lose contests. The substrate devoted to the competitive games that ensures moves in status and prestige involves testosterone. Testosterone operates as a rough proxy to facilitate game-playing to promote win-lose social status in a zero-sum fashion: testosterone rises, and stress decreases, in those who win a competitive contest against an evenly matched opponent, while the inverse is true for the loser, who sees a rise in stress and a decrease in testosterone. This is called *the winning effect*

(Booth et al., 1989, 2006; Mazur & Booth, 1998) which brings about the bioenergetic resources to make subsequent wins, and motivation to pursue them, more likely.

*Serotonin captures one's self-efficacy to bring about a win*, as critically, the winning effect is not observed when the outcome is determined to be one of chance. In group competitions, not only does this phenomenon extend to whole teams that win as found in a variety of studies of sports competitions, it also holds for the fans of the winning team (Bernhardt et al., 1998). In this way, zero sum "wins" can extend to non-zero-sum teams when one team beats another in a zero-sum fashion. In women, this mechanism works much the same, with some nuanced difference: testosterone rises in a team of female soccer players but rises are arrayed based on the popularity of players on the team, with the most popular receiving the highest boost, which likely *captures the self-efficacy of the group as a whole. Testosterone thus captures the stress relief of embodied confidence when one bests another in a competitive game – including games to win the relative prestige from superior expertise in a prosocial domain* (i.e., best teacher) – where self-efficacy is captured as a decisive, calming and confident energy. However, it should be noted that different kinds of "wins" are more or less sustainable. Wins through dominating others, or bullying, builds conflict and jeopardizes prosocial reputation, while wins through exploiting others does the same. Ultimately, the most sustainable source of confidence and esteem, where skill-based wins align with freely given respect and esteem, are those where one plays a win-win role in a community, one that need not be zero-sum, and thus is also less threatening and more secure.

While social esteem and confidence can be built up through games for status,

both prosocial and win-lose in nature, the mechanism of subconsciously and automatically seeking feedback about one's social esteem as a proxy for confidence and threat-stress amelioration is one that can backfire. Loss collapse might be a way to speak of scenarios characterized by excessive social losses, loss of hierarchical positioning or significant defeats that create an internalized state of mental defeat, all of which compromise further game-playing and social positioning which prevent further wins. The bullying literature bears this out as one that drives uncontrollable perceptions of one's inherent unattractiveness and un-intelligence, while others note the role of defeat in engendering an uncontrollable inner critic (Björkqvist, 2001; Gilbert, 1992b; 2005a). All of these send stressors which in turn send status information that can be received and reflected disrespectfully, which reinforces the effect of seeking to avoid status- and competition-priming scenarios, further putting wins out of reach. *Serotonin captures an unsustainable dynamic wherein loss of social games and positions can feed back into further losses through loss collapse.*

Let us review the four ways in which serotonergic energy is a cognitive and social resource for sustaining positive affect.

*Serotonin energizes behavior.* Serotonin energizes confidence and self-esteem toward games for prestige and dominance (testosterone), which is critical to playing those games and attaining those positions. When someone suffers losses as the inverse of the “winning effect,” one is not only de-energized, they will look to avoid games for status or social scenarios where status and prowess are primed (Booth et al., 1989, 2006; Mazur & Booth, 1998).

*Serotonin feels good (and meaningful).* While serotonin is often framed as a “happiness” chemical, it is likely more associated with social feedback about social success of a “social win,” which confers raised status, more resources, fewer threats, and consolidated competencies with which to maintain what was gained. The subjective feeling of social esteem is one of social respect internalized as self-respect, and a sense that this confers social security, communal significance and social deference to role-based skills, expertise and leadership (DeYoung, 2013). *Serotonin can capture one’s service to the community as a source of social security.*

*Serotonin is a resource/psychosocial strength.* When one wins or rises in social status, one is decisive, confident, calm, deliberate and focused, even as stress levels decline. When one suffers a loss, pain centers of the brain are activated, affect is depressed, further competitive or status-primed scenarios are avoided. Serotonin is a bioenergetic resource associated with social wins – the “winning effect” – that are not only necessary to get more wins, but that predict doing so. Serotonin makes gains in esteem through wins of competition or role-performance more likely, and helps consolidate the competencies of self-efficacy.

*Serotonin confers resilience.* When one has the positive affect of an assuaged serotonergic system, one can inhibit stress and negative affect – volatility, impulsivity, reactivity, and aggression – which then positions one to use more prosocial, long-term, sublimated coping strategies and embodied strengths. The “winning effect” suggests this state is not only necessary to beget further wins, it predicts it, which by definition, creates a resilience to conflict or threats of loss.

The bio-energetic resource of a relationship with status and respect is about energetic resources, strengths, resilience and pleasure that makes life meaningful, while the world can injure these same pathways in ways that require understanding, validation, externalization, normalization and re-energizing. Identification of the classes of zero-sum, non-zero sum, and personal “wins” that can be satisfied to confer resources, meaning, energy, and resilience, allows one to be strategic in curating a social niche. At the same time, by understanding when such resources are damaged or cut-off, we can validate or justify the pain of compromised role-functioning for the purposes of healing. As an added level of control, this knowledge is useful for curating energizing experiences, as well as shaping one’s predictive model to provide greater anticipatory resources (i.e., increased confidence and control). Helping to curate energetic resources can benefit both positive mood and personal self-efficacy, while understanding the vulnerable and unsettling psychological states that occur as normal responses to social threats can help to normalize them and stabilize spiral dynamics. Tools and strategies are needed that increase control at this important level.

#### ***Biosocial Niche Injuries: De-energization, Pain, Liabilities and Vulnerability***

The costs of biosocial models come from social experiences that deny, injure or sever social resources, and open one to a variety of costs – de-energization, pain, vulnerability and psychosocial liabilities – that confer spiral dynamics. These costs are predictable, and exert their influence in the experiencing, and subconscious anticipation, of these classes of events. An important implication is that these may be etiologically neglected pathways that account for some of the most mysterious and intractable

dimensions of mental ill-health. Importantly, the evolutionary mechanisms outlined herein are psychopathological because they sabotage conscious self-regulation, but can be ameliorated contextually and relationally. We will further explore the interaction of these mechanisms as *niche dynamics* in the next section.

**Entrapment: incentive disengagement, reverted escape, depressive realism and loss of hope.** Because motivation and curiosity are connected to goal-directed behavior, conditions that inhibit goal-directed behavior are injurious to the psychological resources of hope, control and faith as they are connected to one's expectation of a positive or secure future. *Entrapment* is a moderately significant antecedent to depression that comes from a sense of being "stuck" in negative life circumstances despite fantasies of escape; entrapment is mediated by hopelessness -- a reduced motivation to act and pessimism about the future -- and a lack of cognitive control to affect change (H. Choi & Shin, 2023; Gilbert & Allan, 1998; Gilbert & Irons, 2004; P. J. Taylor et al., 2011). Related challenges include traumatic stress of a catastrophic loss of control, or the anticipatory anxiety of predicted threats to goals and opportunities.

There are a variety of interwoven phenomena that combine in a sense of entrapment, all of which have substantiating evidence that are beyond the scope of this review. In a study by Dixon and Fisch (1998), a chair was fixed to the floor during an interview where subjects were asked stressful and challenging questions that resulted in *arrested flight*: minimal facial expressions, averted eye gaze, and reduced environment scanning, similar to defense behaviors in other animals. In Seligman's (1975) *learned helplessness* experiments, dogs were presented with uncontrollable aversive stimuli,

which led to failure to pursue escape when the opportunity arose. The learned helplessness depression model for humans, based on the perceived uncontrollability of events, has been useful in predicting influences on low mood, and comparing the biological and psychological effects between helplessness and depression (Gilbert & Allan, 2001). *Resource allocation theory* emphasizes that the brain normatively invests energy into those strategies and goals with the most plausible vectors of success, and de-energizing those options with little hope of payoff; data suggests that changes in social circumstance can re-energize behavior when new options become plausible (Nesse, 2000; Nesse & Williams, 1996). *Incentive disengagement theory* aligns with resource allocation theory, in that depressive states are facilitative of a necessary disengagement from strategies that will not pay off to allow switching to more adaptive courses (Klinger, 1975; 1993); indeed, commitment to goals that are impossible to achieve is associated with worsening depression. Role commitments are a type of ongoing goal that pays off proportionately to one's investment while being costly to change; *sunk cost theory* (Leahy, 1997; 2000) suggests that when rewards drop off in a bad career or relationship relative to expectations, one can feel stuck and become depressed. Finally, *depressive realism* is when people accurately perceive the barriers to escaping a negative situation such as an oppressive social environment, which then curtails the biopsychological resources necessary to overcome their circumstance (Alloy & Abramson, 1988; Hanna et al., 2000); depressive realism flips cognitive behavioral assumptions by suggesting that sufferers are more realistic in appraising negative social situations relative to controls and it is their realism about their barriers that is

demotivating; however, this can lead to cognitive distortions as the iterative effects of low mood create progressively more unrealistic forms of pessimism and helplessness.

All of the existing non-social theories of depression (for a review, see: Gilbert, 2001a) can be accounted for as injuries to the balance of a cybernetic system that tethers psychological resources like motivation and control to a) anticipated positive outcomes or b) the avoidance of negative ones. However, while these models suggest that biological mechanisms arrest one's ability for self-determination, the ultimate antecedents are non-biological - it is one's relationship to their social world that injures a biological substrate. Dopamine functioning likely has an inbuilt Catch-22: *the greater one's barriers in life, the less resources one has to reduce those barriers*. Consequently, one can reach invisible critical thresholds where one's relationship to the social landscape of goals becomes precipitously *unsustainable*. The various non-social theories of depression capture the different dynamics of motivational collapse as different paths to breakdown between a person and their functional relationship with all goals that span time and space: being trapped in an aversive situation; the loss of motivating options; the need to facilitate disengagement from faulty goals; a commitment to impossible paths; being stuck in roles, relationships and scenarios that have become under-rewarding relative to the investment; and/or accurately perceiving one's barriers to one's thriving or escape.

Indeed, depression in small amounts may be functional and adaptive: by facilitating the disengagement from goals that no longer serve us, or roles and relationships have become unrewarding, or when the costs of change are high,

depression is a “letting the fields lie fallow” that helps create space to form new motivating visions and paths. *Healthy depression is the need to analyze what is not working and form new, high-level goals that require discovering goal options, development of goal paths, and investment, all while motivational reserves are temporarily impaired by the lack of an organizing vision, slowing the process.*

This functional depression, however, sets the stage for a mechanism like motivational-control to backfire under a number of conditions, leading to the spiral dynamics of motivational collapse. For instance, when the presence of negative barriers or an absence of positive options generalize across multiple mentalities, punishers and threats can eclipse motivating hopes and rewards across goal-systems. This is likely a key mechanism of internalization in moving external barriers to an internalized state. The result is a ratio of effort-to-reward that may become strained across life domains, and total collapse (i.e., clinical depression) can ensue. *Motivational depression can occur from generalized barriers that self-organize into a self-reinforcing dynamic.* Alternatively, when one sees collapse or ratio-strain across a few mentality domains, one may become more reliant on existing goals and a risk for addiction can appear. As some goals become less rewarding, and other goals are sought for motivational resources and become disproportionately reinforced as a result, major niche connections are lost and a single reward system becomes over-reinforced. This is a person looking for all of their motivational resources in the anticipation of a single niche type, which then becomes a motivational pathway to addiction. *Addiction can self-organize from an imbalance of niche goals.* Finally, when one sees a lack of opportunity in long-term goals relative to

immediate gratification, one can reinforce short-term thinking as a means to avoid feelings of long-term helplessness; as an entrenched bias toward being in the moment, this imbalance prevents one from working toward curating a long-term niche.

All of these dynamics interact with neurotype factors. Neurodiverse people may be generally disposed toward immediate gratification from reduced reward sensitivity, which can further bias one toward immediate stimulation and away from the long-term (however, autism can compensate for this with a motivation to avoid stressors that engenders long-term thinking). This can make long-term positioning difficult to engage and work toward. ADHD in particular may be more susceptible to general niche imbalance across domains. Novelty-seeking can lead one toward diverse forms of unsustainable social situations particularly when one is outside a stable niche to curate novelty sustainably. The result may be moving from imbalanced situation to imbalanced situation, which reinforces short-term immediacy to the exclusion of long-term niche construction. As an interactive social determinant, capitalist economic factors only support neurodiverse contributors after they find a monetizable contribution, which rewards those who are either already privileged, or those who finish their niche exploration and experimentation with enough time to position themselves for success while they still have early access to developmental supports. For the majority of neurodiverse people, who require a longer-developmental process to find an idiosyncratic niche, this is insufficient and unsustainable. This is a non-exhaustive list, but in general, neurodiverse niches are harder to attain support and resources for, and this may create high barriers that reinforce all forms of imbalance and risk for anxiety

and depression.

Let us review the four ways in which entrapment is a cognitive and social drag on sustaining positive affect.

*Entrapment de-energizes behavior.* The loss of dopaminergic motivation from the loss of pathways to change or escape, shuts off cognitive motivation, preventing the ability to position oneself in ways that could facilitate escape. In addition to avolition, the inability to be motivated, entrapment leads to anhedonia and the inability to feel pleasure which reduces reward anticipation (Gilbert & Allan, 1998). There is a lack of exploratory behavior, increased behavioral avoidance, and reduced social dominance.

*Entrapment is painful (and feels meaningless).* Anhedonia and low mood are common and produce a range of subjective effects, from events washing together without any emotional gradient to distinguish the good from the bad, as well as a lack of positive affect with which to buffer negative outcomes, leading to baseline sadness and irritation. A sensitization of the FFFFS and a potential for dissociation may emerge from a catastrophic loss of control and a persistent sense of being overwhelmed. Nothing feels worth pursuing, enjoyment and purpose feel alien and out of reach.

*Entrapment saps resources/is a psychosocial liability.* Entrapment leads to an internalized state of helplessness and hopelessness. This is mediated by a lack of cognitive control which can compromise self-efficacy (H. Choi & Shin, 2023). A general de-energization of one's affect leads to a loss of motivation and social pleasure, which leads to performance issues in roles and relationships; for instance, there is a reduced threshold whereby the effort-to-work ratio becomes imbalanced and motivation is lost

(Gilbert & Allan, 1998). A lack of positive affect is considered a social liability (Shackman et al., 2016).

*Entrapment confers vulnerability.* The inability to motivate in the face of stressors leads to role and relationship failures that give rise to real world threats, while the loss of social performance can lead to loss of support in the face of those threats (J. T. Cacioppo & Patrick, 2008). Increased stress burns through neurotransmitters, and can further erode motivational resources (Gilbert, 1992b). A variety of restorative processes are disrupted, including normal sleep, appetite and weight changes, while activity in the amygdala register a loss of control as mood instability.

**Isolation: loneliness, alienation, and a thwarted need to belong.** Because peace and comfort are connected to social connection and belonging (J. T. Cacioppo & Patrick, 2008; Zak, 2012), experiences that leave one feeling isolated, alienated or rejected are injurious to the psychological resources of safety, trust and prosociality as they are connected to one's expectation of relationships and community. *Loneliness* is "the aversive state that results from discrepancies between the relationships one has and those one desires" (J. T. Cacioppo & Patrick, 2008). Loneliness is a moderate predictor of depression as a form of alienation (J. T. Cacioppo & Patrick, 2008; Hari, 2018) that typically comes from that perceived isolation of having an insufficient number of relationships that are satisfying, congruent and authentic. In this sense, isolation is not necessarily an absence of people, nor is it the absence of relationships, but a lack of secure relationships where there is perceived authenticity, depth and congruence (J. T. Cacioppo et al., 2009). Loneliness is mediated by social barriers to high-quality

relationships, individual differences in vulnerability to isolation, one's ability to self-regulate the social and emotional challenges that follow, and the ability to manage the effects on one's cognitive representations and expectations about the social world (J. T. Cacioppo & Patrick, 2008). Related challenges include the traumatic stress of enduring loneliness, or the anticipatory anxiety of abandonment and rejection.

There are a variety of interleaving mechanisms to loneliness that combine to create perceived isolation, which cannot be explored in depth here. Gilbert (2001a) reviewed the *attachment theory* of depression as occurring when individuals suffer major losses to figures of support and affection. The experiments by Harlow et al. (1965) highlighted the significance of such figures, as baby chimps presented with food or a terry cloth simulacrum of a care-giver, chose the caregiver. Bowlby's (1969, 1973, 1980) work highlighted the protest-despair reaction, where initial protestations are designed to signal distress to motivate the mother's return, while despair registers the failure of distress by deactivating the behavior, a useful "hunker down" response in a potentially dangerous environment. However, as is consistent with social baseline theory, the broader dynamics of social abandonment are germane. Brown and Harris (1978) found that lack of support and attachment losses were social antecedents to depression. John Cacioppo (J. T. Cacioppo & Patrick, 2008; J. T. Cacioppo et al., 2009; J. T. Cacioppo et al., 2013; S. Cacioppo et al., 2015) has explored the multiple reinforcing "levels" to the loneliness phenomenon. First, individual factors include the degree to which one inherits a high or low need for social connection, and their sensitivity to social pain. Loneliness creates significant social pain and stress, even as it attacks the ability to cope

with the emotions and stressors of feeling isolated; the longer the loneliness persists, the more restorative functions of sleep and self-soothing are dysregulated. The fundamental solution to loneliness is the ability to entice people to make a connection, which requires an autonomous and cooperative act from another person, and this becomes degraded the longer one is lonely. The chronic stress of loneliness sends social signals that repulse social actors, and the resulting cognitive disruptions impair social performance. Social motivation and social pleasure ultimately collapse (oxytocin-primed dopamine activity is inhibited), and self-protective behaviors self-organize into a threat-sensitive hypervigilance and paranoia which further isolates the individual. Social cognition self-organizes around unhappiness, pessimism and anticipation of threat, which can lead to unfair, defensive and reactive attributions of negative social motivations to others, which further burdens social connection and reciprocity. As the ability to regulate (and co-regulate) stress decreases, the perception of threats and stressors increases, and actual stressors - from exploitation of vulnerability to the lack of allies in troubling times - rise in an unsustainable spiral dynamic.

Loneliness as a social cause of depression is related to the injury and withdrawal of positive support systems that co-regulate stress and restore health. In other words, loneliness is a depression from a lack of positive social factors rather than the presence of adverse factors. Loneliness injures relational feedback loops that tether psychological resources - safety and trust - to the presence of positive co-regulating relationships, and the absence of social threats. There are biological mechanisms involved in the depression of loneliness that inhibit rational thought, social insight, positive affect and

self-regulation, but these are ultimately accounted for by non-biological origins - social isolation or alienation are antecedents that etiologically impair biological substrates like oxytocin functioning. These biological mechanisms can be seen as having an inbuilt Catch-22 that predictably leads to undesired outcomes under fraught social conditions: the more one needs a cooperative, intimate partner to co-regulate stressors and threats, the harder it is to entice a prospective person to do so (J. T. Cacioppo & Patrick, 2008). One can further extrapolate an invisible critical threshold where one's relationship to the social landscape becomes precipitously unsustainable. We might call *social collapse* the tendency toward a spiral dynamic that occurs when the internalized consequences of negative social conditions make it harder to create or maintain the social networks that are needed to restore balance. These self-organizing liabilities include: a) the loss of the ability to self-regulate and self-soothe; b) the loss of social motivation and social affect; c) the loss of social cognition and social reasoning; and d) the loss of the ability to manage stress and threat defenses.

Much of the adverse consequences of loneliness result because social pain and its various effects are adaptive at small scales: manageable social pain protects individuals from social isolation by motivating reconnection in small amounts in small time horizons (J. T. Cacioppo & Patrick, 2008). *Healthy loneliness is the need to evaluate what is not working in one's relationships and social networks and repair injuries therein by fostering social attention, motivation, generosity, gratitude, forgiveness, graciousness and trustworthiness, in part because a lack of social reserves increases the salience and value of social resources, engendering social sensitivity and*

*attunement* (J. T. Cacioppo & Patrick, 2008; Leary, 1999; 2004).

This functional negativity and social sensitivity, however, sets the stage for socially co-regulating psychological mechanisms to backfire under a number of conditions, and potentially, to the spiral dynamics of social collapse. For instance, when the presence of negative disruptions or the absence of positive social signals stacks across relationships and life domains, a general sense of isolation and alienation can self-organize and disconnection becomes internalized. A generalized feeling of social disconnection, self-protection, lost social motivation and sense of social danger, can preoccupy one in their relationships with hypervigilance about further social threats, further impairing existing connections and resyncing. The inability to talk about, normalize, validate and center this dynamic within relationships may further impair the potential of communication to feel understood, or to harness social resources with which to problem-solve.

*Disconnection depression can occur from generalized barriers that self-organize into a self-reinforcing dynamic.* Alternatively, when one feels they can only be themselves, or safe, within a certain kind of relationship, they may let certain types of relationship atrophy, neglecting important kinds of support and resources for the future. Alternatively, when one feels incongruent at an identity level with many of the communities around them, they may become isolated in a crowd, which is real isolation premised on invisible psychological variables. *Relational imbalances may emerge from the dynamics of safety and threat.* Finally, phenomena such as agoraphobia and paranoia may be uniquely understandable from within the iterated feedback loop of internalized isolation, as paranoia reflects an emerging state of vigilance to social threat as

a switch to a solitary mode of survival, while agoraphobia is the self-organization of collapsed social motivation and heightened self-protection. *Extreme forms of psychopathology are etiological endpoints of protracted self-organizing niche imbalances.*

All of these dynamics interact with neurotype factors. Neurodiverse people may generally be disposed toward social barriers of an invisible, psychological nature, leading to perceived disconnection, alienation, lack of social rewards, increased energetic demands from social performance, and risk of social punishment from norm-violations. This increases the barriers, costs and threats of social milieus relative to their rewards, which may engender a generalized loss of social safety, loss of social motivation, anticipated sense of threat and punishment, and difficulty with social positioning. Much of this is offset by ideal social positioning in congruent communities, but the ability to do this successfully may be dependent on early access and development of such networks, lest self-organizing barriers impede the ability to identify and access these communities and relationships later in life. ASD may struggle to find congruent communities early in life, which can lead to a failure to develop prosocial skills, reciprocity and sensitivities, though evidence suggests this is possible in congruent communities where norms allow people to connect in the ways they feel comfortable, around specialty knowledge and interests (D. Price, 2022). ADHD may struggle due to greater social sensitivities and threat-reactivity, coupled with chronic experiences of rejection, exclusion and feelings of being different, which activate the spiral dynamics of social collapse more quickly and easily. For instance, *rejection sensitive dysphoria* (RSD; Beaton et al., 2022; Berenson et

al., 2009; Bondü & Esser, 2015) sees a traumatic stress reaction lead to dysphoric states at a relatively low threshold. In both cases, the ability to identify paths to community and healthy relationships can be developmentally disrupted, and identity development may also be impaired. This non-exhaustive list shows that a minefield of social factors may generally impede niche-construction due to the difficulty of finding congruent supports and communities, and navigating hostile cultures that are normed and valued incompatibly leading to social punishment, all of which may present unsustainable developmental influences that can self-organize early in life.

Let us review the four ways in which loneliness is a cognitive and social drag on sustaining positive affect.

*Isolation de-energizes behavior.* Loneliness de-energizes social behavior needed to synergize with others, which in turn is necessary to create bonds that facilitate openness, generosity and reciprocity, de-energizing those as well. Oxytocin primes the body for dopamine, a proxy for social motivation, which can collapse in the face of chronic loneliness (J. T. Cacioppo & Patrick, 2008; Zak, 2012); this is reinforced by a rise in stress, which induces self-protection and social avoidance.

*Isolation is painful (and feels meaningless).* Loneliness is associated with social pain (J. T. Cacioppo & Patrick, 2008). Amygdala activation depressed mood leading to sadness, fear, irritability, and rumination. Pain thresholds are lowered. A lack of oxytocin disinhibits stress, sensitizes the FFFFS, and increases norepinephrine. Negative affect prevents the enjoyment of social experiences, and hypervigilance fixates on threatening content that generates widespread social fears and a “spreading” of threat-perceptions.

The world feels disconnected, unsafe, and hollow. Overeating (sugary foods) and increased substance use are common coping strategies.

*Isolation saps resources/is a psychosocial liability.* The inability to reciprocate social cues is a social liability that repels prospective partners; the inability to register trust and safety creates a stressed and vigilant preoccupation that others find disconcerting. States that emerge from connection - openness, generosity and prosociality - are difficult to access, even if they are typically considered personal values. Stress and fear cloud social cognition, misattribute social motives, and prevent constructive thinking and problem-solving. There is a loss of attentional control, goal-persistence, and confidence in social skills (J. T. Cacioppo & Patrick, 2008). People are more desperate, impulsive, defensive, punitive, and biased toward the negative, while being less generous.

*Isolation confers vulnerability.* The inability to access states that de-escalate the stress response can induce a spiral dynamic that compounds as one a) perceives more stressors, b) copes with them less well, and c) induces more real stressors in an environment with diminishing support (Cacioppo & Patrick, 2008). Loneliness creates a pro-inflammatory state associated with a range of disturbed health factors, including increased risk of viruses. Cardiac health, blood pressure and sleep quality are impaired.

**Social defeat: humiliation, subjugation, and a thwarted need for status and respect.** Because confidence and self-esteem are connected to social status and competitive games (see: *hierometer*; Mahadevan et al., 2016; Zink et al., 2008), conditions of humiliating loss or subjugation are injurious to the psychological resources

of security, risk-taking, and decisiveness as they are connected to expectations of one's respect and good standing. *Social defeat* is an experience of being dominated, humiliated or devalued following a hostile social interaction in a group setting, despite resistance, and particularly as it carries real or perceived injury to one's social standing or positioning (Björkqvist, 2001; Hollis & Kabbaj, 2014; Oh, 2015; Sapolsky, 1994; Selten & Cantor-Graae, 2005). *Mental defeat*, as internalized social defeat, is a moderate predictor of depression from a feeling of powerlessness (Gilbert, 1992b; Gilbert & Allan, 1998; 2001; Hari, 2018; Hollis & Kabbaj, 2014). A state of defeat involves perceived inferiority, unfavorable social comparisons, submissive behavior, loss of ambition, low self-esteem, and intrusive self-criticism typically following social losses or lost social station (Gilbert, 2001a). The phenomenon is mediated by social barriers to competitive performance (for instance, immigrants lacking support or increased competition in urban environments; Selten & Cantor-Graae, 2005), individual differences in status-seeking (see: assertiveness aspect of extraversion; DeYoung, 2015), one's ability to self-regulate the social and emotional challenges of defeat, and the ability to manage the effects on one's cognitive representations and expectations about their induced perceptions of inferiority and self-criticism (Gilbert, 1992b; 2001a; 2001b; Gilbert & Allan, 1998). Related challenges include the traumatic stress of multiple defeats (Hollis & Kabbaj, 2014), the vicarious defeat of watching another person be defeated (Carnevali et al., 2020), or the anticipatory anxiety of competitive and status-primed environments.

There are a variety of levels to the phenomenon of social defeat that combine to create the experience of feeling subordinated against one's will, which cannot be

explored in depth here. Gilbert (2001a) reviewed the *social rank theory* of depression as similar to the attachment theory of depression, in that it occurs in a social context (intragroup conflict), has social consequences (submissive withdrawal and behavioral inhibition) and is mediated by communicated social information: who has gained or lost rank. A complimentary frame for defeat is as a form of conflict stress, where the communicated social information is about who is the victor or loser in a competition, typically where the loser's submission signals fail to end aggression from the victor (see: *arrested flight and suppressed anger*; Björkqvist, 2001; Gilbert, 2001a; Gilbert & Allan, 1998). In animals, defeat has been studied in the "resident intruder" paradigm, where an animal is let into the cage of another and allowed to dominate the latter in a period of non-lethal conflict; the resulting biopsychosocial consequences for the loser have been mapped onto the bullying literature in humans where there are striking parallels between human bullying and social defeat in macaques, baboons, rats and pigs (Björkqvist, 2001). A single defeat experience can result in profound bodily changes from elevated heart rate and blood pressure, stress-promoting adrenocorticotropin hormone and hyperthermia, other lingering effects: changes to body temperature rhythms, retarded growth, sensitization to stressors more broadly, reduced testosterone and increased anxiety (Hollis & Kabbaj, 2014). Chronic defeat (4-10 days of defeat encounters) adds layers of marked biobehavioral changes: anhedonia, social avoidance, submissiveness, hyperphagia (insatiable hunger), reduced exploration, locomotion, and sexual behavior; changes to thermoregulation, immune system functioning, cardiac and circadian rhythms, serotonin metabolism and receptor binding,

to name a few (Hollis & Kabbaj, 2014). Authors have noted that symptoms of defeat are a near match for major depressive disorder (Hollis & Kabbaj, 2014), and the subjective experience of defeat is a more powerful predictor of depression than hopelessness (Gilbert & Allan, 1998). In humans, a variety of cognitive, behavioral and social consequences commingle in people who feel defeated: loneliness, depression, high anxiety, reduced self-esteem, increased submissiveness, social withdrawal, unpopularity among peers, feelings of being a failure, feeling wrongfully unintelligent and ugly (i.e., potent self-criticism), poor academic achievement, a subjective feeling of maladjustment, and grave dissatisfaction with school and peer relations (Björkqvist, 2001; Gilbert, 1992b).

Social defeat as a social cause of depression is related to abuses of power, or loss of status and respect, in the face of futile defenses; this leads to dysregulated defenses, motivation, self-esteem, communication and help-seeking behavior (Gilbert, 2001a). In other words, defeat is a depression from the presence of adverse conditions (signals may include an absence of respect) rather than a lack of supportive factors, though defeat is made considerably worse in the absence of social support (see: *social buffering*; Björkqvist, 2001; Carnevali et al., 2020; Crockford et al., 2017). Internalized social defeat is *mental defeat*, which is typically the result of unbuffered, chronic social defeat experiences. Mental defeat is the injured ability to coregulate the vertical relationships in one's life, which disrupts psychological resources like confidence and self-esteem; it is both caused by an absence of healthy social conflict and protections on social positions, and prevents one from creating such conditions. The biological

mechanisms involved in the depression of defeat inhibit rational thought, conflict insight, positive affect and self-regulation, but these are ultimately accounted for by non-biological origins – domination or status-loss are antecedents that etiologically impair biological substrates like serotonin, testosterone, dopamine and cortisol functioning, among others (Blanchard, 2001; Booth et al., 1989; 2006; Hollis & Kabbaj, 2014; Mazur & Booth, 1998; Raleigh et al., 1984, 1991; Sapolsky, 1989, 1990; Selten & Cantor-Graae, 2005; Wright, 1994). It is the inbuilt Catch-22 of these mechanisms that predictably leads to undesired outcomes under fraught social conditions: the more vulnerable one is, the more they need cooperative and fair conflict-resolution to co-regulate their defenses and social status, yet the harder it is to entice fairness and respect (Björkqvist, 2001; Chance, 1980; 1984; Gilbert, 1992b; Sapolsky, 1994). One can further extrapolate an invisible critical threshold where one's relationship to the social landscape becomes precipitously unsustainable. We might call *status collapse* the tendency toward a spiral dynamic that occurs when the internalized consequences of negative social conditions make it harder to create or maintain the social status and conflict management that is needed to restore balance. These self-organizing liabilities include: a) the loss of the ability to self-regulate and self-soothe; b) the loss of respect for self or others or status-based affect; c) the loss of status cognition and reasoning; and d) the loss of the ability to manage stress and threat defenses.

Much of the adverse consequences of defeat result because confidence inhibition and its various effects can be adaptive in specific scenarios. A manageable reduction in confidence protects individuals from conflict escalation against aggressive

high-status individuals by motivating submission and loss of ambition in the face of conflict, which signals a withdrawal and reconciliation in most aggressors; states of defeat further enable a defeated individual to co-exist in a social group with their aggressor (Gilbert, 1992b; 2001a; Gilbert & Allan, 1998). *Healthy defeat is the need to evaluate what is not working in one's goals, ambitions and conflicts and repair injuries therein by fostering deference, forgiveness, win-win cooperation, and respect, in part because a loss of confidence and self-esteem increases the salience and value of mutualistic harmony, engendering conciliatory attitudes that repair relationships* (Gilbert, 2001a; Gilbert & Allan, 1998).

This functional ego deflation and status sensitivity, however, sets the stage for psychological mechanisms that coregulate status and conflict to backfire under a number of conditions, creating a potential for spiral dynamics to terminate in status collapse. For instance, when multiple defeats, conflict asymmetries, and disrespectful dynamics unfold across domains in life, defeat and status loss can become internalized as general insecurity, social avoidance (of evaluative and threatening scenarios), threat-sensitivity, low self-esteem, and incessant self-criticism, a likely path to depression (Gilbert, 1992b; 2001a; Gilbert & Allan, 1998; Hari, 2018; Hollis & Kabbaj, 2014). A generalized feeling of inferiority, self-protection, lost status motivation and ubiquitous status threats, can preoccupy individuals as they attempt to navigate vertical relationships while distracted by hypervigilance to further threat, impairing their status signaling, social processing and positional strategizing further. Often these issues resist social support by being difficult to communicate about, normalize, validate or

cooperatively center within relationships, which limits the cooperative resources one can bring to bear. Indeed, attempts to self-advocate explicitly around status-loss or perceived loss of respect will often be punished in group settings, reinforcing paranoia about social persecution and threat (Mirowski & Ross, 1983). A generalized lens vigilant to role and game-playing failures may come to preclude the ability to rehearse other social mentalities and enjoy aspects of life, which can be framed as a “mentality imbalance” (Gilbert 1992b; 2005a; 2005c; 2014). *Status depression can occur from generalized barriers that self-organize into a self-reinforcing dynamic.* Alternatively, when one feels they can only feel strong and competent in a certain kind of setting, role or game, they may avoid any other scenario where they feel evaluated for their performance (see: *social evaluative threat*; Dickerson et al., 2009) which prevents ambitions for roles, games and status opportunities. Unmet needs for status and respect may lead individuals to inappropriately impose status games on social scenarios and lead to preoccupations with winning, saving face, self-righteousness, and superiority narratives; a general trend of resolving all conflicts as zero-sum power games can damage intimate partnerships. *Powerlessness and conflict may be reinforced by the intrinsic dynamics of insecurity and threat.* Finally, phenomena such as schizophrenia and psychosis may be a terminal endpoint of defeat and defeat-rich environments - prone to win-lose or lose-lose conflict - especially in developmentally sensitive periods. Urban environments have a 1.5-3x risk of schizophrenia, and those who face competitive disadvantage, such as migrants, show an increased risk that scales with the level of adversity, such as lower IQ, origins in a developing country, or being a 2nd generation

immigrant (see: the social defeat hypothesis of schizophrenia; Selten & Cantor-Graae, 2005). The lifetime number of psychotic experiences increases in a dose-response fashion in marginalized groups who face racial microaggressions that are either frequent or intense (Oh, 2015). *Extreme forms of psychopathology are etiological endpoints of protracted self-organizing niche imbalances.*

All of these dynamics interact with neurotype factors. Neurodiverse stories center social exclusion, bullying, teasing, role and social failures that map onto defeat as a mechanism. Framed in this way, neurodiversity may present a general competitive barrier to social status and game-playing due to invisible, psychological variables that resist meaning-making. The result is chronic insecurity and inferiority, low self-esteem, confidence-issues, vigilance to evaluative threat (Priscott & Allen, 2021), burnout (Raymaker et al., 2020), and exposure to Environments of chronic defeat through increased incidence of mismatch, social punishments and power imbalances (D. Price, 2022). Evaluative or conflict-heavy milieus may engender a generalized sense of vulnerability to political games, with a myriad of consequences: an anticipated sense of evaluative threat and punishment, sensitivity to perceived conflict or defeat, reduced status ambition, and difficulty working toward advantageous social positions. Much of this can be offset by curating ideal pathways in early development to find congruent communities, but this is dependent on early access and development of such niches; if barriers self-organize early in life, they may be difficult to surmount later on.

In ASD, defeat exposure may compound a sensitivity toward inhibition and social skill barriers. A temperamental negativity bias may provide neurotic potential that is

sensitive to the spiral dynamics of defeat, particularly to self-criticism and making negative motivational attributions to others, leading to the loss of a Belief in a Just World (Bertrams, 2022) and a potential to repel others (Shackman et al., 2016). Those with ASD are also vulnerable to abuses of power and exploitation such as being brought into controlling ideologies and cult-like social groups (D. Price, 2022). ADHD social and threat-reactivity may likewise be inherently sensitive to defeat dynamics. Chronic failures to meet social expectations and role obligations can compound generally with social losses and rejection for being “weird,” activating spiral dynamics more efficiently. For instance, *rejection sensitive dysphoria* (RSD; Beaton et al., 2022; Berenson et al., 2019; Bondü & Esser, 2015), mentioned in the loneliness section, may simultaneously be both a rejection injury and a defeat injury when interpreted as a pattern of rejection due to low status, which may be why RSD creates such profound dysphoria so quickly.

Across the neurodiverse spectrum, the ability to identify roles and paths to social status are inherently harder and rarer, creating a persistent social determinant of vulnerability to all who struggle to find a niche. Innate neurodiverse dynamics also play a role. If reward insensitivity is indeed a general predictor of neurodiversity (clinical and non), then reduced reward sensitivity likely also reduces the drive toward status-seeking and the attendant willingness to play political games, which may make for a disadvantage when such games are imposed despite an unwillingness to play them. An increased justice-sensitivity (Bondü & Esser, 2015; Schäfer & Kraneburg, 2015) may also make for sensitivity to both defeat and vicarious defeat. The point of this non-exhaustive list is to illustrate the potential minefield of factors that work as general

barriers to niche-construction that translate a) more defeat exposure, and b) less defeat resilience, as long as c) one is outside the protective factors of an ideal niche. Here, an ideal niche includes the ability to hold status, prestige and respect, which promotes a prosocial reputation that ensures better treatment, reduced social threats and risks, more allies and supports, more access to resources to handle stressors, and more access to cognitive resources like self-respect to energize agency in life. These advantages of these positions may be difficult to access when the difficulty of finding congruent roles, games and communities, and navigating hostile cultures where conflict is asymmetrical and normed against one's preferred styles of conflict resolution, can lead to early subordination in relationships and career that are psychologically unsustainable.

Let us review the four ways in which loneliness is a cognitive and social drag on sustaining positive affect.

*Defeat de-energizes behavior.* Defeat de-energizes game-playing behavior needed to perform roles and games next to others. Defeat is associated with anhedonia, the loss of social pleasure, which in turn leads to avolition, the loss of social motivation. Defeat is seen as a cognitive and affective inhibitor, leading to "demobilization" - lingering effects of defeat include social avoidance (for instance, rats exposed to chronic defeat will generally avoid all unfamiliar male rats; Hollis & Kabbaj, 2014), loss of ambition (individuals will avoid seeking resources that involve competing with others; Gilbert, 2001a), reduced overall mobility (defeated rats show reduced locomotion in forced swim tests; Hollis & Kabbaj, 2014). In humans, we may extend avoidance to all evaluative situations that can provoke *social evaluative threat* - the feeling of being

judged with a threat of failure. This could include political games (social performance) and prestige games (role-based performance), or involve stereotype threats where one may lose status by confirming negative stereotypes about a marginalized class (Priscott & Allen, 2021).

*Defeat is painful (and feels meaningless).* Defeat is associated with social pain (Björkqvist, 2001; Booth et al., 1989; 2006; Gilbert, 1992b; 2001a; 2005b; Gilbert & Allan, 1998; Mazur & Booth, 1998; Sapolsky, 1994; 2017; Wilkinson & Pickett, 2011; Zink et al., 2008). The effect of defeat on mood is to produce anxiety and a depressive phenotype as changes in serotonin metabolism, receptor binding, and amygdala activation are associated with negative affect such as sadness, fear, irritability, rumination (Gilbert, 2001b; Gilbert & Allen, 1998; Hollis & Kabbaj, 2014). In addition to negative affect, there is a loss of positive affect with which to buffer negative emotionality. Exploratory and social motivations are low, while threat-sensitivity and avoidance are high. Anhedonia makes for a loss of positive affect and an inability to experience pleasure. Defeat increases the perception of a threatening social environment, and anxiety is upregulated as an anticipatory vigilance. The FFFFS system is sensitized to stressors, and a sense of threat “spreads” to new stimuli more easily. Stress is promoted both acutely and chronically, leading to impairments in cognition and social deficits that further play into one’s feeling of powerlessness; social status stressors disturb the hypothalamic-pituitary-adrenal axis and create a proinflammatory state that contributes to depression and cardiovascular disease (Dickerson & Kemeny, 2004). Stress compounds when social under-performance and vigilance to social evaluation

creates a paranoia of persecution - that others will prey on one's vulnerability - and evidence suggests they do (Björkqvist, 2001; Mirowsky & Ross, 1983; Sapolsky, 1994; 2017). One feels inferior, submissive, weak, vulnerable, inadequate and unattractive. Overeating (sugary foods) and increased substance use are common coping strategies that exacerbate a feeling of a loss of control and unattractive behavior (Björkqvist, 2001; Hollis & Kabbaj, 2014).

*Defeat saps resources/is a psychosocial liability.* Defeat creates a subjective sense of submissiveness and inferiority paired with pro-inflammatory glucocorticoids that create the inverse of the “winning effect:” they work to sabotage subjective feelings of confidence, decisiveness, aspiration, assertiveness, motor control and emotional well-being, which further impairs competitive and political performance. Whereas the “winning effect” is associated with a rise in testosterone and a decrease in stress, a “losing effect” would be the inverse, a decrease in testosterone and a rise in stress, impairing cognitive and social performance for subsequent games (Booth et al., 1989; 2006; Mazur & Booth, 1998). Losses demotivate game-playing, induce avoidance of evaluative situations as self-protection, and sap bandwidth with emotional pain, all of which curtails subsequent political performance. Just as the winning effect sees “wins” create the psychobehavioral condition to beget further wins, the “losing effect” sees losses beget losses. Indeed, mood volatility, impulsivity, aggression and defense reactivity are consequences on mood, which can create antisocial behavior that produces more social friction, antagonism and even bullying.

*Defeat confers vulnerability.* A single episode of defeat is all that is needed to

sensitize a subsequent potential for defeat trauma, both as experienced by one's self, or observed in another (Carnevali et al., 2020). Defeat creates a compounding of negative biopsychosocial consequences even as it erodes positive resources with which to deal with them. There is an increase in both acute and chronic stress, damage to stress-ameliorating corticosterone pathways, a sensitization of the HPA axis that sees a lower threshold for subsequent activation and a "spreading" of perceived threat, an impairment to health promoting processes like sleep and diet. There is also a loss of positive affect, the erosion of neurotransmitters from chronic stress, and a disruption of circumstances with which to create new positive game-playing feedback. This spiral dynamic compounds with a social dynamic - increased repulsion or abuse from the signals communicated and the impulsive, aggressive behavior that is produced. In sum, the inability to access states that de-escalate the stress response and promote stress-protection induces a spiral dynamic that leads to perceiving more stressors, coping with them less, and progressively creating the stressors one fears while diminishing support (Mirowsky & Ross, 1983). Defeat creates a pro-inflammatory state associated with a range of disturbed health factors, including increased immunological, cardiac and sleep compromise, which also leads to unhealthy coping - drug use and overeating - which compound the physiological costs.

#### **Niche Dynamics: Agonic & Hedonic Environments, Spiral Dynamics and Culture**

The previous section dealt with what may be considered the foundation of a niche model, which can be summarized thusly: humans have evolved social mentalities to provide biopsychosocial resources to deal with the challenges of different social

dynamics; when mentalities are injured or backfire, it can be harder to reconnect to social resources. To understand how the other of Hari's "connections" interact with niche dynamics, we must explore how social niches are not simply about individual factors, but about ways in which niches can be organized that cause depression, anxiety, and other forms of psychopathology.

***Contextual Factors: Agonic & Hedonic Environments, Positions, Intersection & Dynamics***

It has been suggested that social context is important to understanding the etiology and treatment of suffering, and that counseling theory needs to catch up in this regard (Gilbert, 2019; Ratts, 2008). Evidence suggests that social context is important to the development of depression (Gilbert, 1992a; 2000a; 2001b; 2004; 2005a; 2005c; 2018; Gilbert & Allan, 1998; Hollis & Kabbaj, 2014; Sapolsky, 1994; 2017), social anxiety (Bruce, 2015; Brook & Schmidt, 2008; Gilbert, 2001; Trower & Gilbert, 1989), trauma (Bryant, 2016; Junger, 2016; Spence et al., 2019), psychosis (Oh, 2015), schizophrenia (Luhrmann, 2007; Selten & Cantor-Graae, 2005). A promising frame for understanding the evolution of certain mental disorders is by seeing how they can be adaptive in threatening social environments (Gilbert, 1992a; 1992b; Gilbert, 2001a; Gilbert & Allan, 1998).

For instance, in environments organized around power and threat, social anxiety helps us prioritize, evaluate and attend to conspecific threats (Bruce, 2015; Trower & Gilbert, 1989). Depression can lower the threshold for involuntary submission which helps to avoid violent subjugation and escalation, while also helping those who are

defeated to coexist alongside the victor who bested them (Gilbert, 1992b; 2000a; 2005b; Nesse, 2000; J. S. Price & Sloman, 1987). In the face of bullying, apathetic demotivation likely performs a related function, by disengaging failing strategies that put one in conflict with others, and potentially prompting reevaluation of those strategies (Gilbert, 2001a; 2004; 2005b). However, many of these mechanisms help individuals survive in groups where violence is the primary medium of social negotiation, and where extreme demobilization or threat vigilance is commensurate with the scale of threat, such as that found in domineering baboon troops and despotic human nation-states (Gilbert, 2018; Sapolsky, 1994; 2017).

The same mechanisms may backfire when societies are more *hedonic*, based on safety, trust and egalitarianism, such as bonobo troops or modern democratic-socialist states. The mechanisms are still adaptive: dangerous violence-based environments of power and threat are present throughout the world, as the cyclical rise of fascism demonstrates; even when in hedonic environments, it is possible that agonic mechanisms may need to be redeployed at a later time. Yet when agonic mechanisms are triggered in hedonic environments, their consequences can be highly dysfunctional, or else, illustrate that someone may be reasonably reacting to a hidden agonic dynamic. For instance, agonic environments can result in hypervigilant *threat sensitivity* or *involuntary inhibition* and promote chronic stress that is toxic to higher cognitive abilities (i.e., prosociality, creativity and intelligence; Chance, 1988), which can interfere with hedonic responsibilities like social role development and prosocial coordination. A case study of twins raised apart in 1974 - one in a strict, religious American environment

(agonic), and one in a supportive, cohesive Korean family (hedonic) - revealed that being raised in a hedonic environment after controlling for other factors, was associated with a 16-point gulf in IQ in favor of the hedonically-reared twin (Segal & Hur, 2022). When agonic mechanisms lead to cognitive impairment and role failures in hedonic systems, it can make for the withdrawal of social support, which is perhaps an analog to defeat in a hedonic setting, and additive to the pathogenic load. In a cruel irony, being a victim of agonic defeats begets hedonic defeats, preventing individuals from escaping agonic mode.

**Agonic & Hedonic environments: environments of toxicity or nurturing.** In ethology and primatology, it has been observed that individual and group-level factors (biological, psychological, social and ecological) tend to reach homeostatic equilibrium along a spectrum of possible social outcomes that are either more egalitarian (i.e., "horizontal") or more hierarchical (i.e., "vertical;" Chance, 1980; 1984; 1988; Kortmulder & Robbers, 2005; Thierry, 2013). At one extreme are baboons, who organize around power, threat and anxiety, a social order that is considered an *agonic* system; at the other are bonobos, who organize around playful bonding, reassurance and prestige, considered a *hedonic* system (Chance, 1980, 1984; 1988; Gilbert, 1989; 1992a; Kortmulder & Robbers, 2005; J. S. Price, 1992; Sapolsky, 1994; 2017). The two systems produce entirely different ways of being that affect every dimension of life, which is particularly relevant, as the cues for the agonic-hedonic spectrum may present itself more subtly in a modern world as political, economic and other signifiers.

**Evolution.** Agonic groups are structured in relationships of dominance and

submission, preparing individuals with an *agonic mentality* that is primarily oriented to mounting defenses against threats to social positioning (Bruce, 2015; Chance, 1988; Gilbert, 1989; 1992a; 2018; J. S. Price, 1992). Attention is focused on “positional” threat (i.e., threats from above or below); positioning is increased through violent challenges for dominance; and safety is only possible through extreme deference to those with higher rank; all a precondition to social survival. In contrast to the hierarchy and authoritarianism of agonic groups, hedonic groups are horizontal and egalitarian. Hedonic groups are structured for relational reciprocity in activities such as play, exploration and grooming. A hedonic mentality biologically prepares individuals for relational reciprocity and cooperative social roles; attention is open to exploration, prosociality and problem-solving; positioning is improved through investing in important relationships and prestige due to skills or attractiveness; safety is a sense of security in one’s robust relationships, allies and supportive social networks (Bruce, 2015; Chance, 1988; Gilbert, 1989; 1992a; 2018; J. S. Price, 1992). While agonic groups tend to focus on maintaining social order and cohesion in the face of existential threat (such as food scarcity or war), hedonic groups seek to evolve and explore on a foundation of social harmony and cooperative interdependence. It is these extremes, and the gradations in between, that lead to the basic spectrum of antisocial self-interest and prosocial mutualism (Gilbert & Basran, 2019), with attendant implications: surviving vs thriving, power vs safety, threat vs meaning, utopian and dystopian.

Some primates, such as chimpanzees, have the capacity for both agonic and hedonic dispositions (Chance, 1988), and humans have extended this unique and rare

ability (Chance & Jolly, 1970). This flexibility among non-human primates likely arose as a part of *fission/fusion dynamics*, where group dynamics could radically change for different ecological needs; when foraging, the group would split up into loose cooperative bands and then re-fuse under tight-knit social hierarchies. A troop that reached its environmental carrying capacity, i.e. when food scarcity drives undue stress and conflict, saw a portion of the group splinter off into a new group to settle the next available niche. Such fission dynamics create natural social experiments by mixing gender group composition and creating more relaxed cooperative atmospheres without stressful power inequities, yielding advantages that attract new members (Heslop et al., 2021). In human prehistory, this may have created a natural evolutionary laboratory to test the group-level plasticity of switching between agonic and hedonic modes under different ecological conditions; for instance, many human groups seasonally reorganized when moving between farming and foraging (Graeber & Wengrow, 2021). The ability for a primate to switch between a “power and competition” mode and a “community and cooperation” mode transformed humans into “two-level man” (Haidt, 2013), with a new capacity to rapidly socially reorganize as part of their nature (Haidt, 2013).

It is plausible that the ability to flip between two modes is especially pronounced in humans, and key to their evolutionary success (Heslop et al., 2021); for instance, by reconfiguring the social order to the different demands of environmental threat or safety (Wright, 2009). Indeed, the adaptation helps by allowing social organization to reconfigure to the psychoemotional logic of different niche demands, and only two species have been observed to occupy diverse ecological niches, rhesus macaques and

humans (Belsky et al., 2009). One obvious target for application is in explaining, not just the cyclical rise of populism in different parts of the world, but the responsiveness of large swaths of the population to such populism, fed by shifting perceptions of environments toward power and threat.

It is likely that the story of subgroup evolution has been an important factor in human evolution, a force that has likely been underappreciated in the evolutionary literature because it seems counter-intuitive to consider social dynamics as a patterned selection pressure capable of shaping social and cognitive evolution (Heslop et al., 2018; 2021). Namely, as cultural evolution increased the “surface area” of cooperation in society through rising social infrastructure, humans – who had uniquely retained access to their “better angels” through dark times – could then spend more time connecting to, and building off of, their prosociality in good times (Wright, 2000; 2009). Paradoxically, by holding onto the human capacity for a ruthless survival mode to endure the worst of times, humans also protected their better nature to allow it to re-emerge during the best of times; in other words, survival mode has allowed thriving mode to gradually flourish in the broad arc of human cultural evolution (Wright, 2000; 2009). Indeed, some authors believe both influences are even important to individual development (Chance, 1988), and it may be worth considering the function of receiving hedonic and agonic influences as an archetypal contribution from parents.

However, while the ability to switch between agonic and hedonic modes may be adaptively flexible at a species-level, it is at significant cost to the well-being of individuals. While moving from hedonic to agonic mode is relatively easy, flipping back

may be pathogenic (J. S. Price, 1992). The greater project of mental health and well-being may be one of humanity taking intentional control of its own “two-level” nature (Haidt, 2013). As summarized by Drew and Kriz (2012), evolutionary psychologist Cummins (2005, p. 693) characterized the agonic/hedonic divide thusly: ‘Darwinian processes have produced a complex network of cognitive, emotional and physiological systems that bias us toward producing this kind of social structure’ and ‘we are wired from high cognition right on down to our neuroendocrinology to detect minute changes in our status vis-a-vis others.’

***Agonic mode and social dynamics.*** Agonic groups take their name from the Latin root for agony (Chance, 1988; Gilbert, 1989; 1992a; 1992b). Agonic groups form rigid hierarchies of social rank that originally served to constrain escalating violence among competitors in a group, but likely came to have other command and control functions in humans including some prosocial functions such as conflict resolution (de Waal, 1982; Gilbert & Basran, 2019). In primates, agonic groups are dominated by those that have *resource-holding power* (RHP), which is a physical and political prowess to win access to physical, social and sexual resources, often using ritualistic bullying and threat to test for rank security and maintain social standing through fear and stress (Chance, 1988). In unstable hierarchies, elevated cortisol is found throughout the hierarchy as those higher up must defend their rank, while those on the bottom are the victims of *displacement aggression*, where unbuffered social defeats are perpetuated down the social power gradient (Mazur & Booth, 2005; Sapolsky, 1994; 2017).

Accordingly, *agonic mode* in humans is one where higher-level cognitive functions such as creativity, prosociality and intelligence are suppressed through chronic stress and the narrowing of attentional resources to positional threats, such as ingroup/outgroup dynamics and rank. Social anxiety becomes a state-based trait suited to a threatening social environment; groups are seen as being organized based on dominance and submission; attention is devoted to positional threat vigilance including seeing one's actions through the perspectives of evaluators; defenses are marshaled to avoid catastrophic loss of standing (Bruce, 2015; Trower & Gilbert, 1989); threat feels unpredictable, paranoia tracks persecution, and control feels external (Mirowski & Ross, 1983; Sapolsky, 1994; 2017). Depression may also be adaptive in inhibiting motivation for dangerous challenges for higher status, not contesting resources without a plan or with little chance of success, or avoiding major changes to unsatisfactory conditions when the alternatives might be worse (Gilbert, 1992b; 2005b; Nesse, 2000).

Evidence suggests a relationship between modern agonic environments, such as environments that lack psychosocial safety or have authoritarian bosses, create a threefold increase in depression risk (Zadow et al., 2021). In organizations with steep power gradients, the same profile of high stress, depression, anxiety and poor health is found in the lowest ranks that can be found in low-ranking baboons (Marmot, 2006; Sapolsky, 1994; 2017). In humans, cultural evolution has partially compensated for this instability by formalizing hierarchy to reduce uncertainty and status insecurity and increase rule clarity (Mrazek et al., 2013); in such a context, agonic mode may resemble a more traditional conservative disposition that values honor, deference and loyalty

(Haidt, 2013; Mazur & Booth, 1998). Agonic groups emerge under conditions of stressful scarcity, existential threat, intergroup conflict and war, high numbers of [young] males, and pressures toward large group size (Chance, 1988; Gilbert, 1989; 1992a; 2019; Mazur & Booth, 1998; Mrazek et al., 2013; Sapolsky, 1994; 2017). Interestingly, high school environments – characterized by a sharp uptick of androgens, unstable hierarchies, a lack of cooperative goals, and pressures toward large groups size – are environments ripe for bullying: young males tend toward physical threats of violence, while young women harm one's social reputation, and bullied victims share marked phenotypic similarities with other defeated animals (Björkqvist, 2001).

Theirry (2013) cataloged linked social traits that are featured in the *agonic mode* of macaque societies: centrality of hierarchical steepness, centrality of top-ranking males, a high proportion of conflicts involving biting, the development of formal submission signals, preference for kin among females, rules of female rank inheritance, and a higher rate of male dispersal. These societies are less likely to have conflicts involving counter-aggression (fighting back), cooperative behavior, conciliatory tendency, rate of affiliative contacts, permissive mothering, allomothering, immature interference in mating, cooperative patterning in social play, and coalitions between males. Thierry calls these “socially intolerant” societies, where a strong dominance hierarchy functionally inhibits more egalitarian non-kin social relations.

***Hedonic mode and social dynamics.*** Hedonic environments emerge under conditions of relaxed predation, food abundance, group fission, and general conditions that allow for loose interdependence (Chance, 1988; Gilbert, 1989; 1992a; 1992b; 2019;

Mrazek et al., 2013). Hedonic social logic is organized around widespread cooperation toward mutual benefit, often requiring long periods of social learning toward role expertise (Gilbert, 1989; 2019). Hierarchies are built around those who can solicit attention to their “attractive” qualities such as skill, talent and prestige, which offer role models to scaffold learning. The ability to wield this prestige-as-attention is called *social attention holding power* (SAHP; Gilbert, 1989; 1992a; 1992b; 2019). Social roles require extended social learning to develop cognitive skills such as creativity, prosociality and intelligence, faculties that are easily clouded by stress, and thus require a social safety net to buffer against stressors and liberate attention (Chance, 1984; 1988; Gilbert, 1989; 1992; J. S. Price, 1992). Group practices among primates reveal ritualized greetings, grooming and play which are signs of relational investment and reciprocity that suppress the stress of relational insecurity and rehearse psychological safety (Chance, 1988; Gilbert, 1989; 1992a; J. S. Price, 1992), a similar function to the more acute *tend-and-befriend* stress response found in humans (S. E. Taylor et al., 2000).

Theirry (2013) showed when dominance hierarchies can relax and allow social networks to facilitate non-kin relationships, as with the hedonic macaque societies, the social traits of a *hedonic mode* can be characterized by cooperative behavior, a conciliatory tendency, a high rate of affiliative contact, conflicts involving counter-aggression (fighting back), a degree of mother permissiveness, increased allomothering, a cooperative patterning to social play, and coalitions between males. Features that are inhibited in socially tolerant societies are hierarchical steepness, less centrality of top-ranking males, a reduced proportion of conflicts involving biting, less development of

formal submission signals, less preference for kin among females, fewer rules of female rank inheritance, and a lower rate of male dispersal.

While agonic groups are likely more pathogenic (J. S. Price, 1992), hedonic groups do have pathogenic channels that instead involve the absence of resources rather than the presence of stressors. For instance, failing to maintain some basic level of prestige-as-social attention likely activates the same depression-as-low-rank found in agonic systems (Gilbert, 2001a; J. S. Price, 1992); loss of confidants has been identified as a depression risk (Brown & Harris, 1978; Costello, 1982; Patten, 1991), as has loneliness in general (J. T. Cacioppo & Patrick, 2009). The recent signs of increased rates of depression and anxiety in younger social media users may partially reflect cyberbullying, but more frequently reflect the effects of social comparison and a sense of relatively less “likes” as measures of captured social attention (Robinson et al., 2019). In this framework, we will call these *hedonic injuries*.

In summary, a central adaptation of humans is their ability to flexibly reconfigure their social networks (Christakis & Fowler, 2011) by radically reshaping the social fabric based on opposing forms of socioemotional logic called *agonic mode* and *hedonic mode*. This can be from factors that are intrinsic to a social group (leadership style, gender composition, religion) or extrinsic to the group (scarcity, war, existential threat; Chance, 1988; Gilbert, 1989; 1992a), with some evidence suggesting that religion and political ideologies have been mediums for both sets of factors through much of modern human history (Haidt, 2013; Wright, 2009). Rapid sweeps of change toward or away from power and threat are not skin deep, but rest on changes to the balance of factors that activate

embodied states of safety or threat in the brain, which roughly correspond to extreme activated states of the affiliative or antagonistic mentality (Gilbert, 1989; 1992a; 1992b; 2019; Wright, 2000; 2009). The ability to switch rapidly from hedonic to agonic mode en masse can serve to turn humans into a social superorganism (Christakis & Fowler, 2011; D. S. Wilson, 2002), but it can also contribute to pathology as the move from agonic to hedonic is harder, involving deescalating physiological systems of threat regulation that tend to increase threat sensitivity, fear, and susceptibility to anxiety and depression in ways that make it difficult to return to baseline (Gilbert & Basran, 2019; J. S. Price, 1992).

Agonic and hedonic environments have gone by different names, including *toxic* and *nurturing environments* (Biglan et al., 2020), but could be framed in other ways as well: as environments of defeat and support; or win-lose (or lose-lose) and win-win environments.

***Modern ramifications.*** In modern environments, we can consider that agonic and hedonic environments likely exist on a spectrum based on a variety of factors such as environmental resources (Heslop et al., 2021), internal culture (Zadow et al., 2021), leadership qualities (Gilbert & Basran, 2019), economic incentives (Wilkinson & Pickett, 2011) and more, and likely all environments have some hedonic and some agonic qualities. Some environments may have agonic qualities from creating the conditions for violence and conflict, while others coerce and manipulate, and others simply remove safety nets (*oppression by force* versus *oppression by deprivation*; Hanna et al., 2000). A study on the relationship of workplace psychosocial safety to depression risk evaluated

several specific factors common to psychosocial threat that are theoretically congruent with modern agonistic work environments: job strain (high psychological demands and low decision latitude), high job demands, low social support, low decision latitude, organizational injustice, effort-reward imbalance and bullying (Zadow et al., 2021). In other words, modern agonism takes the form: a) an unequal distribution of psychosocial stressors (i.e., entrapment, abandonment and defeats) along a hierarchical gradient, b) the need to co-regulate these stressors with high-quality social relationships, and c) the unequal access to such relationships in a hierarchical gradient (Elstad, 1998). Thus, there are many paths to an environment that feels subconsciously “dangerous” and activating: a deprivation of hedonic supports and resources; the active agonistic threats of bullying, conflict or unpredictable violence; or the passive threats of coercion, constrained autonomy, and lose-lose options. Thus, in a modern context, agonism does not need to be overtly hostile to activate a heightened risk for depression and anxiety. For instance, modern agonism may be connoted in different marginalized groups through various forms of cultural shorthand such as “late-stage capitalism,” “patriarchy” of “white supremacy,” which connotate a toxic environment due to threats of subjective violence; in this case, it is their respective induction of a dysregulating agonistic survival mode from regularly encountering social barriers that are predictable or uncertain, missing safety nets, and micro- and macroaggressions.

**Values, culture & social determinants of mental health: the meanings of different modes of life.** Agonistic systems and hedonic systems can be expressed through the different cultural value systems that organize social and institutional life

(Drew & Kriz, 2012). Expressed in terms of Hofstede's (2001) cultural dimensions and Hall's (1983) work on time orientation, agonic values have been framed as being more collectivistic, which in turn has predictable subdimensions: high power distance (hierarchical relations), high uncertainty avoidance (high control to compensate for anxiety about the future), greater past-orientation, more feminine values (gender flexibility; relationships and nurturing valued), and befits a Confucianist/Taoist ideology. Hedonic values are more individualistic: low power distance (values in pluralism and equality), less uncertainty avoidance (open to the future), future-orientation, more masculine (distinct gender roles; assertiveness and achievement valued) and befits a Judeo-Christian ideology. However, a single spectrum may be inadequate to capture the moral and political nuance to meaning systems, which we will subsequently explore.

***Agonic and hedonic systems: a second dimension.*** Recall that the agonic/hedonic divide may map well onto *fission/fusion dynamics*, where fusion is any dynamic that sees social animals cohere (mating, defense, resource exploitation), and fission is any dynamic that sees groups disperse (resource foraging; high conflict). Agonic values can be seen as a fusion strategy, as it is promoted in ecologies with abundant resources, and where resource allocation becomes strongly hierarchical to coordinate resource exploitation and limit intragroup conflict (Drew & Kriz, 2012). Alternatively, strong social orders may also be built on *moral tightness*, which predicts many of the same qualities but emphasizes norm conformity as a coordination and security mechanism. Moral tightness may generally arise in environments with frequent

ecological threats: territorial challenges, natural disaster prevalence, food scarcity, high population density, and heightened disease transmission, where such threats are then countered by cooperation, coordination and the systematic exploitation of shared resources (Gelfand et al., 2011; Mrazek et al., 2013). In contrast, hedonic values are promoted in areas of greater food scarcity, requiring food exploration (foraging) and egalitarian resource sharing (i.e., a fission strategy; Drew & Kriz, 2012). However, hedonic values may also reflect a general reduction in ecological threats, where a lower need for order, coordination or stringent social rules translates to a tolerance for individualistic strategies and differences (Mrazek et al., 2013).

This basic fission/fusion divide maps well onto the complementary cognition framework (H. Taylor et al., 2022) which acknowledges one of the basic cognitive strategy divides is between resource exploitation (agonic) or cognitive exploration (hedonic), with this ethological research suggesting that such a divide may be reinforced at the group- and ecological-level (Drew & Kriz, 2012; Haidt, 2013; Mrazek et al., 2013). However, it may be worth parsing out some nuance therein. For instance, if agonic environments share the orientation to high power distance (i.e., acceptance of hierarchy as a central feature of social life), and hedonic systems are low power distance, there can be important differences in how and why they get there.

In collectivistic countries, a strong “social fabric” offsets hierarchy by coexisting with nurturing ingroups and low levels of status conflict due to the formalization of rank. Such societies coexist with relatively “feminine” values where relationships matter, and gender roles are less distinct (Hofstede, 2011). By contrast, “cultures of honor” (Mazur

& Booth, 1998; Nisbett, 1993; Sapolsky, 2017) may generally be composed of any group, often shaped by self-organizing young men outside of the social controls of a community, where perceived insult is met with reactive aggression to save face and deal with threats. They are reminiscent of the agonic baboons organized around displacement aggression (Sapolsky, 1994; 2004), and in humans, include cultures of the American South, inner city gangs, the nomadic pastoralists of the desert, and seem to shape the socioeconomic culture of being low SES (Sapolsky, 2017); i.e. the culture appears through combinations of both scarcity and threat. These differences have been studied as *unstable* versus *stable hierarchies* (Knight & Mehta, 2016; Marmot & Sapolsky, 2014; Sapolsky, 1993), but they may also broadly correspond to functioning as dominance hierarchies versus prestige hierarchies (see also: eminence; Brand & Mesoudi, 2019; Del Giudice, 2018; Gilbert & Basran, 2019; Henrich & Gil-White, 2001; Sapolsky, 2017). In honor cultures, the logic of survival seems to shape a strong hierarchy around masculine values of assertiveness and achievement, often in response to scarce, harsh, war-torn or conflict-prone environments (Mazur & Booth, 1998; Sapolsky, 2017). However, a similar distinction may be made in hedonic environments. There is likely a difference between hedonic nomads (C. Chen et al., 1999), anarchists, counter-culturalists, vagabonds, bohemians and frontiersmen, versus the socialist democracies of northern Europe, as unstable and stable hedonic environments. The two paths to agonic and hedonic ways of life, then, may represent the need to overlay agonic and hedonic values with a focus on survival and self-interest, or mutualism and interdependence, i.e. *tightness* vs *looseness* (Mrazek et al., 2013), or *stable* vs *unstable* (Knight & Mehta, 2016; Marmot &

Sapolsky, 2014; Sapolsky, 1993; 2017). We will refer to this as *agonic individualism*, *agonic collectivism*, *hedonic individualism*, and *hedonic collectivism*.

**An ecological tapestry.** As a tentative four-way model of ecological types, these ecosystems offer a range of influences on mental health. All such influences are set against the backdrop of exponential social change and globalization, which complexifies our understanding of the agonic/hedonic divide from the relatively neat study of different primate groups in natural laboratory conditions. Among pluralist countries like the US, for instance, the general trend of modernity may be observed as globalization increasingly “shrinks the world” (mixing cultures and lifestyles while lowering barriers to their cooperation; Wright, 2001), while making the world “bigger” (pressuring narrow ingroup identities while rapidly expanding the possible subcultures with which one can identify). Most of social life is spent in varying institutional environments – work, school, community, friends, family - where different sub-identities are effectively exposed to a range of sub-niche ecologies. Agonic and hedonic dynamics may exist as a nested mix that vary by level (network, community, region, state, country) and region, wherein someone could theoretically live in an agonic state, in a hedonic country, a nice neighborhood in a bad city, have a good job in an economically-deprived part of town, and be in good friend group in a toxic company. This may be said to frame the material social conditions of ideological environments that self-organize along different demographic conditions: for instance, in the United States, major divides appear between rural and urban, cultural subregions (South, Midwest, New England, Pacific Northwest, etc.) and coastal areas relative to the domestic interior. Institutions,

companies and social organizations likewise promote different values environments, as was the premise of Hofstede (1984; 1991; 2011) who did his work categorizing cultural dimensions mostly with and for an international business community. In these contexts, one may be able to make bold claims. For instance, the United States, once a frontier country of hedonic individualism – self-reliance and self-determination - and champion of pluralistic values, has been increasingly dominated by corporate ecosystems that most resemble agonic collectivism - cooperative hierarchy - as the dominant values shaping most of day-to-day life, and that this may go some way to explaining the variance in how people interpret their American culture within radically different material social conditions. Against this backdrop, let us consider a non-exhaustive list of four ways these ecosystems shape biopsychosocial well-being.

*Internalizing “junk values.”* The paradoxical nature of modern pluralism is that it promotes a range of ecologies, including those opposed to the high-level values of pluralism. Consider the United States, considered the most individualistic country in the world according to Hofstede’s *cultural dimensions* (Hofstede, 2001; 2011; Oyserman et al., 2002), with values of low power distance, low uncertainty avoidance, a masculine orientation, and a Judeo-Christian orientation (Drew & Kriz, 2012). However, there is some discrepancy between the values espoused and how they are lived; European Americans are neither the most individualistic or least collectivistic in practice (Oyserman et al., 2002). Despite values in hedonic individualism (equality and pluralism; Mrazek et al., 2013), capitalist economics dominate most day-to- day life, and range from agonic collectivism - formalized rank, high power distance, feminine values (supportive

teams) - to agonic individualism: competitive materialism, self-interested status-seeking, acceptance of unfair inequalities and social exploitation, and a marginalization of community (Hari, 2018; Junger, 2016; Oyserman et al., 2002). Most prominently, institutionalized profit-motives and high-power distance lead to a large number of low-ranking workers facing modern agonism as a coercion to work under threatening conditions. That is, workers are forced to work under threat of homelessness with few social safety nets, forcing them to endure stagnant low wages, high inflation, unaffordable housing and child care, few worker protections, inaccessible healthcare and little paid time off. This class of workers feel that they cannot escape such conditions (see: low social mobility; Wilkinson & Pickett, 2011), face socioeconomic conditions where agonic individualism thrives as a culture of survival (see agonism and SES; Sapolsky, 2017), and a feeling of being dominated through exploitation, as the dominant class has absorbed all of the accrued value, with the richest 1% gaining almost twice the world's wealth in the last two years (Christensen, 2023; Hari, 2018; Junger, 2016). However, agonic individualism has a broader influence on American culture as well. Capitalist economics promote individualistic competition in an unstable system (non-formalized rank), and so produces profound social stratification with narratives that justify inequality in ways explicitly opposed to the national values of pluralism and equality. The result is a social environment of status insecurity and uncertainty, toxic social comparison (see: social media and depression), little social trust, high rates of mental illness and addiction, and few communal safety nets, among other related social problems (Hari, 2018; Junger, 2016; Marmot & Sapolsky, 2014; Wilkinson & Pickett,

2011).

What is most notable is that workers who face these conditions show evidence of internalizing agonic individualism and recapitulating an agonic worldview and lifestyle because stressful environments produce adaptive strategies suited to navigating them (Biglan et al., 2020; Ellis et al., 2012). When people internalize a strong overlay of agonic individualistic values that promote self-interest, conflict and status-seeking, regardless of their more intrinsic neurotype needs and motivations, they internalize what Hari (2018) called “junk values.” Such values are more likely to be endorsed by people who have lived in threatening life circumstances as a capture of agonic survivalism, even though having this worldview is more distressing and threatening to maintain (Biglan et al., 2020). These values also reinforce extrinsic motivators (materialism as “keeping up with the Joneses”) and steer people away from the intrinsic motivations that provide an evidence-based path to meaningful well-being, and lead to endorsing higher levels of negative emotionality on a day-to-day basis (Hari, 2018).

This dynamic has been well-captured by M. Larsen et al. (2023), whose multilevel model of well-being captures well-being on two levels - individual *happiness* and collective *meaning*. Happiness is considered self-oriented, transient and inherently unsustainable; meaning is group-oriented (an “altruistic contribution”), enduring and more sustainable. However, meaning is a luxury of the rare healthy social systems that create a systemic abundance of “altruistic opportunity:” the proliferation of roles that enjoy meaningful work to better the community. Altruistic opportunity is less common in agonic systems that skew toward competition for individual happiness, and more

common in hedonic systems that offer both win-win meaning *and* win-lose happiness.

Nordic countries are examples of societies that create more win-win “surface area” to support altruistic opportunity, tipping the balance toward system-wide cooperation in ways that are sustainable, and less conflict-oriented, individually and collectively.

Intrinsic values tend to foster such societies, thereby contributing to the “moral commons” on which civilization is built, and create altruistic contributions in doing so. Societies and cultures that curtail this opportunity effectively deny access to meaning as a “niche organizer.”

*Values conflict as lose-lose dynamics.* Attempts to internalize multiple value systems in conflict may also be bad for mental health. Consider an American conservative in the American south, who would have been part of an evangelical, “establishment” political caucus just two decades ago. In a modern ideological climate, there would be pressures to conform to hedonic individualistic values at the national level (“freedom” and “individual rights”), agonic individual values at the political level (i.e. Trumpian populism; capitalism) and agonic collectivist values at the cultural level (southern evangelical culture). For those who must iterate these dynamics across heterogeneous identities and environments, the result may be an internal lose-lose dynamic of always facing the threat of ideological punishment and conflict, without reprieve. Indeed, evidence suggests that 2<sup>nd</sup> generation immigrants are at higher risk of schizophrenia due to persistent social defeat, likely because they are attempting to live up to two incompatible values systems and ecologies, that of their adopted and native heritages (Selten & Cantor-Graae, 2005).

*Values environments as high-level punishers and reinforcers.* There is a danger for people to become depressed in environments that feel oppressive to their values or punishing to their way of being. Here, we consider the demographic factors of ideological environments and the alignment with different neurotypes as creating a potential for mismatch. Neurotype strategies correspond to high level moral values (Haidt, 2013), as well as characteristic values related to their life strategy such as creativity, achievement, intelligence, and fairness, to name a few. Social environments likely reward and punish along values-based dimensions, using values to frame ambiguous social information among people playing different roles in a system. For instance, a person who holds values in individualism, adaptability and creativity by nature, may struggle in a corporate environment that rewards duty, obedience and loyalty. An imbalance of punishers to rewards is likely an “environment of defeat,” an agonic environment by nature of an imbalance of agonic punishers to hedonic resources and buffers. By way of example, agonic collectivistic environments have aphorisms to this effect, such as “the nail that sticks up will be pounded down,” and evidence suggests a novelty-seeking temperament gene allele was selected out of the local population, plausibly due to the incompatibility of an individualistic temperament with a local collectivistic ecology (Chang et al., 1996). One can alternatively frame a values mismatch as an absence of high-level reinforcers for values-driven behavior, i.e. the sense of a lack of niches with a sense of moral purpose. For example, a person who embodies progressive values but lives in a conservative society, may feel there is no meaningful path toward social change in a society that celebrates the status quo and conserves

power structures. If the status quo negatively impacts one's well-being, and that person has *perspicacity* (Hanna et al., 2000) into this dynamic the oppressive social reality as entrapping, this may also be acutely maddening (see: gaslighting) particularly if their distress itself would be taken as a sign of "mental illness." Thus, values mismatch can lead to internalized distress through alienation, entrapment and subjugation at the level of a values mismatch as high-level patterns of excess punishment and inadequate reward.

*Social conditions for inner agonic dimensions.* A final intrinsic dynamic of agonic and hedonic divide is that humans are in a perpetual tension: between their prosocial impulse toward group-level interdependence and meaningful cooperation as a non-zero-sum (win-win) dynamic; and their individual self-interest to compete in the sexual marketplace for mating opportunities as an inherently zero-sum (win-lose) prospect (though this is only one particularly prominent example of such tension; Barker et al., 2012). Sexual competitiveness brings out agonic individualism in young men in particular, with risky, aggressive and antisocial dimensions (Ellis et al., 2012; M. Wilson & Daly, 1985), and a potent influence on groups of young men that self-organize into agonic individualism outside of prosocial influences (Mazur & Booth, 1998). Hudson and den Boer (2004) tracked countries with an increasingly imbalanced male-to-female ratio in countries such as China and India and found young men without romantic prospects routinely pose a threat to domestic peace and stability, are an antecedent to international violence, and jeopardize the future of democracy. A study by Brooks et al. (2022) corroborated this link by geolocating 4 million tweets by online incels who

espouse “involuntary celibacy” and promote misogyny and violence. They found that the tweets were tracked to local mating markets with male-biased sex ratios, high competition for few single women, pronounced income inequality, and reduced gender gaps in income. A study by Luberti et al. (2022) reversed this finding: young men who were experimentally manipulated to receive negative feedback about their video dating profile could be induced to have low positive affect and reduced support for casual sex, but also greater general support for right wing [agonic] political positions, such as resistance to raising the minimum wage or expanding healthcare. Paradoxically, then, individual violence is naturally constrained by social conditions like hedonic collectivism, found most prominently in the Nordic countries, which better employ “reverse dominance hierarchies” as social controls that prevent excess hierarchy (Wilkinson & Pickett, 2011; D. S. Wilson et al., 2023). This approach sustainably and equitably distributes “individual prosperity and altruistic opportunity” (M. Larsen et al., 2023) to prevent the “toxic” social conditions that radicalize young men and contribute to political populism.

In conclusion, values- or ideological-environments are shaped by material social and cultural conditions to create agonic (individualistic or collectivistic) or hedonic (individualistic or collectivistic) environments. Such environments shape many of the niche environments we spend our waking hours in across our many social identities. When these hidden ecosystems constrain social mobility, social trust and social status opportunities, they prove toxic to our biopsychosocial mental health (Hari, 2018; Marmot & Sapolsky, 2014; Sapolsky, 2017; Wilkinson & Pickett, 2011). Toxic social

conditions: a) promote life history “fast” strategies that are suited to stressful social conditions but challenge prosocial development (Biglan et al., 2020), b) promote antagonistic mentalities that can be hateful, judgmental, and self-critical and create further conflict and stress (Gilbert, 1992b; 2005c), and c) make it difficult to switch back to hedonic mode after spending too much time in the physiologically deregulating agonic mode (J. S. Price, 1992). Most paradoxical is that people who are locked in an agonic mode and live in agonic cultural conditions, are more likely to embody and espouse such worldviews despite not benefiting from them, making it difficult to break out of a vicious cycle both personally, and socially, as observers are less likely to be attracted to their cause. Still, hedonic collectivism seems like the likely long-term sustainable solution both for the afflicted, and those who must coexist with them (M. Larsen et al., 2023; D. S. Wilson et al., 2023).

***Key Mechanisms: Positions, Intersections, Traumatic Stress, Spirals & Self-regulation***

**Social Positions.** The impact and deleteriousness of “environments of injury” come from a number of factors that can exacerbate their impact in the social landscape. For instance, as has been partially explored, *social positions* can mitigate or magnify the effects of injuries as better social positioning. In general, one seeks to be away from the edge of a social network (J. T. Cacioppo & Patrick, 2009; Christakis & Fowler, 2011; Zak, 2007), higher up a social hierarchy (Gilbert, 2001a; 2001b; Hari, 2018; Marmot, 2006; Marmot et al., 1984; 1991; Sapolsky, 1994; 2004) and “closer” (in time and space) to attainable goals (Alloy & Abramson, 1988; H. Choi & Shin, 2023; Erickson et al., 1975; Gilbert, 1992b; 2005a; Hanna et al., 2000; Mirowsky & Ross, 1983). Better social

positions mean more resilience factors (for instance, from high quality relationships) and social resources with which to deal with injuries, and often means fewer potential injuries from better positions (Elstad, 1998); worse social positions suffer from “the inequitable distribution of psychosocial injuries” and may translate to having fewer resilience factors with which to deal with them (i.e., being overworked, undernourished and having no sleep, while facing toxic relationship conditions).

Social dynamics are paralleled in embodied pathways for better and worse. Social “wins” may release neurotransmitters that act as psychological resources, while “losses” release cortisol and erode resources. For instance, Gilbert (1989; 1992b) talked of the way chronic social stressors from threats and conflict may release neurotransmitters to mount mental resources, but this can burn through them over time, leaving one physiologically depleted. This may go some way to accounting for a critical link between social phenomena and embodied consequences that drive biologically-reductive theories of mental illness (Moncrieff et al., 2022). At a psychological level, awareness of poor positions – for instance, as an intuition of one’s highly constrained options – may magnify the impact of injuries by accurately modeling the gravity of one’s barriers and lack of control (Alloy & Abramson, 1984; Griffiths et al., 2014; Hanna et al., 2000; Mirowsky & Ross, 1983). This may mean that therapy works in part by creating a microculture where the social positions are all positive – the client is elevated to the primary focus in the dyadic social network, hierarchy and goals of the system.

**Intersections.** All people have numerous *intersectional identities*, meaning that we all play multiple identity roles across the social world, with each positioned

differently in different environments. Some of those identities may be well positioned in more hedonic environments (mother in a positive family environment; community member in a good neighborhood), while others may be poorly positioned in more agonic environments (employee in a toxic work environment; citizen in an unequal country). As we naturally switch between social roles and identities, with their different profiles of stress or support, the embodied consequences accumulate as an allostatic load – stress “wear and tear” – in a single embodied form. Consequently, social disadvantage is a magnifier often because it yields more disempowered identities that interact in unique ways within the individual (Crenshaw, 1989). Framed ecologically, marginalized people have more disadvantaged identities (race, class, ability, etc.) that have more exposure to agonic environments, with fewer hedonic positions and environments with which to buffer them, creating a skewed ratio of positive resources to negative stressors and injuries (see: distribution of resources and stressors; Elstad, 1998). This may further act to make some identities act as a drag on other identities in a “poor-get-poorer” dynamic. Alternatively, those who have multiple well-positioned identities may experience fewer defeats and have multiple resilient identities with which to buffer the less resilient ones, in a “rich-get-richer” dynamic colloquially termed *privilege*.

**Social Threats can Traumatize.** There is increasingly evidence that Criterion A, which holds that trauma is defined by a “exposure to actual or threatened death, serious injury, or sexual violence” (American Psychiatric Association, 2013, p. 271, Criterion A) may misframe what makes an experience inherently traumatic (Bjornsson et al., 2020; Bryant, 2016; Charuvastra & Cloitre, 2009; Junger, 2016; S. E. Larsen & Pacella,

2016; Oh, 2015; Spence et al., 2019). The DSM-5 removed the emotional criterion of “intense fear, helplessness, or horror” (American Psychiatric Association, 1994, p. 467, Criterion A2) from the DSM-IV, and while this subsequently curtailed the number of events classified as clinically traumatic, the prevalence of PTSD has remained effectively the same (Elhai et al., 2012; Kilpatrick et al., 2013). The existing definition of PTSD emphasizes the role of a *threat to life* (Bjornsson et al., 2020; Weathers & Keane, 2007), meaning that trauma should scale in intensity and impact the closer one perceives an event took them to actual death. However, this is often not the case with sexual violence (Bjornsson et al., 2020) or racial trauma (Cenat, 2023; Williams et al., 2018), and indeed, a number of studies have shown that people can have post-traumatic stress symptoms and not meet Criterion A (Bjornsson et al., 2020). A meta-analysis of 22 studies by S. E. Larsen and Pacella (2016) revealed that experiences where post-traumatic stress symptoms were associated with Criterion A had only a slightly larger effect size than those with symptoms that did not have a qualifying Criterion A experience. Another study by S. E. Larsen and Berenbaum (2017) found the effect size between the two paths to symptoms to be similar. S. D. Gold et al. (2005) divided 454 college undergraduates between two groups – those who faced a traumatic experience that was consistent with Criterion A and those who faced an experience that was inconsistent with Criterion A. They found that there were substantially more who experienced an inconsistent traumatic event, and that those who did had symptomatology that was typically of significantly greater severity.

Judith Herman (1992, p. 377), renowned for her work on complex trauma, has

argued that the state of being traumatized can come from experiences of a more abstract and social nature, such as social conditions of being “under a state of captivity, unable to flee, and under the control of the perpetrator.” Of particular significance, she wrote, was a state of “coercive control,” where it mattered little if the victim was held physically captive, or if they were entrapped by “a combination of physical, economic, social and psychological means:” “The psychological impact of subordination to coercive control may have many common features, whether that subordination occurs within the public sphere of politics or within the supposedly private (but equally political) sphere of sexual and domestic relations” (Herman, 1992, p. 378). However, Herman’s etiological factors are quite tangible when considering the biggest threats and stressors to social animals. Entrapment (loss of control and inability to escape) and defeat (coercive subjugation), as well as alienation (disrupted attachments) are all injuries and experiences that threaten one’s “social survival”: one’s ability to curate the esteem, belonging, support, security and resources in a social ecology (Baumeister & Leary, 1995; Coan & Sbarra, 2015; Gilbert, 1992b; Spence et al., 2019). Inversely, we know that social factors are bound up in PTSD risk because social factors confer resilience while their absence confers vulnerability; i.e. compassionate and care-elicitting relationships regulate threat systems (Gilbert, 2014).

Studies have borne out such themes to be more distressing than Criterion A experiences (Spence et al., 2019), such as a study of trauma in political prisoners that showed subjective patterns in who does and does not become traumatized: enduring mental defeat, loss of control, and alienation from attachments was predictive of greater

PTSD, while individuals were protected if they could maintain a sense of control and political or ideological commitments (Ehlers et al., 2000). Contextual approaches echoed similar themes, acknowledging that negative life events (as sub-traumatic events that do not constitute a “threat to life”) can nevertheless be related to the risk of PTSD when they involve acts of humiliation, rejection or entrapment (Spence et al., 2019).

Junger (2016) framed similar findings through a contextual social animal lens, exploring trauma and recovery against the backdrop of combat across a number of global conflict zones as far back as colonial America. He found trauma resilience comes from meaningful social bonds that confer resilience to social threats. Consider a few enlightening findings. First, war is not hell for many: high *unit cohesion* is a powerful resilience factor to the violence of combat because it lowers competitive individuality and creates the ideal conditions of mutual reliance to form a deep and meaningful “brotherhood of pain,” even in the face of high casualty rates. Trauma treatment can be difficult because many soldiers want to keep aspects of the experience. Second, citing case studies from Israel, Sri Lanka, World War II and the Balkans, one paradoxically faces a higher risk of developing trauma when they cannot partake in a shared and meaningful struggle as they cannot access the resilience factors of trauma bonds. For instance, rear-guard troops and drone pilots see a threefold increase in the rate of trauma diagnoses as front-line troops, even when controlling for misdiagnosis. Similarly, those who are disadvantaged in their ability to form such bonds include people who’ve faced early life traumas, which impairs their ability to form deep and enduring relationships, and they likewise suffer higher rates of combat-related trauma because

they cannot access the resilience of trauma bonds for different reasons. Fourth, the skyrocketing rates of trauma diagnoses in modern military conflicts and in the US in particular (relative to other countries), may not reflect not greater adversity – these conflicts are relatively “safer” than the conditions in historical conflicts – as much as the conditions of social resilience for troops, which may be poorer. Finally, societies compound trauma risk when they handle social reentry poorly. Veterans are alienated through misplaced hero worship while negligent policies fail to provide material benefits and psychological dignities such as meaningful work; moreover, the reintegration process replaces the raw tribal communalism of military combat with a society of narrow transactional self-interest:

What people miss presumably isn't danger or loss but the unity that these things often engender. There are obvious stresses on a person in a group, but there may be even greater stresses on a person in isolation, so during disasters there is a net gain in well-being. Most primates, including humans, are intensely social, and there are very few instances of lone primates surviving in the wild. A modern soldier returning from combat—or a survivor of Sarajevo—goes from the kind of close-knit group that humans evolved for, back into a society where most people work outside the home, children are educated by strangers, families are isolated from wider communities, and personal gain almost completely eclipses collective good. Even if he or she is part of a family, that is not the same as belonging to a group that shares resources and experiences almost everything collectively.

Whatever the technological advances of modern society—and they're nearly

miraculous—the individualized lifestyles that those technologies spawn seem to be deeply brutalizing to the human spirit. (pp. 92-93)

A “social ecology of PTSD” presents a consilience of evidence from social neuroscience, social cognition, epidemiology, developmental psychology and other academic programs, suggesting a paradoxical shift in how we understand trauma and recovery (Charuvastra & Cloitre, 2009). For a social species, protective factors against traumatic stress come from meaningful social conditions such as relationships built on mutual reliance, social purpose and a sense of importance – and so social animals are also the most traumatized when these factors are threatened or lost (Bryant, 2016; Charuvastra & Cloitre, 2009; Junger, 2016). The perspective emphasizes trauma risk and recovery as social phenomena, and explains paradoxical observations about trauma and recovery. For instance, the *social deterioration model* of trauma holds that trauma shatters one’s ability to feel supported and disrupts social support systems; as individuals reduce expectations of support, they hurt their support relationships, which worsens their traumatic stress response and prolongs recovery (Barrera, 1988; Bryant, 2016; Wheaton, 1985). A longitudinal study found intense PTSD at 2 years predicted lost social support networks at 5 years (King et al., 2006). A study by Kaniasty and Norris (1993) showed high levels of support at 6 months following a natural disaster predicted decreased PTSD symptoms at 12 months, and similarly, support at 12 to 18 months predicted decreased PTSD symptoms; however, high levels of PTSD symptoms also predicted decreased support. At the heart of the trauma complex, then, is the way trauma paradoxically damages the social resources needed to deal with the trauma, all

because social animals coregulate threat, stress and emotion primarily with other social animals (J. T. Cacioppo & Patrick, 2013; Coan & Sbarra, 2015; Junger, 2016).

Trauma as social threat also explains why the classes of event that are most likely to traumatize, either as single-episode and complex traumas, are events caused by other people, i.e. “events of human intent” (Charuvastra & Cloitre, 2009). Traumas of human intent carry a high traumatizing risk: for men, rape (65%), combat exposure (38.8%), childhood neglect (23.9%), and childhood physical abuse (22.3%); for women, rape (46%), childhood physical abuse (48.5%), being threatened with a weapon (32.6%), and sexual molestation (26.5%; Kessler et al., 1994; 2005; Kessler & Merikangas, 2004). Meanwhile, traumas of a non-social nature have about a 10% probability of PTSD, about half the risk of the next most impactful social trauma.

The social animal view of trauma means seeing trauma as less about the power of specific events, and more about the nature of *social threats*. That is, social trauma risk is not simply shifting to interpersonal events, but about the embedded social meaning of profound humiliations, entrapments and rejections. Such social insults are deeply overwhelming because they threaten one’s social standing, resources and resilience, i.e. the social capital that is as important to one’s survival as physical survival, for evolutionary reasons (Baumeister & Leary, 1995; Benight et al., 2018; Bjornsson et al., 2000). Bjornsson et al. (2020) explored social anxiety disorder (SAD) as a risk factor for PTSD because social anxiety may itself be an evolutionary response to social threats, as it is anticipated fear of social humiliation, rejection or criticism, typically due to an overwhelming past experience of that nature. The study compared a control group of

people with OCD (n=19), or no disorder (n=60), with people who had a diagnosis of social anxiety disorder (SAD; n=60), where most had had a significant social trauma revealed by interview: 63.3% of the control group, 78.9% of the clinical control group (OCD), and 81.7% of the SAD group. Social trauma included bullying, teasing, mental/physical and sexual violence/harassment, anxiety-provoking remarks, rejection, social mishaps, and outsider status. While most victims reported significant impairment and emotional distress from their experience, it was the one third (32.7%) of SAD respondents that developed an acute trauma reaction. The authors concluded that extreme social threats could both create the conditions for social anxiety as a psychological vigilance to further threats, which further primed the body to be vulnerable to experiences of acute social threat, making PTSD and SAD act as if they were a single self-reinforcing condition.

In summary, a social animal/social ecology view of trauma sees resilience as more than atomized individual factors, but a social gestalt of belonging and purpose in “something bigger,” ala a social superorganism. This places the emphasis on trauma not on the nature of a singular event, but on the psychosocial context where a) evolved social psychology regulates resilience and vulnerability to threat (Charuvastra & Cloitre, 2008; Coan & Sbarra, 2015) and b) attacks to one’s *social survival* include the social violence of acts of subjugation, marginalization or disenfranchisement which damage one’s psychosocial threat resilience, in part because a self-organizing sense of social danger damages the trust necessary to maintain protective relationships (Bjornsson et al., 2019; Bryant, 2016; Dickerson et al., 2009). This view challenges the significance of

criterion A (“a threat to life”) as central to PTSD, as criterion A cannot theoretically accommodate the trauma-like profiles of drone pilots who never experience real danger (Junger, 2016); the phenomenon of race-based traumatic stress that might accrue through persistent microaggressions as microinsults, microassaults and microinvalidations (Carter, 2007; Harrison & Tanner, 2018); the evidence that life events involving public humiliation, ridicule or rejection are more distressing than criterion A experiences (Spence et al., 2019); or trauma-like profiles among those who live on the periphery of a social network, where a similar diagnostic profile – hypervigilance to social threat, increased salience to social cues, confirmation bias toward perceived social danger, and a negative memory bias to social information - can arise simply from being on the social fringe (J. T. Cacioppo et al., 2013). Many people live alongside threats to life daily, but the collapse of interpersonal safety sabotages the neural pathways that keeps one’s embodied threat perception on a leash (J. T. Cacioppo & Patrick, 2009; J. T. Cacioppo et al., 2013). Consequently, it can be traumatic to attack one’s social survival because one is attacking an individual’s sense that they are safe within an ingroup where subjective safety and threat insensitivity are tied to one’s security in the group, and danger is less about objective events, and more how dangerous events can feel if one feels they are outside the protective context of normal social living (J. T. Cacioppo et al., 2013; Gilbert, 1989; 1992b; Hari, 2018; Junger, 2016; Sapolsky, 2017). Many paths to traumatic vigilance occur through the gradual loss of control and self-regulation, and the rise of a complex trauma as persistent, unbuffered social stressors (Bjornsson et al., 2019; Herman, 1992). Some of the most stressful events humans face are social in nature

(see: *social evaluative threat*) which is stress that arises from social scrutiny in scenarios such as test-taking and public speaking (Gramer & Saria, 2007). Thus, triggers of catastrophic loss of social positioning likely make for high levels of traumatic threat, which doesn't always require the insidious effects of traumatic stress to be grounded in objective danger, but importantly, always constitute *social violence* toward one's social survival (Carter, 2007; Oh, 2015; Rosenberg, 1999).

By implication, the social ecology/animal view of trauma extends conceptual legitimacy to *traumatic disruptions* of safety, security and opportunity, which make it increasingly hard to access embodied resource states of safety, confidence and hope, which can help explain why infidelity and other social disruptions are involved in trauma risk (Spence et al., 2019). This is true at individual levels, but also at societal levels, as we see from the nature of agonic and hedonic environments: some environmental conditions promote safety, esteem and freedom at a deep normative level (hedonic environments), while some environments promote power and threat at the normative level (agonic environments) and thus normalize traumatic insecurity to social positions. Trauma-like features are in many ways features of agonic "mode," which helps navigate environments of injury with vigilant sensitivity to cues of power and threat, by tracking vectors of social and positional danger, and by preparing fight-flight behavior to the exclusion of intelligence, prosociality and creativity (Chance, 1980; 1984; 1988). Hedonic mode is thus a double-edged sword: it is critical to the mental foundation of higher cognitive faculties, but it is easily undercut by an agonic mode that becomes harder and harder to dislodge each time it is activated, spreading a sense of associated social

danger around every corner, and equating safety with a vulnerability to lurking agonic threat.

**Balance of Stressors and Resources.** Modern environments need not be overtly agonistic to trigger agonic mode because as traumatic stress illustrates, both stressors and the loss of psychosocial resources carry trauma risk, so it may be that the subjective ratio of stressors to energetic resources is sufficient to signify threat. The perception of whether an environment feels dangerous may simply be an internal calculation of whether stress feels acute or chronic, and whether stressors feel manageable within one's existing mental and social resources. Given that excess stress over-utilizes neurotransmitters and can "burn through" them under chronic duress (Gilbert, 1992b), it is likely that the subjective qualia of feeling "stressed out" is effectively synonymous with an inability to feel one's subjective energetic resources which in turn amplifies perceived stress in their absence. A similar mechanism has been implicated in neurodiverse *burnout*, where there is an overproliferation of stressors and lack of support, which fails to provide enough energy to meet social expectations (Raymaker et al., 2020); i.e. burnout is about a lack of social energy as resources. Therefore, any path that takes one to an insufficient ratio of stressors to resources— either due to too many stressors or too few resources— may sensitize agonic mode in the body. Indeed, life history research points to a critical developmental window in childhood where excess stressors and inadequate supports may provide the central environmental contribution to creating fast strategies, flipping the epigenetic switch that moves one away from "slow and steady wins the race," and toward "live fast and die young" (Biglan et al.,

2020). Simply put, then, any overproliferation of stressors and attenuation of social resources may be sufficient to trigger acute stress reactivity, sensitivity to social threat and the cognitive shifts toward impaired intelligence, prosociality and creativity (Chance, 1984; 1988). By extension, social conditions that are particularly toxic to social animals include any environments skewed toward over-stress and under-support, including: the anticipation of losing control, uncertainty, effort-to-reward imbalances (see: *structural inconsistency*), entrapment (see: low social mobility), status insecurity, unstable hierarchies, social comparison across hierarchical gradients, lack of support (see: lack of safety nets), lack of high-quality and authentic relationships, lack of social trust and cohesion, punitive social policies, and so on (Booth et al., 1989; 2006; J. T. Cacioppo & Patrick, 2008; J. T. Cacioppo et al., 2013; S. Cacioppo et al., 2015; H. Choi & Shin, 2023; Elstad, 1998; Leary & Baumeister, 2000; Leary, 1999; 2004; Marmot et al., 1984; 1991; Marmot, 2006; 2015; Mazur & Booth, 1998; Sapolsky, 1994; 2017; Seligman, 1975; Wilkinson & Pickett, 2011; Zink et al., 2008).

#### **Unsustainability: Self-regulatory Resilience and Compensatory Mechanisms.**

Feedback about social survival comes from each mentality system as automatic and preconscious data (J. T. Cacioppo & Patrick, 2009; J. T. Cacioppo et al., 2009; Gilbert, 1992b; Kirkpatrick & Ellis, 2001; Mahadevan et al., 2016; Zink et al., 2008), where it affects a variety of biological regulators in the brain: neurotransmitters, neurohormones and neuropeptide pathways including serotonin (McGuire et al, 1983; Watanabe & Yamamoto, 2015), oxytocin and vasopressin (J. T. Cacioppo & Patrick, 2009; J. T. Cacioppo et al., 2009; Sapolsky, 2017; Zak, 2012) testosterone (Mazur & Booth, 2005;

Sapolsky, 2017) dopamine (DeYoung et al., 2011; Sapolsky, 2004; 2017), norepinephrine (Sapolsky, 1998; 2017) and others. Rather than these pathways pointing to debunked theories of chemical imbalances (Baughman, 2006; Moncrief et al., 2023), evidence suggests these biological regulators capture a variety of social dynamics related to social survival, and facilitate important subjective shifts in psychological well-being to convey their adaptive information (J. T. Cacioppo & Patrick, 2013; Sapolsky, 2017; Selten & Cantor-Graae, 2005; Zak, 2008). Rather than reflect intrinsic deficits, such mechanisms likely provide a path for social adversity to affect mental health by driving subjective, cognitive, affective and behavioral changes in ways that are outside one's ability to self-regulate them, contributing a robust path to diagnosable psychological conditions.

For instance, social defeat experiences involve changes to dopamine, serotonin, testosterone and other neurotransmitter pathways, which leads to a variety of cognitive, behavioral and affective changes. When internalized defeat becomes mental defeat, a predictable loss of affective regulation including the subjective assessment of one's own personal failure, inadequate intelligence, poor academic achievement, and perceived unattractiveness, regardless of how objectively false that assessment may be (Björkqvist, 2001). Experiences of loneliness are likewise mediated by physiological and neurotransmitter changes, and lead to paranoid vigilance and mistrust of others in extremis, leading one to make unfair and malicious social attributions about the intent of others (J. T. Cacioppo & Patrick, 2008; J. T. Cacioppo et al., 2013). Realistic perceptions of social entrapment can lead to a negativity bias and cognitive pessimism called *depressive realism*, as well as uncontrollable avolition (Alloy & Abramson, 1988;

Hanna et al., 2000), likely by impacting on the dopamine pathways and removing the default human optimism bias (Sharot et al., 2012). These phenomena are hallmarks of diagnostic “symptoms” familiar to clinical evaluation, yet each is in fact a predictable social animal phenomenon: impaired cognitive and affective self-regulation is the expected outcome of adverse niche dynamics including isolation, entrapment and subjugation.

Biosocial pathways that predictably involve a loss of self-control or self-regulation extend to a range of phenomena: the inability to regulate one’s nervous system activation (Björkqvist, 2001; J. T. Cacioppo & Patrick, 2008; J. T. Cacioppo et al., 2009), the inability to control social approach behavior or general motivation, and an increase of involuntary behavioral inhibition (Björkqvist, 2001; J. T. Cacioppo & Patrick, 2008; J. T. Cacioppo et al., 2009; Gilbert, 1989, 1992b; Sapolsky, 1994; 2004; 2017), an increase in negative health outcomes such as cardiac, sleep and inflammatory dysregulation and sensitization of biochemical pathways (Björkqvist, 2001; J. T. Cacioppo & Patrick, 2009; J. T. Cacioppo et al., 2009; Sapolsky, 1994; 2004; 2017), the telegraphing of repulsive social signals (J. T. Cacioppo & Patrick, 2009), the tendency to lose social positions (S. Cacioppo & Patrick 2015; Sapolsky, 2017), and an increase in adverse social experiences from positional vulnerability as a result (J. T. Cacioppo & Patrick, 2009; Elstad, 1998). The loss of embodied self-regulation, typically considered a sign of mental illness, is a predictable consequence of positional vulnerability to social adversity (Björkqvist, 2001; J. T. Cacioppo & Patrick, 2009; J. T. Cacioppo et al., 2009; Elstad, 1998; Gilbert, 1989, 1992b; Hari, 2018; Sapolsky, 1994; 2004; 2017), and highlights how the gain of group-

level adaptive advantages such as interdependence, cohesion and coordination can involve powerful receptivity to social signals that can, at the extreme, involve the potential loss of physiological self-control when negative social influences affect sensitive biopsychosocial pathways.

Much of this can fit an adapted model of *self-regulatory strength* or *self-regulatory resilience* (Bauer & Baumeister, 2011; Baumeister, 2016) where self-regulation is seen as a finite, energetic resource that can be lost and thereby lead to overeating, crime, abuse, gambling, prejudice, addiction and more. Inversely, self-regulatory resilience may be increased by filling one's "mental gas tank" which includes any experiences that may be restorative or energizing to a social animal. While a full social animal account is beyond the scope of this section, one might adopt a categorical view that corresponds to the various social mentalities (Gilbert, 1992b; 2000b; 2005a; 2005c; 2017; 2019) and the types of social resources one might access as part of social coregulation (Coan & Sbarra, 2015): social connection and intimacy (J. T. Cacioppo & Patrick, 2008; J. T. Cacioppo et al. 2013; S. Cacioppo et al., 2015), competitive or cooperative achievement (Gilbert, 1992b; 2000b; Griffiths et al., 2014; Hollis & Kabbaj 2014; Mazur & Booth, 2005), fulfilling social expectations and personal goals (Coan & Sbarra, 2015), and satisfying needs for curiosity and fun (see: cognitive novelty). That is, self-regulation is improved by access to social resources that in turn help to access empowering psychological states that are energizing/motivating, feel good, confer resilience, and embolden psychosocial strengths. This has been framed as *recovery capital* within *self-regulation shift theory* (Benight et al., 2018).

Self-regulatory resilience may help explain other psychological phenomena as well. It is plausible that social mentalities are tasked with solving both real social dilemmas and boosting psychological resources and strengths, and therefore must often make tradeoffs against both goals. For instance, Ratnayake (2022) pointed out that CBT overstates the relevance of reasoning to optimal mental health, in part because normal people exhibit a delusional optimism bias, while those who are particularly realistic about the world may gain depressive features because of it, i.e. *depressive realism*. Here we consider that findings like this make sense as trade-offs between perceptual and cognitive accuracy on the one hand, and the need for social mentalities to adopt mindsets that boost psychosocial resources like motivation and resilience, even if they are unrealistic in doing so. In other words, cognitive and perceptual biases may be employed to bend reality in ways that empower energetic reserves and sacrifice truth when resources are deemed to be more important. Interestingly, pronounced irrationality may not be a feature of mental illness, *per se*; rather, those who are severely psychologically under-resourced may be irrationally attempting to boost desperately needed psychological resources, but when a lack of psychological realism makes it harder to solve real world problems, this may nevertheless contribute to a downward spiral.

Each social mentality has a version of sacrificing perceptual accuracy strategically to boost psychosocial resources. For instance, social connections release neuropeptides designed to facilitate cooperation by motivating social trust and cooperation (J. T. Cacioppo & Patrick, 2008; Zak, 2012); however, central in this effort is the need to

override rational assessments of the potential dangers of cooperation, such as defection (Zak, 2012). In Prisoner's Dilemma experiments, which mimic real-life scenarios where cooperation toward a goal is the most adaptive option, the obstacle to both parties cooperating with one another is reasonable fear that the other party will defect or freeload on one's efforts. The release of the neuropeptide oxytocin in affiliative scenarios *does not eliminate that risk of cooperation*, but it does increase perceived feelings of safety, trust, generosity and relational motivation, all of which suppress fear, stress and anxiety associated, making cooperation more likely, particularly if the cooperator is a known member of an ingroup (Declerck et al., 2014). Thus, oxytocin motivates a cognitive bias toward trust (Kosfeld et al., 2005) and generosity (Zak et al., 2007) to ingroups (Sapolsky, 2017) by offering the self-regulatory strength of social connection as a reward, even at the expense of rationality.

Defeated rivals exhibit involuntary behavioral inhibition following a social defeat. This evolved response serves the social group at large by allowing rivals to live in close social quarters after conflict without endless cycles of escalation and violence, while allowing the loser to avoid further harm by appeasing the aggressor with submissive behaviors (Gilbert, 1992b; 2000a; Griffiths et al., 2014; Hollis & Kabbaj, 2014); however, this mechanism comes at great cost to the loser, effecting submission through automatic involuntary self-inhibition, self-criticism and defeat-driven anxiety and depression. This dynamic is similar to the theorized mechanisms of *internalized oppression* and *systems justification*, where one may readily believe themselves inferior by accepting an ideological belief system that is not aligned with their interests, in order

to coexist among a group without significant resistance (Jost & Hunyady, 2002). More generally, it can motivate a bias to see one's self or one's group as superior, a form of attribution bias (Haidt, 2013; Sapolsky, 2017; Wright, 1994) to boost levels of self-confidence as a resource. Again, a group function is promoted through cognitive biases by rewarding outcomes with self-regulatory strength - the ability to maintain a sense of confidence and control while minimizing stress through the "palliative functions of ideology" (Jost & Hunyady, 2002).

Finally, shared social beliefs and myths structure goals and expectations (the acquisitional mentality) by creating a *practical reality* based on useful fictions that motivate coordinated action (D. S. Wilson, 2002). Ideological myths and beliefs likely evolved to sacrifice truth to facilitate ingroup cohesion and coordination as part of their core function (Henrich, 2016). One aspect of this function may be to boost shared psychological resources like hope and faith in service of curating motivation and control as social resources even if optimism borders on delusion when disproportionately attending to the positive (McGuire-Snieckus, 2014; Ratnayake, 2022; Sharot et al., 2012). The obvious cost is that analytical rationalism became subservient to useful fictions and myths throughout history (Henrich, 2016; Ratnayake, 2022), as realistic information about the future could be seen as threatening and undesirable if negative expectations about the future curtailed motivational resources in the present. Dopamine has been shown to naturally moderate belief formation to be skewed toward the positive to facilitate an optimism bias for this reason (Sharot et al., 2012), but the obvious costs of hope, faith and control in service of self-regulatory strength, is that

realism is seen as having a zero-sum relationship with the truth that negatively impacts on well-being even when assessment of risks are reasonably warranted.

**Multilevel spiral dynamics.** When individuals lose self-regulatory control, either through internalized states of defeat, alienation or entrapment, or through the loss of ideologies that tether one to the psychosocial resources of the group, they find themselves witnessing themselves acting in ways that violate their values, beliefs and self-image. They may be impulsive, defensive, easily triggered, avoidant, labile, prone to magical thinking or likewise losing their ability to control their own behavior, affect and cognition. They also lose the ability to act in their own long-term self-interest, prosocial self-interest, and status self-interest, all critical for long-term social success. The narratives we place on this tend to reinforce a loss of control, hope and normalcy, which likely makes things worse (MacDuffie & Strauman, 2017a; 2017b). However, the loss of self-regulatory resilience is a predictable consequence of social animal biosocial mechanisms and spiral dynamics.

Spiral dynamics arise because they lose-lose conditions align biologically, psychologically, and socially in a poor-get-poorer dynamic. The loss of psychosocial resources, energy, strengths and resilience can position people in worse ways going forward creating a “losing” effect, which can lead to further injuries and positions, ultimately leading to self-reinforcing states of suffering, pain, disorder and dysfunction. Motivational collapse, social collapse and status collapse (see: biosocial injuries) are individual spiral dynamics with affective, cognitive and behavioral dimensions. Even sociocultural political dynamics likely play on these dynamics, and include low social

mobility, economic inequality, and punitive public policies can scapegoat vulnerable groups with regressive taxes, reduced safety nets, imposed austerity and harsh sentencing (Marmot, 2006; Marmot et al., 1984; 1991; Wilkinson & Pickett, 2011).

Obversely, there is an evolutionary Catch-22 that people who are suffering act in ways that beget further social injury. The loss of self-regulatory control makes for increasing impulsivity, irritability, aggression, reactivity, negativity biases, aggression, defensiveness, apathy, avolition, role failures and more. This behavior leads to further social punishment, mistreatment, and positional injuries, which in turn registers as new layers of entrapment, defeat and isolation to sufferers. Framed differently, people who are poorly resourced and positioned bring out the worst in those around them, and common people will seem to act as coordinated perpetrators to worsen the social positions of mental health sufferers despite no such coordination. For instance, autistic people face uncoordinated social punishment for their pragmatic language problems, reinforcing their loss of belief in a just world (Bertrams, 2022). Mirowski and Ross (1983) described microdynamic studies that highlight the unintentional synergy of individuals and groups in facilitating social spiral dynamics. Among vulnerable populations in Brownsville, Texas, along the US and Mexico border, people who were positionally vulnerable and routinely victimized came to feel rightly persecuted. The cost of rising threat-sensitivity was suspicion about further persecution and a loss of trust in group-settings. Trust is a social resource, however, necessary to help one another meet cooperative goals (see: *biosocial resources*), and persecuted people who lose trust will be further punished by failing to meet social and occupational expectations, which leads

to lost social status. When vulnerable individuals who lose status face worsening social treatment, they intuitively seek to communicate to others about it, imploring social groups to make the implicit social rules into explicit social rules (i.e., “why am I being treated this way?”). However, such a dynamic only leads to further group punishment as the remaining group colludes to exclude the disempowered member, which cyclically reinforces their perceived lack of trust, safety, and paranoia.

Given that biopsychosocial interactions can take on a downward spiral dynamic, we can infer the existence of a range of factors that contribute to resilience and vulnerability and may be more or less *sustainable*. Such variables would include the balance of one’s resources and injuries, one’s positions and identities, whether one was in environments of injury or support, and one’s life strategies and ideal niche proximity. Sustainability may be a less stigmatizing, but equally descriptive metaphor for framing mental health and well-being in an evolutionary frame. It includes a variety of connotations including the normality and predictability of collapse under extreme circumstances, the need to manage it to maintain sustainability, and a need to attend to what is sustainable and what is not, among other potential insights. Furthermore, it follows that clinical disorders may simply be embodied expressions of unsustainable dynamics, and therefore be a form of feedback that has itself become unsustainable.

**Niche dynamics and clinical disorders.** Though non-exhaustive, niche dynamics account for biopsychosocial spiral dynamics that align in to create pathological states of embodied collapse. In doing so, they plausibly account for the main etiological pathways to clinical defense disorders (Del Giudice, 2018; DeYoung, 2015) as social injuries that

sensitize neurotic defense potential in ways that worsen social prognosis and embodied well-being (Shackman et al., 2016). As with the evidence of social stressors and traumatic stress, evidence of [social] negative life events that predispose one toward depression go back at least as far as Brown and Harris (1978), validating the everyday importance of social buffering - lack of a confidant is one of the “vulnerability factors” - having subsequent evidence to corroborate them (Patten, 1991). Depression can arise whenever approach motivation collapses in the face of assessed certainty about one’s inability to escape negative circumstances, while anxiety results from a more uncertain risk-reward profile (DeYoung, 2015); both are also inherently present in defeat and loneliness pathways, which add other layers of depressogenic stress and inhibition and may extend to any circumstance that confers humiliation and rejection, such as unemployment (Brown & Harris, 1978; J. T. Cacioppo & Patrick, 2008; Gilbert, 1989; 1992b; 2001a). Psychosis, befitting the social defeat model of schizophrenia (Selten & Cantor-Graae, 2005), can also be framed as a defense disorder in that higher exposure to social defeats, both as frequency and magnitude, predict lifetime prevalence of psychotic episodes in non-schizophrenic people in a dose-response fashion (Oh, 2015). Paranoia can be framed as a traumatic disruption of safety that can be induced from the loss of social resources as with profound loneliness (J. T. Cacioppo & Patrick, 2008). Acute stress disorders can arise from sufficiently social stressors particularly in a context of vulnerability through previous exposure to the social dangers of such stressors (Bjornsson et al., 2019; Bryant, 2016).

It should be no wonder that many rightly think that etiological lines are blurry

and lead to unnecessarily high rates of diagnostic comorbidity (Suris, 2016), as many of the social pathways to depression - entrapment, isolation and subjugation - self-organize as plausible positional outcomes from general spiral dynamics. In other words, status collapse, motivational collapse and social collapse implicate one another along sufficient time horizons. The predisposing injuries may even share many of the same dynamics. For instance, depression from entrapment and defeat are independently depressogenic, but experiences of defeat also have an entrapping dynamic to them, called *reverted escape* (Gilbert, 2001a; Gilbert et al., 2004, Gilbert & Allan, 1994), while most social entrapment is inherently oppressive or socially coerced (Hanna et al., 2000; Herman, 1992); meanwhile, status loss involves a loss of social support and resources, while a loss of social resources may invariably impact on one's social status. Said another way, all of these may be the body's way of registering either permanent social demobilization in an agonic system, or the inability to access a hedonic one. For this reason, it is plausible that one's general well-being is most accurately assessed by one's access to social resources, and ability to avoid social stressors, which is best captured as a more or less sustainable relationship to one's overall social niche.

### **Biosocial Niche Summary**

A niche perspective illustrates that real world social dynamics can be more or less unsustainable for human beings and their social survival, and this is not captured rationally, but by embodied and evolved psychological mechanisms with various subjective expressions. The evolved psychological mechanisms capture our social survival by adjusting perceived well-being through threat perception, a sense of self-

esteem and self-respect, a sense of safety and control, access to psychological resources, access to higher cognitive capacities such as intelligence, prosociality and creativity, existential woes about our social security, the perceived manageability of social stressors, and more. The fact that these feedback mechanisms evolved to capture our entry into dangerous social environments, at least for some of our intersectional identities, means they supersede human rationality, and this paradoxically makes them seem irrational when they come out as impressionistic social fears and stresses without a clear objective origin. This in turn has historically allowed such fears to be not just dismissed, but helps them contribute to the perception of mental health sufferers as unreliable narrators, an epistemic injustice; moreover, attempts to communicate about positional social insults and injuries is often met with social punishment. Nevertheless, evolved pathways to track feedback about our social niche offer us data about well-being, some of which is under individual control, some of which is under social control, including unsustainable dynamics that are oppressive either intentionally or unintentionally (Hari, 2018). A niche view of mental health likely means that many of our current assumptions about human suffering and thriving are backwards, that mental health problems are not individual problems “in [one’s] head” but social problems pushed down onto individuals that compound many existing injustices.

Let us briefly summarize the relationship of Hari’s (2018) model to a niche model:

***Disconnection from meaningful work.*** Meaningful work dictates the role we play in a social superorganism, and whether that role fits our life strategy and moral values, or not. Congruence with ourselves and our environments are necessary to

access meaningful community, prestige hierarchies, and values-aligned goals. Agonic environments can be exploitative and stratified, and deprive people from control, autonomy, predictability or social resources with which to deal with their threats. Sufficient mismatches of any degree likely feel agonic.

***Disconnection from other people.*** Horizontal relationships create networks of attachments - friends, allies, romantic partners - that help co-regulate social threats and offer psychosocial resources like safety, trust and cooperation. Injuries like rejection and alienation can lead to loneliness as an unsustainable state of lost hedonic resources and amplified social threat.

***Disconnection from meaningful values.*** Values are high-level patterns of reward and punishment that can be aligned or misaligned to those around them. One's personal values emerge from their life strategy diversity (creativity, prosociality, intelligence), moral diversity (conservative, progressive, etc.), and characteristic adaptations. These dispositions can be rewarded or punished based on their fit with the values of the prevailing sociomoral environments based on their agonic or hedonic nature and the kinds of roles one can play. One can be mismatched with these environments, internalize ill-fitting values, fail to live up to incompatible values systems, and get stuck in agonic competitions.

***Disconnection from childhood trauma.*** Social threat is more powerful than previously believed, being capable of damaging social positions that create greater access to psychosocial injuries, with fewer relationships with which to deal with them. A poor balance of psychosocial resources to social stressors may be sufficient to activate a

trauma-like profile which further damages the relationships needed to regulate stressors. When this happens early in childhood, one may become locked into an agonistic world that is difficult to escape, physiologically, perceptually and ideologically.

***Disconnection from status and respect.*** Vertical relationships encapsulate both dominance hierarchies of power and threat, and prestige hierarchies of prosocial contribution and skill. Social defeats as humiliations and subjugation may dysregulate our ability to partake in these prestige games, and make one feel stuck in an agonistic world of power and threat.

***Disconnection from the natural world.*** Not explored here. This category is different by virtue of being non-social and non-agentive, and could fall within an extended umbrella that considers all other critical non-social dimensions to niche health. Such a taxonomy might include exercise, diet, sleep hygiene and daily structure (see: social rhythm; Levenson et al., 2015). Furthermore, connection to the natural world should itself be teased from data suggesting that environmental enrichment is buffering (Lehmann & Herkenham, 2011), and might then include anything from opportunities for restorative stimulation, to environmental beauty and comfort.

***Disconnection from a hopeful or secure future.*** Human goal-directedness is a cybernetic relationship with space and time. The agentive brain is devoted to building a model of the world held in memory, which is used to predict the future and manage motivational resources. A tradeoff between cognitive realism and subjective motivation means anticipated entrapment can damage hope and faith as sources of goal-directed energy, and even skew individuals toward magical thinking for short-term motivational

boosts, lest they develop the cognitive pessimism of depressive realism.

***The real role of genes and brain changes.*** Neuroplasticity debunks reductive brain-based narratives, while genes that sensitize one to their social environment for good or for ill implicate a broader range of neurodiverse factors. That includes individualized factors of who gets sick and why, as expressions of differences of life strategy, cognition, morality and sensitivity that lead to different profiles of social challenges and trade-offs.

### **Therapeutic Mechanisms in Social Animals: Social Buffering and Hedonic Microcultures**

Human beings' have a "social nature" with a profound ability for relationships to harm and heal, a power that underpins talk therapy as a "social cure" (Wampold & Imel, 2015). The brain is socially optimized, comfortably managing between 100-230 (~150) relationships, not coincidentally the number found in tribal bands before tensions split the group in a *fission/fusion dynamic* (Dunbar, 1992). Humans meet their every challenge and need in concert with other people thanks to communication, organization, collaboration, and culture, which is thought to provide a unique adaptive advantage over other social animals, enabling humans to be the only species to transcend niches and dominate the planet as a whole (Christakis & Fowler, 2011; Haidt, 2016; Henrich, 2016; D. S. Wilson, 2002; 2008; 2019; Wright, 2001). Sophisticated mechanisms facilitate deep intersubjectivity as an interdependent adaptive strategy, from representational brains that model the social world (Hawkins & Blakeslee, 2005), to mirror neurons that map others feeling states onto our own (Kilner & Lemon, 2013), neuropeptides like oxytocin that facilitate trust and safety and belonging while calming

stress, fear and anxiety (Heinrichs et al., 2003; Kosfeld et al., 2005; Marazziti & Dell'Osso, 2008; Zak, 2012); neurotransmitters and hormones that respond to social positioning (Björkqvist, 2001; J. T. Cacioppo et al., 2009; Mazur & Booth, 2005; Sapolsky, 1994; 2017; Wright, 1998); evaluative mechanisms that size up one's degree of belonging or esteem in a group (see: *sociometer*; *hierometer*; Leary, 2004; Leary & Baumeister, 2000; Leary & Downs, 1995; Mahadevan et al., 2016), and social needs that tie well-being to social feedback (Hari, 2018; Sapolsky, 2017), to name only some. While evidence-based practice tends to emphasize specific ingredients in therapy as the mechanism of change, common factors proponents that these effects make up just 7% of clinical outcomes, while 20-40% of outcomes are due to the *real relationship*, possibly because of the significance of social factors to general human functioning (Wampold & Imel, 2015).

Understanding the evolved basis of therapy is important because there is a deep evolutionary logic for why relationships injure and how they heal. First, social resources are simultaneously both indispensable and a luxury. Humans coregulate psychosocial threats through relationships because this motivates people to come together to face shared challenges as a central conceit of social evolution (Henrich, 2016; Haidt, 2013; D. S. Wilson, 2002; Wright, 2001). Social stressors are directly “buffered” by such relationships, mitigating the stress response immediately after an acute social injury (Crockford et al, 2017; Kikusui et al., 2006); this makes it intuitive to face stressors by seeking trusted allies (see: the *tend-and-befriend* stress response; H. Taylor et al., 2000). Yet social resources are not superfluous to one's individual resources, they are a

necessary and assumed part of one's individual baseline (Coan & Sbarra, 2015); losing access to them may be intrinsically unsustainable. Psychosocial resources keep one's acute threat response on a leash, making social interdependence necessary to inhibit the sympathetic nervous system, and keep stress, anxiety and fear conditioning from amplifying and spreading to a highly reactive, overwhelming and disabling state (Bjornsson et al., 2020; Bryant, 2016; J. T. Cacioppo & Patrick, 2008). Thus, people have evolved to regulate threats physiologically by receiving social attention, social feedback and social reassurance, all of which calm fear, stress, arousal and distress at an embodied level (J. T. Cacioppo & Patrick, 2008; Crockford et al., 2017; Sapolsky, 1994; 2017), and yet, people can lose access to their fundamental ability to coregulate. One's relationship to their relational resources can therefore be more or less psychologically sustainable.

A second key dimension to why relational healing is critical is that *social survival* is as evolutionarily real as one's physical survival and the two are directly linked (Leary, 1999; 2004). The power of social threats to our well-being have been significantly underestimated, as the magnitude, frequency and exposure to such threats can be psychologically unsustainable (Björkqvist, 2001; Bjornsson et al., 2020; Oh, 2015; Sapolsky, 2017). Coregulating, managing and solving social stressors is incredibly important to social survival, yet some positional and political dilemmas can create a Catch-22 wherein attempts to communicate about them can make one's predicament worse (Mirowsky & Ross, 1983); a politically-neutral, third party and safe support is required. Because social threats pose a cumulative, existential and physiological toll (Björkqvist, 2001; J. T. Cacioppo & Patrick, 2008; Elstad, 1998; Sapolsky, 2017), one may

also lose self-regulatory resilience because of it, inviting further social mistreatment and injury, and further damage to social positions and resources, and amplifying social threat vectors in a vicious cycle. Spiral dynamics challenge one's ability to find social resources: people who can understand their complex problems, coregulate and buffer the stressors involved, or energize their resources against the problems. Thus, stressors can be naturally unsustainable because of their spiral dynamic toward exponential dysregulation. Regardless, the combination of resource and stressor dynamics make something clear: in contrast to connotations of therapy being "complaining," a client is very much *doing something evolutionarily real* when they attempt to buffer their stressors, energize their resources, alleviate inhibiting mental states, clarify thinking, unburden emotions, create allies, build social energy, and motivate action.

Much of the relational power of therapy can be seen as a form of *social buffering*. Social buffering is the use of physical, psychological and social support in social animals, from attention, grooming, affection, assurance, sympathy, empathy, understanding and trusted touch (Crockford et al., 2017; Kikusui et al., 2006). At the physiological level, buffering reflects a social causal chain wherein a variety of inputs (such as mirror neurons) register a social connection, which then activates the rest and digest system, calms the amygdala and HPA axis, and releases oxytocin. The release of oxytocin registers a meaningful and subjective phenomenological change by promoting a state of safety, trust and openness and reducing stress, fear and anxiety; this is energizing, feels good, promotes psychosocial strengths like openness and generosity (Zak et al., 2007), and increases psychosocial resilience to injuries (Lehmann &

Herkenham, 2011). Oxytocin is related to feelings of ingroup belonging (Sapolsky, 2017) which may have evolved in relation to outgroup challengers that would have been hostile in an evolutionary environment. Encountering challengers among friends meant two things: the rise of cortisol at impending conflict, and the ameliorating effect of oxytocin from being among trusted allies, which helped to coordinate a strategic response (Crockford et al., 2017). The natural coupling of social stressors with social soothers shows a corollary of this mechanism that is highly relevant to therapy today—when encountering stressors in isolation, people naturally seek out the reassuring social connection of trusted allies and partners to calm the stress-response with socially-induced oxytocin, a phenomenon called *tend-and-befriend* that exists alongside *fight-flight* (S. E. Taylor et al., 2000).

At a psychosocial level, social buffering from a supportive individual may be critical in countering feelings of shame, subjugation or defeat down a social ladder. Following social defeats, where a person feels knocked down the social ladder and subjugated against their will often by a capricious higher status bully (see: *displacement aggression*; Björkqvist, 2001; Sapolsky, 1994; 2017), supportive contact by other social animals - grooming, touch, supportive care and general social contact - has been shown to prevent the conversion of social defeat to mental defeat. This includes physiologically calming the range of associated physiological markers like vigilance, submissiveness, anxiety and PTSD-like symptoms (Kikusui et al., 2006; Lehmann & Herkenham, 2011), and also holds true for vicarious defeat, i.e. the distress of watching a conspecific face defeat (Carnevali et al., 2020). A likely mechanism to offset the threat to social status

that comes from competitive or hierarchical defeat is being reassured of one's relational value as a community member worthy of supportive investment.

The power of horizontal relationships to directly counter the injuries of vertical relationships is particularly important to social animals like primates and humans, where two poles of social organization exist: an agonic world shaped by power and threat (agonic being from the root word for agony), and signifying a toxic survivalist mentality; the other a hedonic world of affiliation and cooperation, that supports hedonic thriving (Chance, 1980; 1984). These social dimensions are in many ways in direct opposition; CFT, for instance, takes its core theoretical mechanism to be the need to re-balance an over-exercised competitive mentality by compensating with a more supportive empathic mentality, as it is thought that whichever mentality is more dominant will also shape how one relates to one's self (Gilbert, 2005a; 2005c; 2014; 2017). Stress may be an important physiological proxy for understanding which of the two forms of social logic is at play, and the importance of care and support may be critical to turning off the agonic lens that the social world is one of fear, domination and power. After all, *agonic mode* dictates that one must be vigilant to signs of social status and ingroup positioning as clues to social survival, and dread rules the day (Chance, 1980; 1984; Gilbert, 1989; 1992a; 1992b).

Appraising the dynamics of social buffering against the social dynamics of hedonic and agonic forms of social living, one can sense a larger meaning in therapeutic relationship-building. Among clients who are undersupported, neglected or isolated clients, or those who face abuse, bullying or invisibility, hedonic relationships offer a

critical gateway to a psychosocially coregulated hedonic world. Shifting one out of agonic mode requires social signals such as respectful active listening to facilitate the internalization of support, safety, value, respect and belief in one's abilities. Clients who are socially positioned so as to spend long enough in agonic worlds may become sufficiently activated that they physiologically never leave them, a central nervous system activation that sensitizes fight-flight-freeze-fawn response and inhibits higher cognitive and social skills to orient to a social world of power and threat (feelings of depression, anxiety, low self-worth, etc.). In order to promote feeling the social logic of hedonic mode, which lays down a foundation of safety and trust to free up cognitive resources like intelligence, creativity and prosociality, clients must compellingly believe they are a part of a social world where the logic is supportive, trustworthy, aligned to one's developmental goals, and what we might think of as meaning-oriented (Chance, 1980; 1984). A therapeutic relationship may not just be access to such a world, it may be a critical opportunity to spend time absorbing its logic, skills, comforts and process.

Therapy may fundamentally embody a process-oriented negotiation across these different worlds. One model for understanding the potential for therapeutic change is to see therapy as creating a hedonic microculture to mitigate the effects of spending too much time in agonic microcultures, as people who hold multiple marginalized intersectional identities often do. Agonic environments set up a developmental Catch-22 where people must project an image of imperturbability and strength to avoid status challenges, which requires emotional suppression and masking one's authentic internal experience, even to themselves. These pressures may exert an emotional lose-lose in

agonic cultures wherein feelings of vulnerability are met with an automatic shielding and avoidance of help-seeking behavior as a survival response. Hedonic cultures, however, see exploring vulnerability, growth, self-awareness and shared understanding as mutually beneficial in improving the effectiveness of long-term relationships, and thus vulnerability can afford to be met with authenticity, safety and courage. Hedonic therapy, therefore, might be said to allow people to internalize a win-win feedback loop of empowering understanding, awareness, sensitivity and control, while agonic worlds lead people to internalize lose-lose situations to leave them helpless, alone and defeated, unable to process their experience in order to gain the tools to escape it.

When client's resist vulnerability in therapy, it may be because vulnerability is associated with agonic danger, coupled with the safety that hedonic safety is a luxury they cannot afford to indulge.

Social buffering is likely a multilevel phenomenon for humans that takes its power from all of these biological, psychological and social dimensions, with multiple substrates/pathways to affirm ingroup positioning and light up interpersonal neurobiology. However, while this understanding helps to understand the therapeutic encounter, a critical part of the efficacy of buffering is engaging a real client who exists in a world beyond the therapeutic encounter. It is in understanding the client's lived experience in their multiple social ecologies that is critical for buffering to work. The depth with which a therapist can convincingly enter the realism of their client's social situation may reflect the depth of experienced social buffering, possibly as a measure of the therapist's ability to travel with a person into the darkness of their situation. In this

way, social buffering is related not just to active listening and demonstrated understanding, but to ally with a client on their journey into their world to help process the meaning of their experience. In this regard, a key aspect of buffering may be the ability to model someone's context and the evolutionary psychology of their interaction with it relevant to mental health, including the potentials for stressors/injuries, sources of mental resources to re-moralize, and ultimately, to sidestep epistemically unjust dangers that reinforce many of the pitfalls outlined above.

#### **Part IV: ADHD & ASD**

##### **Attention-Deficit/Hyperactivity Disorder (ADHD) as Neurodiversity**

###### ***ADHD Primer***

ADHD is characterized by clinically significant features of inattentiveness, hyperactivity and impulsivity (subtypes include inattentive, hyperactive/impulsive and combined). Hyperactivity includes restlessness, fidgeting, turn-taking, and interrupting others. Inattention includes the inability to sustain attention or focus, distractibility, wandering thoughts, forgetfulness, and disorganization of tasks, activities and spaces. There is moderate correlation between these symptom clusters, and they are continuously distributed in the population (Del Giudice, 2018). Though these symptoms are definitional to the syndrome, others have suggested these are superficial to the deep functional dimensions of ADHD, which include difficulties self-inhibiting, difficulties with self-regulation, and problems of executive functioning, such as motivation, planning and task-execution (Barkley, 2003; M. S. Gold et al., 2014). Impairments to self-regulation at the interface of motivation include aspects of the behavioral approach system (BAS)

that are less dependent on rewards (high sensation-seeking or novelty-seeking) and reduced deployment of the behavioral inhibition systems (BIS), as well as excessive irritability and negative emotionality (Heym et al., 2015; Rabinovitz et al., 2016). There may be a subtype of ADHD characterized by low intelligence, that generates inattentive features as a consequence of cognitive deficits, but ADHD can be diagnosed in highly intelligent people (Milioni et al., 2014). There is a separate subtype for “concentration deficit disorder” or “sluggish cognitive tempo” characterized by troubles staying alert, apathy, mind-wandering, drowsiness, slowness and lack of initiative that is associated with withdrawal, anxiety and depression, and may be more related to a pathway in the brain attributable to physiological arousal levels, which is different than motivational pathways (Barkley, 2015; Bauermeister et al., 2012; Becker & Langberg, 2013; Marshall et al., 2014; Nigg, 2016; Tamm et al., 2016).

ADHD affects 5% of children in the US (Mills et al., 2018), and is highly heritable (70-80%) that can include common allelic variants and rarer mutations. Males are more likely to be diagnosed at a 2:1 ratio, with women expressing more inattentive subtypes, although the different presentation may also contribute to underdiagnosis or misdiagnosis in women (M. S. Gold et al., 2014; Quinn & Madhoo, 2014). Common comorbidities of ADHD are autism, schizophrenia spectrum disorders, bipolar disorders, eating disorders, antisocial personality disorder and conduct disorder, substance abuse, personality disorders (predominantly borderline personality disorder, obsessive-compulsive personality disorder and narcissistic personality disorder), as well as social injury/defensive-related disorders of depression, generalized anxiety disorder, social

anxiety disorder, and obsessive-compulsive disorder.

From a life history strategy perspective, ADHD can span both of the cognitive niches, including an ADHD slow subtype that is comorbid with ASD and OCD, and an ADHD fast subtype that can be comorbid with the rest of the psychosis spectrum, including SSDs and BP. Regarding the latter, early ADHD predicts later onset SSDs and BD and close relatives of ADHD are at higher risk for psychosis (Brody, 2001; M. H. Chen et al., 2015). ADHD predicts a number of fast spectrum traits including risk-taking, early and promiscuous sociosexuality, early reproduction and early mortality, although these are likely to be comorbid with conduct disorders (Olazagasti et al., 2013; Sarver et al., 2014). Given that the FSD predicts different ADHD subtypes, there are likely to be different sub-personality profiles (Perroud et al., 2016); associations that have not been isolated to subtype include extraversion, sensation-seeking, high time discounting, disorganized attachment in childhood, and romantic insecurity (Demurie et al., 2012; Lo et al., 2017).

### ***ADHD: Personality and Evolution***

There is evidence that ADHD is associated with subclinical traits common to an underlying temperament found in families of those with ADHD. Traits like those in ADHD are shared by those in the family of origin at both clinical and subclinical levels, and the difference between those who have clinical features and those who do not is often one of degree, with no clear pathological divide between them (Oller, 2019). Consequently, Oller (2019) considered the overall distribution of traits including those the clinical expression to represent a “normal neurodiversity,” as there are no “symptoms” that are

fundamentally unique outside of these normally distributed traits. By implication, to understand a diagnosis like ADHD, it may be valuable to understand the underlying trait logic of the temperament it is built upon, including the clear adaptive dimensions. There is strong precedent to evaluate ADHD as an expression of an adaptive profile, where the challenges of the diagnosis may be “joined at the hip” with the adaptive strengths, and to the extent that ADHD increases the expression of these traits generally, ADHD may simply magnify both the strengths and challenges together.

People with ADHD score higher on tests of novelty-seeking even when controlling for impulsivity (Donfrancesco et al., 2015). Temperamental characteristics include novelty-seeking, high activity and impulsivity, reduced inhibitory control, lower self-directedness and task-persistence, lower attentional focusing, and low conscientiousness or effortful control, low agreeableness and increased potential for hostility, and increased negative reactivity (Chauhan et al., 2022). In these correlations are a few trade-offs including greater responsiveness (impulsivity, reduced inhibitory control) at the expense of proactivity (reduced self-directedness, conscientiousness and attentional control), with both positive (novelty-seeking) and negative (hostility, low agreeableness) dimensions. A study by Bouvard et al. (2012) confirmed ADHD as being related to the behavioral activation system (BAS): ADHD involved higher activity, emotionality and extraversion, but was not involved with socializability or shyness, which are loaded on the behavioral inhibition system (BIS).

These traits are consistent with the adaptive profiles derived by DeYoung (2015), who showed all temperaments to be composed of just two interacting meta-trait,

*stability* and *plasticity*, with traits as downstream parameters (i.e., for instance, with the ADHD temperament, the trait implications include being “high” plasticity and “low” stability). With regard to meta-trait *stability*, ADHD is part of a temperament that is less “stable” in its goal directedness, which can include trade-offs involving emotional volatility and lack of [social] self-control (DeYoung, 2015). As an adaptive strategy, this emboldens a fluidity of response to environmental threats, with the potential for downsides connected to adaptability as a strength. For instance, hyper-responding can be destabilizing and lead to over-activated defenses (i.e., higher neurotic potential). This supports the view of ADHD as a “fast strategy” (Del Giudice, 2018), a strategy that thrives in less predictable environments where invisible threats may loom around each corner and require the swift mobilization of defenses.

The ADHD temperament includes another dimension of responsiveness, which is the optimistic view of the unknown as full of opportunity and information (high openness to experience/intellect; DeYoung, 2015). A disposition toward risk-taking opportunism and curiosity allows one to capitalize on fleeting opportunities in unpredictable environments, and may require taking costly risks (impulsivity) or using time that could be spent exploiting resources to instead seek out information that may or may not prove useful (novelty-seeking). These trade-offs are associated with meta-trait *plasticity*, and ADHD represents a highly plastic approach, where a loss of goal-directed efficacy (the “exploitation” strategy) is in service to greater creativity/flexibility of responses, interpretations and strategies (the “exploration” strategy). The costs can involve a loss of decisional and task efficacy, reduced delayed-gratification (time-

discounting), and higher barriers to long-term motivation (low self-directedness and conscientiousness). These trade-offs are presumably only costly in some environments. For instance, in ecosystems that undergo change, abandoning strategies that stop working is key to adaptability (J. Williams & Taylor, 2006); and in the case of scarce environments, where no one strategy may work for all scenarios, individuals may need to constantly switch strategies to, for instance, persistently search for foraging opportunities (Costa et al, 2014).

DeYoung (2015) characterized both aspects of these meta-trait as recognizable archetypes. He characterizes high Plasticity thusly: “The exploratory tendency associated with Plasticity should produce the kind of active engagement with novel and interesting phenomena that others tend to find dynamic and that is likely to lead to personal growth.” He also summarizes high meta-trait Stability, which it should be noted is the *opposite* character to the one possessed in ADHD: “the self-control or self-regulation associated with Stability should make children easier to socialize and may also be strengthened by socialization.” Thus, the temperament strategy connected with ADHD is one that favors adaptive responsiveness as a reactivity to ecological threat, and a curiosity and opportunism supporting exploration. Both dimensions would be best deployed in environments that align with the trade-offs favorably, thereby minimizing the costs and leveraging the strengths.

While the previous adaptive trade-offs of the ADHD temperament may be associated with the temperament as a “life history strategy” (Del Giudice, 2018), there is another relatively late ecological consideration that has its own adaptive logic. The

exponential complexification of social evolution and social living would have created robust social ecologies with their own adaptive niche considerations (Del Giudice, 2018). Multilevel selection logic suggests that the underlying adaptive traits may have been co-opted to fulfill different prestige roles defined by their social contributions with respect to the group, which is to say, to bend one's adaptive strengths to a social niche as a kind of "social niche specialization" (Hunt & Jaeggi, 2022). With ADHD, the combination of being "fast" and "plastic" are ideal as a *social* specialty, with qualities that harness social learning and social adaptability. For instance, the "seducer/creative" life history profile characterized by Del Giudice (2018) is high in trait "mentalizing," including heightened abilities in theory of mind, and verbal and aesthetic creativity. At the intersection of social intuition and imaginative potential are a variety of social roles including teachers, story-tellers, creatives, artistic performers (actors and dance), social healers, social communicators (journalists) and spiritual leadership (Del Giudice, 2018; Hunt & Jaeggi, 2022). Here, the sensitivity to social information would be what characterizes openness to experience and the intellectualism associated with the humanities (rather than openness to intellect, which is associated with the sciences), while social threat sensitivity may underpin a vulnerability toward rejection sensitive dysphoria and justice sensitivity (as a kind of moral injury; Bondü & Esser, 2015; Schäfer & Kraneburg, 2015).

Based on these functional profiles, we would theoretically expect ADHD to exhibit brain characteristics that conform to, or even support, neurocognitive mechanisms that functionally support the adaptive profiles of social specialization. We would expect a low setting in the behavioral approach system (BAS) including reduced dopaminergic

activity, and a low setting in the behavioral inhibition system (BIS) as a potential for reduced serotonergic activity. We may even expect ADHD subtypes to conform to different subtypes of ADHD based on whether one's temperament phenotype is characterized more by high "fast strategy" responsiveness (impulsive type), or high dispositional exploration (inattentive type), or both. Indeed, the evidence does show these things, and conforms to them well enough to question whether ADHD research may be assuming that "disorder" is the proper epistemic footing. While ADHD studies bring tremendous technical rigor, most of the mechanisms illuminated within a given study do not show evidence of dysfunction per se, but assume its existence based on the connotation of the ADHD construct. As we explore, consider that these same mechanisms could also map to adaptive trade-offs as a way of accounting for their costs alongside strengths.

### ***Three Dimensions to an Integrated View of the ADHD Brain***

**The Low Dopamine Hypothesis.** Midbrain dopamine neurons are known to encode the "exploration-exploitation" trade-off in the brain (DeYoung, 2015; Humphries et al., 2012; Keeler et al., 2014; Natsheh & Shiflett, 2018), a dilemma between maximally exploiting a given strategy regardless of the quality of that strategy, versus seeking out new information for better strategies at the cost of losing valuable time. Dopamine neurons do this in part with two circuits that modify one another: a D1 dopamine pathway that helps determine the salience of a stimulus by making sensory inputs "loud" to the brain's attention circuits (when a stimulus proves to be more interesting or rewarding than expected); and the D2 circuit that "muffles" the D1 circuit

under certain conditions, specifically when baseline D2 dopamine is high. Together these circuits, largely in the midbrain anatomy of the striatum and basal ganglia, help to “prepare and select” actions for the brain (Keeler et al., 2014). First, D1 neurons “prepare” the brain to act by conjuring an array of competing behavioral options to a) exploit a known reward like food or sex, or b) to explore a source of “cognitive novelty” for a more uncertain payoff. Both drive “phasic” dopamine bursts in different ways: the exploitation of known rewards is associated with the dopaminergic “salience” of reinforcement learning, while the exploration of “cognitive novelty” is an evolved motivation to seek out information to update mental models; this is *curiosity*, and it is triggered by a “bonus” dopamine signal when any stimuli or experience that defies subconscious predictions, called a *prediction error* (Sethi et al., 2018). The D2 circuit then takes these unlike options and “selects” a winning behavior by inhibiting the least favorable options served up by the D1 circuit: goals that are too much work, too much risk, or are not exciting enough.

Interestingly, the mechanism to weight either exploration or exploitation over the other involves the amount of dopamine in the D2 circuit. Excess dopamine inhibits many options in the D1 circuit and favors obvious behavioral choices, optimizing for an exploitation strategy. Alternatively, less dopamine in the D2 circuit under-inhibits the D1 circuit. Not only are several behavioral options served up to the brain at the same time, the D1 phasic bursts are bigger, favoring cognitive novelty with their “bonus” dopamine, and optimizing for an exploration strategy. Consequently, low dopamine in the D2 circuit moderates the exploration-exploitation trade-off, by inducing “behavioral flexibility.”

the brain is offered more behavioral options with more novel approaches. In other words, low D2 dopamine is not inherently pathological, it is a state underpinning a functional trade-off: with more novel options comes more flexibility and complexity, but complexity also impedes efficacy. Low dopamine is indeed implicated in *implicit learning* (in contrast to *explicit learning*), where non-conscious, intuitive processes use pattern recognition to model complex phenomena, in contrast to *explicit learning*, which is more deliberative, linear, conscious and rule-governed (Udden et al., 2010). Exploitation optimizes immediate decision-making, while exploration sacrifices efficacy for the potential to model complexity, or grow optimization strategies over time.

Most authors assume that the exploitation-exploration trade-off is functional, with many further assuming that evolution has sought to optimize an intrapsychic balance between exploitation and exploration lest the trade-offs select against individuals too far in any one direction. However, other interesting details push back on that hypothesis. First, the D2 pathway is likely set to some degree by the average level of reward in the environment. In other words, a low average of rewards in an environment reduces dopamine in the D2 pathway to functionally under-inhibit the D1 pathway, thereby increasing trait novelty-seeking as a way for the brain to say “in this environment, it is worth the opportunity costs of exploration because resources are scarce” (Costa et al., 2014; Humphries et al., 2014). This is familiar as the experience of being under-stimulated where boredom induces a restlessness to explore for greener pastures. Here, low dopamine induces novelty-seeking as a necessary option based on ecology.

Secondly, the concept of complementary cognition speculates that a neurocognitive division of labor at the population level is effectively a second way of resolving the exploration-exploitation trade-off *across* individual personalities (H. Taylor et al., 2022). Multilevel selection pressures at the group-level could select for individuals to specialize in certain social roles and niches, in the same way we see personality to operate among other social animals as social niche specializations (Bergmüller & Taborsky, 2010). Resolving the exploration- exploitation trade-off at the social, rather than psychological level, may relax individual selection pressures and support the evolution of cognitive specialists (H. Taylor et al., 2022). Individuals who consistently optimize for exploration over exploitation, for instance, may gain emergent skills from the D1 system serving up more information and novelty more frequently, generating more complex mental models, and creating the *potential* for strategies that refine opportunism, creativity and growth across the lifespan. However, what we see with ADHD may be that forcing a heritable strategy does not ensure social success; the trade-off for cognitive specialists is likely that they are a “high-risk, high-reward” strategy (Del Giudice, 2018), as they likely depend even more on the rare social niches that can make use of the unique strengths of cognitive specialists.

Genetic evidence suggests some preliminary evidence about the role of genes, low dopamine and ADHD explorer strategies. The DRD4.7r dopamine gene allele that has been implicated in ADHD codes for “inefficient dopamine receptors,” and generally aligns with evidence of low dopamine in ADHD (M. S. Gold et al., 2014), and yet, this only aligns with known mechanisms to induce an exploration strategy (Sethi et al.,

2018). While low dopamine has been assumed to be a marker of psychopathology due to largely disproven chemical imbalance assumptions, viewing the allele as instead facilitating a sometimes-costly trade-off can nevertheless center the associations of ADHD and candidate genes with novelty-seeking, creativity, and migratory lifestyles (C. Chen et al., 1999; Mayseless et al., 2013). Indeed, the DRD4.7r gene allele shows evidence of positive selection, suggesting that it has been historically selected *for*, not against (Ding et al., 2001). These findings integrate into a picture of low dopamine as a functionally encoding of the explorer side of the exploration-exploitation trade-off, specifically by inducing trait novelty-seeking which is known to be temperamentally associated with ADHD (Chauhan et al., 2022; Costa et al., 2014; Donfrancesco et al., 2015).

**The default mode network and big picture thinking.** Shifting to a systems neuroscience perspective, the *default mode interference hypothesis* (Sonuga-Barke & Castellanos, 2007) can build on the implications of the low dopamine hypothesis to validate how an explorer strategy may come to specialize in the social, creative and imaginative “mentalizing” cognitive niche. The brain can be organized into several major networks that are functional, interconnected, and span many individual anatomical structures. Evidence suggests that patterns of connections between these networks may be implicated as biomarkers for neurodiverse diagnoses like ADHD and ASD. For instance, the *task-directed networks* (TD; see also: *task-positive networks*) of the brain are oriented toward goals outside the bounds of the organism (see: exteroception). These networks suppress a network called the *default mode network* (DMN) in normal

operation, but with ADHD there is an incomplete suppression of the DMN by TD networks (Silbertstein et al., 2016). This is the phenomenon wherein people with ADHD become distracted in the middle of tasks and “wander away” in their thoughts, which has been assumed to be a marker of “abnormal” psychology and dysfunction.

Alternatively, however, it is just novelty-seeking (and a low boredom threshold) turned inward and perhaps functionally so.

The functioning of the DMN has been largely mysterious until quite recently; the network was initially ignored and incorrectly dismissed as a simple cognitive “default mode” that people returned to when they were not doing something more meaningful like pursuing a goal (Buckner, 2012). However, researchers have since discovered that a DMN is present in numerous social species and is thought to be a critical network active in a range of social and learning functions. The DMN a) processes stimulus-independent (“mind-wandering”) thoughts, b) is involved in self-referential thoughts (introspection), c) recalls the autobiographical past to mentally simulate possible futures (imagination), d) is involved in narrative comprehension (meaning-making), and e) other aspects of creative and holistic cognition: scene construction, associationist thinking, and semantic and verbal memory (Buckner, 2012; Buckner et al., 2008; Carroll, 2020; Manning & Steffens, 2016; Spreng, 2012). This has led the DMN to be considered the “mentalizing network,” “theory-of-mind network,” the “memory network” (due to its role in remembering the autobiographical past), and the “prospective network” (for its role in mentally simulating the future based on the past; Barret, 2017). The DMN is also a “major hub in high-level prediction-error representations,” and thus is heavily involved in

processing cognitive novelty to update mental models (Brandman et al., 2021)

It has generally been framed that the suppression of the DMN in the brain helps to support task-positive networks (i.e. goal-directed pursuits), but scholars have since realized that it is fallacious to think of the DMN as “task negative.” More than a simple cognitive “default,” the DMN is functional. The DMN promotes cognitive flexibility by coordinating a dynamic relationship between internally- and externally-changing environments over time (Spreng, 2012). This includes the ability to reference autobiographical memory to simulate possible solutions to complex problems (Buckner, 2012; Buckner et al., 2008), infer complex mental states of others (Manning & Steffens, 2016), and a variety of applications for *embodied simulation* (moral reflection, narrative comprehension, counterfactual thinking, intentional fictional constructs, among others; Carrol, 2020). Carrol (2020) went so far as to tout the DMN as critical to the evolution of humans’ highest, and most creative capacities. He suggests that the connectivity of the DMN, which spans multiple neural networks and domains, sees the network function as “the crown of cognition” and “the brain’s most comprehensive network for the integration of information.” Carrol summarizes thusly: “by constructing autobiographical memory as an emotionally modulated narrative, projecting the self into future scenarios, considering multiple alternative scenarios valanced by emotion and moral value, and simulating the mental lives of other people, the DMN creates subjectively meaningful models of the self and its relations with the world.” Said differently, the DMN is adaptive: it takes the brains’ holistic function as a prediction machine (Clark, 2016; Hawkins & Blakeslee, 2005) and shapes a meaningful and

subjective story that can have multiple different paths through the world model, allowing for many adaptive possibilities with which to deploy action and motivation.

DMN intrusions on TD networks may suggest ADHD weights this adaptive narrative function more strongly in a for-better-or-for-worse fashion. Indeed, the same brain linkages are found at subclinical levels in those who do not have ADHD but share ADHD traits, suggesting the brain differences in question are general personality trade-offs that are normally distributed (of which ADHD is only an extreme value). This validates the dimensional approach to ADHD as consistent with a “normal neurodiversity” perspective (Hilger & Fiebach, 2019), while predicated the epistemic footing of ADHD to be based on an adaptive trade-off with amplified strengths and challenges.

**The salience network and the social brain.** Network analysis largely conforms to other intuitive expectations with respect to ADHD. For instance, the dorsal attention network (dATN) - involved in goal-directed attention switching - is largely hypo-connected (under-connected) to the DMN; less intuitive is that the ventral attention network (vATN), also called the “salience network” (SN), is hyper-connected (over-connected) to the DMN in ADHD (J. Choi et al., 2013; Guo et al., 2020; Hilger & Fiebach, 2019). This could be easily framed as another trade-off: the ADHD brain is more detached from goal-directed efficacy, but more streamlined for the “integrat[ation of] social, emotional and cognitive information,” which facilitates “communication, social behavior and self-awareness” (Menon, 2015). For instance, the salience network includes anatomical regions such as the anterior cingulate cortex, which processes

prediction errors as cognitive novelty, and has been described as “an integrative hub for social interactions,” involved in decision-making, empathy and sociality (Lavin et al., 2013). The salience network also incorporates the anterior insula, which creates a cogent sense of social awareness called the “global emotional moment,” a phenomenon that integrates subjective emotions, sense data and bodily states as an intuitive sensory-emotional gestalt, distorting the linear perception of time as a byproduct (Craig, 2009). In other words, the tight coupling of the DMN and SN indicates *hypermentalizing cognition*, the most social aspects of a largely *social brain*, used to model, predict and interact with other agents, guide one’s own introspection and meta-cognition, foster creativity and imagination, and inspire through spiritual leadership (Burns, 2004; 2007; 2009; Del Giudice, 2018; Price & Stevens, 1998; 1999; Stevens & Price, 2000).

**Integration.** The most parsimonious way to view these disparate elements is to view them as interrelated in service to an adaptive profile that trades strengths and challenges against one another. Low dopamine, which functionally induces cognitive exploration, is likely also implicated in *implicit learning* (Udden et al., 2010). Implicit learning is associated with openness to experience and mentalizing, while explicit learning is associated with openness to intellect, and mechanistic cognition (DeYoung, 2015; Kaufman et al., 2010). Implicit learning automatically takes in patterns from sensory experience to help in behavioral and interpretive flexibility, and creative and ideational production.

Low dopamine may also trigger the daydreaming of inattentive ADHD by orienting novelty-seeking toward an internal (introspective) source of stimulation rather

than external (exteroception). This DMN hyperactivation would not be ancillary to implicit learning, but would likely help process, synthesize, visualize, and interrogate the information drawn in by implicit learning; i.e. mind-wandering as a creative and ideational process. The intrusiveness of the default mode network may be functional in prioritizing the processing and internalizing of pattern-recognition for those individuals who are temperamentally locked into explorer mode: they must not only take in a stream of complex data about the world, they must also manage its cognitive integration. Here the brain is effectively motivated to manage the salience (i.e. “meaning”) of complex patterns of information, which is useful for developing creativity, ideation, imagination and empathy through the “crown of cognition” (Carrol, 2020). This would track with ADHD as “big picture,” “holistic,” or “top-down” thinking in diametric opposition to the “bottom-up” mechanistic thinking of ASD, a view consistent with the *diametrical model of autism and psychosis* (Crespi & Badcock, 2008) as opposing specializations in the cognitive niches (Del Giudice, 2018).

Finally, recent updates to the default mode interference hypothesis in ADHD center the hyperconnection between the salience network and the DMN in addition to the hypoconnection of the DMN and central executive network (J. Choi et al., 2013; Hilger & Fiebach, 2019). The tight relationship with the DMN and the SN in ADHD suggests that big picture, mentalizing cognition is uniquely oriented toward social salience, which is to say, information with social and emotional meaning: narrative, art, culture, media, humanities, politics, social sciences, and so on, in contrast to the data and logic of mechanistic thinking. This would align with ADHD as a specialist of the *social*

*brain:* increased social and emotional salience, a predilection toward sensory information (novelty-seeking as channeled through openness to experience is also “sensation-seeking”), and the time-distorting, sensory-integration qualities of the “global emotional moment” as they support implicit learning and distort perceived time (Craig, 2009).

**Strengths.** Together, these qualities suggest ADHD may be suited toward a) the rapid inference of complex information in a “response-ready” adaptive style,” b) curating patterns of information toward social and creative applications, including insight, introspection, meaning-making, narrative comprehension, simulating the future, opportunism, humanistic inquiry, and emotional intelligence, and c) specialization in social and creative roles involving verbal and aesthetic creativity, theory-of-mind, ideation and imagination, which may involve roles in teaching, artistic performance, spiritual leadership, social healing, communication and more. In terms of contributions to the moral commons, those with ADHD may be considered a subset of “social” explorers who expand human cultural knowledge about: realms of the psychic interior, sociality, culture, society, art, philosophy, social progress and the sustainability of human social living. In a developmental vacuum these raw potentials may resemble meaningless preoccupations until they are given order and purpose to some end; strengths may not appear as strengths outside of the natural context of a purposeful subcultural enterprise where interests become instruments to a social end. Having an imagination to link interests and instruments is what lacks, as well attribution of the problem: the lack of alignment one may have with the “life organizing” properties of

meaning and purpose found in a biosocial niche. When like-minded people are aligned, however, contributions like these may be responsible for a branch of cultural evolution concerned with making change toward ever more sustainable, ethical and meaningful forms of social living at higher and higher scales, which is arguably the “logic” of progressive values at a deep, evolutionary level (Haidt, 2013).

ADHD is associated with heightened trait novelty-seeking (Donfrancesco et al., 2015), openness to experience (van Dijk et al., 2017), creativity (Boot et al., 2020; Hoogman et al., 2020), idea-generation, dispositional optimism (Dimitriu, 2022), youthfulness (Armstrong, 2010) and self-transcendence (i.e., religiosity, a sense of interconnectedness and/or, spirituality), but is lower than controls on self-directedness and harm avoidance (Perroud et al., 2016). This aligns with the FSD classification of ADHD as a fast strategy (there is also a slow strategy subtype, and another as a byproduct of low general intelligence; Del Giudice, 2018).

ADHD is not purely a deficit of attention, but a *roaming and homing* attentional style capable of hyperfocus when topics activating curiosity and passion are primed (Armstrong, 2010). A roaming and homing attention style is capable of great *hyperfocus* when curiosity and passionate topics are engaged, suggests that ADHD may be more of a sensitivity to *flow states*, where one feels utterly self-absorbed in a task with minimal self-referential thinking, heightened focus, peak performance and a sense of joy and well-being (Csikszentmihalyi, 1990; 2014; van der Linden, 2021). The dual-edged nature of social sensitivity may contribute to people-pleasing and rejection sensitivity, but it is also a chameleonic flexibility, social openness, and depth of empathy and introspection.

Similarly, the justice-sensitivity of ADHD is related to a sensitivity to causing moral injury, and makes for a strong ethical motivation (Bondü & Esser, 2015; Schäfer & Kraneburg, 2015) to universally apply a progressive standard of human rights (Haidt, 2013).

It is perhaps no wonder that ADHD and its traits, a mentalizing specialization and one half of the cognitive niche specialties overall, has strong overlap with “giftedness” through its hyper-curiosity, creativity, ideation and pattern-recognition. Budding and Chidekel (2012) noted that scholars sometimes attempt to explain away the high incidence of ADHD in gifted students to retain the bright lines between constructs associated with ideal learners and those associated with learning deficits. They find these attempts “frustrating,” because such attempts ignore many brain-behavior correlations that naturally break down the existence of these constructs as fundamentally separate and opposed, and note a variety of data in support of this claim. For instance, there is a parallel between ADHD and gifted children having the same four executive functioning difficulties: when to act, when not to, when to persist in an action, and when to stop. ADHD and gifted children also shared similar developmental patterns with respect to a delayed timeline for the cortical thickening of the prefrontal cortex, a process that naturally occurs throughout adolescence, but happens more slowly in both ADHD and gifted populations. A trade-off approach may be able to reconcile these and other overlaps as moderated by a third variable: developmental access to a supportive and values-aligned niche as a precondition to guiding a predilection for creativity, novelty, ideation, fast learning, adaptability, social interest, humanistic inquiry, futurism,

and progressivism by balancing the challenges with extra support, guidance, directionality, developmental scaffolding, environmental richness, opportunity, respect, positive positioning, and more. These dimensions offer the critical buffer between the spiral dynamics of an unsustainable ratio of social threats and stressors to resilience factors, of which this population is inherently sensitive to.

**Challenges.** The costs of ADHD are also perhaps better understood as over-expressions of strengths, and expand the clinical context to mismatch, lack of developmental scaffolding, and those who may face the same challenges at a trait-level while being subclinical for ADHD as a diagnosis. For instance, a heritable biological drive to curate imagination, creativity and empathic theory-of-mind narrows viable social roles to a subset of sometimes rare, risky and under-valued niches. Modern day social specialists may be found in the humanities, social services and social influencing spaces, among others. These can be difficult niches to enter for different reasons, yet not taking these risks may leave the lose-lose potential for chronic mismatch. Failure states can just as likely stem from an inability to attain the luck, patronage, support and guidance needed to develop ones' strengths and positioning appropriately (see: ADHD as a high-risk strategy; Del Giudice, 2018).

Those with ADHD may commonly have better or worse communication than others in the population. They are dispositionally more likely to have high verbal and aesthetic creativity, yet face the inherent challenge of communicating knowledge gained through implicit learning: complex, holistic, introspective, emotional, ideational and pattern-based information that may not conform to popular narratives and stereotypes.

Such information may be uniquely difficult to justify or legitimize, particularly in mismatched political environments which do not value social observation or critical discourse. Indeed, while Del Giudice (2018) highlighted the role of fast, slow and byproduct subtypes of ADHD in explaining both high and low intelligence found among subtypes, another confounder may be the difficulty of capturing the products of implicit learning as a kind of creative, narrative, emotional or integrative intelligence. The ADHD tendency to explore multiple interests and influences into many divergent perspectives and models may also intrinsically resist explication as inputs crosscut many ideologies and resist easy worldview integration. If this translates to a potential loss of authority or cognitive legitimacy, it may leave one particularly vulnerable to social insults.

On the topic of social injuries, many evolutionary theories converge on the unique challenge faced by a high-mentalizing strategy (associated with psychosis and ADHD) to face mismatch, environmental insult and diagnostic risk. Social specialists may be challenged by modern day individualism and the loss of close relationships as disrupting the communalistic values that support social roles and offer them a path to status and prestige (J. S. Price & Stevens, 1998, 1999; Stevens & Price, 2000). The vulnerable developmental window of the maturing social brain may be more susceptible and sensitive to “environmental insults” such as the “toxic” societal manifestation of “chronic stress, urbanization, economic inequality, and migration” (Burns, 2004, 2007, 2009). Paradoxically, then, social specialists frame a unique trade-off with respect to the social insults of a niche model: while increased salience to social feedback may be critical in fostering adaptive social flexibility, it also leaves one sensitive to negative

feedback as social injuries. Social injuries may also hit harder as a “cognitive specialist” if one is more likely to be positionally vulnerable with a narrower range of viable social niches. This combination of factors may go some way to framing the evolutionary etiology of vulnerabilities to rejection sensitive dysphoria and justice sensitivity. The idea of imagination as both “valuable and vulnerable” (Carrol, 2020) may highlight the unique risk of ADHD as a strategy.

A variety of challenges flow from the relationship of strengths and challenges in regard to social sensitivity in a for-better or for-worse fashion. For instance, social chameleonic tendencies found in ADHD performers and actors may lead to identity diffusion when attempting to adapt to too many competing social groups, identities and influences. Social alienation may result from the need to consistently mask in homogenous social worlds, and create a strain against unmet needs to feel understood for stress-relief. There may be an acutely introspected sense of being different. One may become aware of their high needs for autonomy and stimulation, their many diverse interests without a clear intersection, hypermentalization as a source of cognitive difference, and these and more may create a potential to feel disconnected, masked and under-valued. It is worth highlighting that social difference itself creates a perceived imbalance of social rewards and punishers, i.e. the agonism of niche mismatch. There may also be a difficulty among ADHDers that are adaptively oriented to the present to curate a long-term sense of direction and purpose, particularly in social environments that can lack viable social niches for specialists. The tendency for these and other factors to align with intrinsic spiral dynamics may generate a disposition toward anxiety,

depression, psychosis or trauma, when they accumulate in ways that feel out of control.

**Summary.** A clinical portrait suggests that the subclinical traits for ADHD include the S/C function of heightened exploration, a tendency toward imagination (default-mode network experiments with futuristic scenarios based on past experience), and empathic mentalizing (DMN theory-of-mind about the social and emotional states of others), which may become over-expressed or environmentally mismatched, or both (to the extent that strong expressions of a strategy may be appropriate in rarer, more extreme niches). Within the cognitive niches, ADHD is a generalist, with potential strengths in model-level integration, mental simulation (imagination), holistic thought, adaptive flexibility, introspection, and social sensitivity. Alternatively, the S/P ADHD subtype may express reduced task-flexibility and behavioral switching, autistic-like traits (including reduced mentalizing) and perfectionism (Del Giudice, 2018), which may combine both the strengths and challenges of ADHD with those of ASD. Challenges here include the difficulty of insufficient basal stimulation in mismatched environments, which may lead to maladaptive coping through excessive novelty-seeking; struggles with community and identity across the lifespan (chameleonic challenges); time-blindness and motivational deficits in meeting imposed deadlines and goals; and similar challenges of organizing across long time horizons (time discounting) that may interfere with positioning toward a career, a sense of purpose, and meaning in a congruent niche, which may interfere with long-term satisfaction.

### ***Niche Construction***

This section will not be comprehensive, but it will consider the *framework* of

ADHD as an evolved strategy (to survive in a social niche, and as a moral and cognitive contribution) to shift how to think about treatment and support. A shift does not preclude seeing ADHD as a potential source of impairment, distress, empathy, or support, including medical framing therein. Some evolutionary perspectives may even build in such notions, as traits may be overexpressed or “cliff-edged” in their adaptive fitness (Del Giudice, 2018), suggesting that subclinical traits of ADHD may be functional in moderation, but dysfunctional in extremis. However, the general view espoused herein is that extreme traits increase both the strengths and the costs as moderated by relation to a supportive developmental niche. This includes a critical etiological role for ADHD being mismatched throughout development due to unaccommodating, unsupportive or threatening social environments, and this may mediate any problematic relationship between organic traits and a problematic relationship with one’s self or one’s environment. ADHD as a fast strategy implies a likely role for developmental injuries (such as high stress family environments leading to poor attachment) as a mediating role in steering a personality style toward its more dysfunctional potentials (Del Giudice, 2018). However, what a broad range of evolutionary frames uniquely add is the potential for ADHD to be connected to a viable social strategy, and this can go some way toward fostering *alignment* of diagnosed individuals (or those with subclinical traits) to those niches and subniches that support social success and balance. For example, it may be that ADHD as an extreme expression of a functional strategy (i.e., extreme creativity alongside extreme instability) is uniquely suited to niches and roles that are likewise extreme (for instance, Salvador Dali was a product of a niche that

allowed him to be not just successful, but an authentically eccentric version of himself).

The primary benefit of ADHD as an embodied relationship to a functional strategy is the ability to entrain on the strategy to provide high-level insight into what works and what does not. This may help in orienting individuals to the roles, functions and niches that maximize positive factors (strengths, needs, goals and values) while offsetting costly trade-offs and injuries. This is called *niche construction* (Armstrong, 2010), and it is an effective way to consider solving the challenges of ADHD at multiple levels, including fostering alignment between biological, individual and social factors. ADHD may benefit from niche construction that seeks to optimize a) the degree and nature of structure; b) the level of stimulation in support of flow states, c) the ability to build self-regulatory resilience, d) a social culture that can protect from threats and tolerate challenges of motivation, time perception and other idiosyncrasies, e) work roles that align with cognitive strengths and motivations, and f) a moral environment with “altruistic opportunity” to convert strengths into meaningful contributions in values-aligned healthy communities.

In terms of niche construction for those with ADHD, the “recipe” for an optimal biosocial niche is slightly different than those with other temperaments. Structure is important for ADHD. Particularly, the need for structure that supports accountability and deadlines to offset *time blindness* (i.e., a loss of accurate time perception related to constant updating of working memory as a difficulty of keeping a single goal in mind; and a potential influence of the “global emotional moment”) and *time discounting* (the struggle to significantly delay reward gratification), both of which can lead to the stress

of challenges to self-efficacy and the need to use deadlines as stress motivators. Barkley (2018; Nigg & Barkley, 2014) called this *intention deficit disorder*, and highlighted that knowledge is intact, but acting on it is impaired, making ADHD a *performance disorder*. However, a strong need for structure must be counter-balanced against an equally strong need for autonomy and novelty, which can resist structure. Reward insensitivity and high novelty- and sensation-seeking promote a need for meaningful exploration, stimulation and responsiveness that lends itself to unstructured autonomy. Reward insensitivity also requires larger, more immediate rewards to achieve sufficient stimulation in order to energize behavior and sustain task-directedness (Poulton, 2015). The use of novelty and reward to sustain motivation can require a variety of strategies for short term bursts of stimulation such as (highly curated) social media or games to build up energy for mental effort needed to sustain deeper hyperfocus periods. Strategies to build flexible structure are needed that can provide the benefits of both. Autonomy may mean a) pursuing improvised stimulation as it supports motivation, b) looking forward to novelty and reward as a source of motivation to avoid the sense of entrapment in a repetitive (boring) schedule, and c) supporting an idiosyncratic, semi-improvised and creative process toward tasks. Together, the salience of structure means optimizing for rule-governed systems of organization and scheduling where they can be most effective, and flexibility where they can support periodic stimulation, autonomy and creativity to energize engagement with systems.

The optimization of structure is also necessary in considering the importance of flow states. Being aligned to challenges, roles and niches that offer a sense of *flow* - for

instance, work that sustainably aligns with one's strengths, creativity, improvisation, stimulation and need for reward - provides feedback that optimizes motivational, cognitive and behavioral feedback to remain in the flow state. The result of periods of flow that transcend days or weeks or more can sometimes carry over to other domains of life that might otherwise fall to inertia and entropy, such as struggles to get out of bed or sustain task-directedness. Sustained flow states lead to an improvement in motivation to energize discipline and organization to avoid such traps. In a word, this can define an ADHD in part by its ability to optimize one's life for flow states as a goal, with the amount of life synergy providing an organizing principle for other challenges such as motivation to get out of bed or avoid excessive social media stimulation. It also prioritizes the importance of designing systems to sustain flow - organizational and behavioral systems such as physical organization of spaces or planning can be framed as tools to attain and sustain flow, and can take on rewarding properties when linked as such.

Within one's niche, the central challenges from an ADHD perspective are managing *ratio strain* (work-reward imbalance) and *time blindness/discounting*, often through *self-regulatory strength* (Bauer & Baumeister, 2011; Poulton, 2015) which can be communicated via a "gas tank" model of mental resources. Ratio strain, a behavioral term for the demotivating effects of a reward that requires too much work to attain relative to the motivational energy provided by the anticipation of that reward, resulting in motivational collapse before the behavior can begin. This is a general phenomenon that ADHDers are sensitive to through reduced reward activity

(Poulton, 2015). This creates motivational deficits (i.e., willpower) that require creative use of rewards and novelty to fill one's "mental gas tank" in order to raise "self-regulatory" resilience and decrease the distractions of subconscious need. The less novelty, or further out the time delay to an expected reward, the higher the need for mental energy, and negative coping may involve falling into high stimulus activities to seek a "recharge" (i.e., the *superstimuli* like social media and smartphone use). When this motivational collapse puts one's goals further and further from achievement, it cyclically increases the size and scope of the meta-problem of "falling behind in life," which further increases global ratio strain, compounds in a vicious cycle. A variety of strategies may be used to compensate, including curating bigger, more immediate rewards, but this requires intentionally managing a balance among reward paths. Many rewards have costs (sugar, drugs, addiction, etc.), and offsetting them requires a) creating positive addictions as a harm-reduction solution (i.e., working out or socializing), b) the need to distribute stimulation across reward types to avoid over-reinforcing a single reward pathways as an addiction risk, c) normalizing focused bursts of stimulation to reduce energetic needs driving attentional deficits, and d) systematizing goal-pursuits to manage priorities, motivation, decisional fatigue and ratio-strain within the system itself, which may involve intentional strategies to recruit timers, reminders (sticky notes), plans (lists) and motivation (rewards; Barkley, 2018; Nigg & Barkley, 2014; Poulton, 2015).

Career challenges might better be framed as challenges of direction and purpose. Time blindness and motivational challenges create a sensitivity to flow states

that can create inertia between flow states and focuses the solution on maintaining activity. One model for solving this dilemma is to foster hyper-adaptable roles (see: fast strategy), which is to say, roles that require a stream of *hyperresponsivity*, ideal for careers in an ER, restaurant kitchen settings, performance, entrepreneurs, consultants, and crisis workers. However, while this approach can be experientially meaningful and solve the problem of motivational extremes, fostering a state of hyperresponsivity may not solve the challenge of long-term positioning for a meaningful, purpose-driven career due when impairments to intentionality at long time horizons are not dealt with (*intention deficit disorder*; Barkley, 2018). Long-term goal positioning may be a perennial challenge that can become increasingly compromised with each failed opportunity for positioning (missing schooling opportunities, career building opportunities, etc.). Many ADHDers may not frame a problem of purpose at all, but rather eschew the concept altogether, lamenting the inability to instead live more experientially as the solution. Here, framing purpose can be a way to orient toward long-term niches within society that can enable roles and lifestyles that allow one to be more experiential and niche-aligned. Effectively, many ADHDers may yearn to lean into the “fast strategy” foundations of their temperament, where a more therapeutic frame is the need to create a “slow strategy” role and sense of meaning that can align with one’s fast strategy contributions. This centers the problem of M. Larsen et al. (2022), who found that meaning is sustainable while happiness is not, and ADHDers who live closer to a purely responsive, experiential life may still be more likely to struggle over time with questions of meaning, purpose and identity diffusion if they “succeed” in aligning with a

vagabond lifestyle. Framing the need to align a “fast strategy” nature with a meaningful social role is to orient one to intentional curation of their niche, not to try to make their way of being different than it is.

ADHD career roles may span a continuum from hyper-adaptable roles with questionable long-term sustainability (a chef that works long, hard hours and may burnout), up through roles and niches built on greater meaning, purpose and sustainability but require more foresight - or luck - to attain (artist). A variety of possible job models exist, including: a) dynamic roles that require constant improvisation using a broad and stimulating knowledge base that must be constantly adapted to unique applications (sommelier, therapist, comedian, information technologist, etc.); b) jobs at the intersection of fields or roles that resist boredom by requiring wearing one to wear multiple “hats” (i.e., anything from a handyman, to a purchase manager for an eco-friendly farm, at the crossroads of business, agriculture and management); and c) jobs that require discrete specialization but in a sufficiently broad knowledge base (teacher; professor of the humanities professor, philosophy, therapy, etc.), though investing in such a course may feel risky if one is uncertain about the fit relative to the opportunity cost. These jobs represent a continuum of role options that cater from immediacy to long-term commitments, with attendant trade-offs for all of them, but the goal is not survival, but *meaningful work* as an ultimate goal of sustainable mental health and optimal niche (Hari, 2018).

The challenge of finding “altruistic opportunity” in a Western capitalist culture is worth noting (M. Larsen et al., 2022). ADHDers may struggle with

individualizing/universalizing moral values, egalitarian social values and a harm/care justice-sensitivity that can be incompatible with exploitative or coercive economics. This may compound the challenge of finding a social “purpose” in systems where one is exposed to significant moral injury by contributing to corporate enterprises that seem to cause harm for profit. An economic framework that skews most work culture in this direction may effectively block paths to meaningful niches or else make them sufficiently out of reach as to be demotivating, creating a lose-lose choice. Facilitating social change to these systems may be a more natural alternative, in which case progressivism and resistance can become purposeful in themselves. Values in openness to experience and empathic care would predict that ADHDers are naturally found in higher-frequencies in more liberal, counterculture movements (Haidt, 2013). Such niches are inherently high-risk and fringe, requiring sub-cultural support to make them sustainable. Moral-communities are thus important social environments, and ADHDers may need to seek roles that a) serve social change, b) promote universal rights, empathic care and autonomy-promoting values, and/or c) orient to a sufficiently meaningful lifestyle to find meaning outside of one’s economic role. Indeed, social change may be the natural evolutionary moral contribution of modern day “social specialists” (Haidt, 2013). It is possible that epistemic injustices obscure the full authority of modern-day social specialists who track social sustainability by nature, and framing the challenge of social and mental sustainability may be useful to expanding the niches of social specialists.

#### **Autism Spectrum Disorder (ASD) as Neurodiversity**

ASD is perhaps the diagnosis most likely to be associated with neurodiversity given the originator was herself diagnosed with among three generations of women diagnosed with ASD (J. Singer, 2017). ASD is typically characterized by symptoms considered the “autistic triad:” impairments of social interaction, impairments of communication and repetitive behaviors and restricted interests (Del Giudice, 2018). Impairments of interaction might be difficulties in mentalizing, reading body language and reciprocal sharing. Impairments of communication might be difficulties taking turns in conversation, non-literal speech (irony, sarcasm), idiosyncratic language, or failure to develop language in extreme cases. Restricted/repetitive behaviors and interests might be a narrow focus on interests and activities, rigid routines and stereotyped movements. Sensory issues are common and included in the restricted/repetitive category; feeling overwhelmed by intense, unpredictable or confusing stimuli can lead to sensory overload. There are only weak correlations between categories in the triad, so symptoms can range widely between those diagnosed with ASD, including patients with very low language abilities to those with elaborate language (though there may still be struggles with non-literal speech). ASD includes autism-like traits, which are normally distributed in the population, and are considered “male typical,” including high visuospatial abilities (*mechanistic thinking*) and low mentalizing/mind-reading, and less social and affiliative motivation (high systematizing, low empathizing), leading to the *extreme male brain theory* of autism (Baron-Cohen, 2002; 2003). These traits include a deliberative, logical style of decision-making, contrasted with more emotional or intuitive style (Brosnan et al., 2014; De Martino et al., 2008; South et al., 2014), and

accordingly, ASD is strongly represented in the sciences and technical fields (Del Giudice, 2018).

The DSM-5-TR has collapsed the separate diagnoses of autism and Asperger's syndrome into ASD, with severity levels of "requires support," "requires substantial support," and the presence of intellectual disability or language difficulty. About 40% of those with ASD have an intellectual disability, which overlaps strongly with the mutational load etiology, while mutational load plays a relatively minor role among the remaining "high-functioning" variant of what was Asperger's syndrome, where language ability is intact alongside normal or even high IQ (Del Giudice, 2018). Like ADHD, heritability is high for ASD, with an overall heritability of at least 75%. Neurotransmitter findings suggest roles for glutamate and GABA, which are implicated in a neurotic profile (*withdrawal subtype*); combined with the *amygdala theory of autism* (Baron-Cohen et al., 2000), which argues a central role for the amygdala as coordinator of social behavior including sensitivity to threat (Zalla & Sperduti, 2013), there is evidence consistent with autism as a stability strategy. Upregulated serotonergic activity (BIS), decreased oxytocinergic activity, and low default mode activation are involved (Del Giudice, 2018).

Evidence of ASD as a cognitive strategy comes from theories such as the *weak central coherence model* (Happé & Frith, 2006), the *extreme male brain theory* (Baron-Cohen et al., 2002), the *enhanced perceptual functioning model* (Mottron et al., 2006), and the *intense world theory* of autism (Markram & Markram, 2010), which generally paint a picture of enhanced low-level perceptual processing (bottom-up) and reduced global big picture processing (top-down), where local, detail-oriented processing

becomes disproportionately weighted and global processing becomes slower and more deliberative. Recall that the default mode network (DMN) is at the “top of a representational hierarchy—the crown of cognition” and “the brain’s most comprehensive network for the integration of information” (Carroll, 2020, p. 37); and is highly implicated in mentalizing, social cognition and theory of mind (Buckner, 2012; Buckner et al., 2008; Carroll, 2020; Manning & Steffens, 2016; Spreng, 2012). A variety of studies have shown ASD to have a characteristic pattern of underconnectivity with salience, attentional and visual networks in the brain thought to reflect deficits in social cognition (Nair et al., 2020), and the higher one’s autistic quotient (AQ), the more connectivity to the mentalizing subnetworks are compromised (Assaf et al., 2010). This echoes the theme that a) integrative, model-level thinking is reduced through underconnectivity of the DMN to other brain networks, and b) social cognition and self-reflective thinking are consequently attenuated. This has been functionally framed in terms of *Bayesian predictive processing* (Friston et al., 2013) in terms of the brain over-weighting incoming low-level perceptual data in favor of its precision despite it containing both information and “noise;” meanwhile “hyperpriors” in the system are discounted as imprecise, which is to say, the assumptions and beliefs at the model-level that serve to simplify and “pre-fill” expectations often to screen out such noise (see: *aberrant precision*). Social and self-referential processing, which are executed at the model level, are costs of this trade-off.

Emphasizing low-level perceptual data leads to the increase in visuo-spatial mechanistic thinking associated with the problem-solving precision of the S/P strategy,

but ASD highlights the trade-offs of the gain. Discounting at the model-level means the social world becomes confusing and chaotic, which may lead to anticipatory anxiety and poor task-shifting as a corollary, while restricted and repetitive behaviors/interests serve to simplify the social world and increase perceived control through manageable predictability. While there is a case for an environmental contribution to neuroticism, the *amygdala theory of autism* (Baron-Cohen et al., 2000) suggested a role for heightened BIS activation, and a serotonergic-driven style of thought. This makes sense as a dispositional bias toward negativity has been shown to contribute to precision of thought at the cost of increased depression risk ala *depressive realism*, where higher basal orientation to negative emotionality increases a more perceptually accurate or “realistic” form of cognition that ranks consistently higher in tests of anticipated accuracy of events and realistic self-appraisal after test performance in laboratory settings (Alloy & Abramson, 1988). Thus, neuroticism has been associated with ASD (Del Giudice, 2018). Finally, in contrast to the *generalism* of ADHD, ASD may be a form of *specialist* thinking (Doyle, 2020), as other evidence from network analysis shows ASD to show reduced activity in the executive control networks of the brain (ECN) responsible for functional integration of task-negative and task-positive networks (de Lacy et al., 2017), and this may corroborate observations of ASD as a “spiky profile” where there is a discrepant gulf of high and low functioning across brain networks, rather than emphasizing efficient coordination between networks, as with heightened DMN activity (Doyle, 2020).

Autism as a slow strategy of the FSD model is evidenced by low impulsivity,

restricted sociosexuality, and increased investment and relationships duration in long-term partners (Del Giudice, 2018). Moral and sexual disgust, which are indicators of more conservative temperamental disposition in Haidt's model, are also elevated in those with autistic-like traits (Del Giudice; 2018; Haidt, 2013). Personality correlations of those with highly autistic-like traits show increased neuroticism, and lower extraversion and agreeableness, with some mixed results for conscientiousness (Del Giudice, 2018) and openness (Shirayama et al., 2022). The latter two may be partially accounted for by increased environmental injuries and mismatch such as autistic burnout (Raymaker et al., 2020).

A functional analysis of ASD as a functional relationship to the environment can help therapeutically frame ASD to maximize strengths and offset challenges. Where ADHD is perhaps an increased, mismatched or over-expressed specialization in *mentalizing* cognition, the central trade-off of ASD is heightened *mechanistic* thought and a disinvestment in mentalizing cognition (i.e., social and imaginative thought; Del Giudice, 2018). Mechanistically, we can see how a sensitive amygdala self-organizes many of these features as a developmental path by creating anticipatory sensitivity to social injury and threat through greater BIS defense activation decreases social opportunism and increases efforts toward *somatic capital*, such as skills and knowledge that support role-based learning as a path to prestige and success. ASD is likewise associated with smaller social circles, later sexual debut and embodies the long-term pay-off of slow strategies (Del Giudice, 2018). ASD pairs social challenges with a sensitive amygdala that neurotically maximizes the impact of social injuries and threats,

as well as creating perceptual biases toward detail-orientation that makes big picture considerations overwhelming and unpredictable. Therapeutically, there is a need to: a) build up authentic, congruent and energizing social supports; b) buffer neurotic reactions to defeats and threats, and c) manage inner resources to be able to support industrious pursuit of self-relevant goals long enough to leverage strengths in niches that can deliver social success, and with it, precious social resources. Consequently, we may reframe some of the deficits as niche considerations. When inside one's niche, social capital ensures a balance of support and fewer burdens, which energizes resilience. Outside of one's niche, less capital leads to more injuries encountered by sensitive defenses primed by traumatic precedent, and this may lead to a painful negative feedback loop outside of one's niche. Given the developmental timing of slow strategy success, agonic environments may be front-loaded and hedonic environments accessible upon attaining some career success. Helping a client transition from the psychological injuries of agonic mode in adolescence to hedonic mode in adulthood may be a central therapeutic challenge. Given the cognitive niche strategy of experimenting with problem-solving models as central to the strategy, we speculate a heightened role for worldview as etiological to mental health challenges, specifically the over-proliferation of perceived problems in the world as a source of depressive realism as a pathway for anxiety and depression. Furthermore, fantasy or ideation as a simulated way of meeting needs may become a coping mechanism that, when coupled with motivational barriers, becomes a self-reinforcing cycle of retreat from stressors into limiting, unrealistic fantasies, which creates more stressors.

### ***Niche Construction***

ASD may benefit from niche construction that seeks to balance the cognitive autonomy of skill- and knowledge-expertise, with pathways that avoid *autistic burnout*. Autistic burnout arises from a poverty of social support resources, an excess of stressors, and the resulting imbalance of inner resources and external expectations (Raymaker et al., 2020). Stressors may include: a) *masking*, where one feels the need to hide their minority status and mimic neurotypical status in a way that is exhausting, stressful (i.e., the chance of discovery), and prevents authentic connection; b) social, occupational and familial obligations; c) disability management; d) life change stress such as transitions; e) social injuries such as rejections and defeats. Barriers to support include gaslighting/dismissal of concerns (convincing one their concerns are invalid); poor boundaries and self-advocacy (which may arise not only from the difficulties with relationships, but the adaptive compensation toward people-pleasing); inability for self-care (“can’t take a break”), and lack of supports/services and resources. When the cumulative load meets an inability to find relief, inner resources collapse in the face of social expectation, and burnout results. Again, here we see the three social mentalities in play, and the gas tank model of meaningful resilience may be useful.

This autistic burnout model highlights both the challenges and goals of therapeutic niche development. As Armstrong (2010, p. 59) said, “the world needs systematizers: computer programmers, mathematicians, engineers, mechanics, and scientists, among others.” Niches curate respect for systematized knowledge, problem-solving and skill expertise, but may work best when presented in a “free agent” style

with sufficient autonomy to exercise their strengths without unnecessary social injury from team interaction and managerial domineering. In contrast to ADHD's introspective generalist, ASD may be a problem-solving specialist, one happier in the concrete world of things. Protecting interests in both time and space is crucial to promoting an adaptive niche, including self-regulatory strength. However, social positioning is a social game, and the relatively slow road of role and skill development may give niches a temporal dimension as success comes later in life. This may delay the resilience-promoting factors of being in one's niche concurrently, increasing the likelihood for agonic "damage" to accrue in the volatile developmental years of high school, where ASDers may be more likely to go unbuffered, traumatically stressed and rendered invisible. ASD misanthropy may come from unbuffered social pain, and therapeutic influence may require helping individuals in agonic mode mentally transition to be able to live in the hedonic realms that are suddenly possible. That may require honoring the reality of these agonic experiences, validating them, and consciously grappling with how to make a hedonic orientation possible. This new hedonic environment will likely be a moral one, where truth-seeking and problem-solving take on a transcendent moral significance in the therapeutic microculture, giving deeper meaning to the ASDers underlying strengths, values and contributions.

As with ADHD, the need to ASDers may face social pitfalls along the way. The cognitive and moral alignment of intellectual problem-solving may create a risk of "hyper-rationalism" that can interfere with relationships by applying analytical reductionism where social and emotional holism might be more appropriate. For

instance, hyper-rational thinking may get in the way of conflict resolution when values in truth and objectivity make “being right” both a self-righteous and ego-involved goal, which may interfere with the relational goal of win-win de-escalation and mutual understanding (i.e., *nonviolent communication*; Rosenberg, 1999). The agonically traumatized ASDer might encounter a misanthropic and cynical take on the “stupidity” of other neurotypes, which further alienates them as they justify their loneliness and social injury as misunderstood superiority. The relationship to the social world is important. A variety of early social interventions are available to ASD, but applied behavior analysis is controversial. More organic long-term facilitation of ASD niche construction will be a question of creating cultural spaces for ASD subcultures with organic norms, values and practices that are hedonic to them, and may ultimately align on shared interests; spaces like this are currently being facilitated by the internet, where the written word offers a concrete medium with less reliance on mentalizing (Armstrong, 2010). Meanwhile, social decoding - of signals, meanings, and relationships - may be an important part of therapy. For instance, the importance of understanding the function and nature of different kinds of relationships in the social network may be important as they provide different functions, and require different kinds of boundaries and expectations, with a special significance placed on roles that offer authentic depth, de-masking and social buffering. Therapeutic microcultures should offer the opportunity to a) de-mask, and b) secure support, for instance, by processing neurotic content with a validating real-world agonism and avoiding the cognitive biases of *depressive realism*, c) lend ASDers some big-picture processing power where necessary, d) avoid over-

stimulating sensory input (as well as strategies to help outside the office), e) avoid the epistemic injustice of tropey understandings of ASD, and f) celebrate the meaningful narratives that organize their lives. As usual, the therapeutic relationship as an acute stress-reducer, and long-term buffering micro-culture, is paramount.

### **Part V: Summary**

This theory is an attempt at therapeutic consilience. It seeks to explore a large but important evolutionary meta-frame to situate the mental challenges of human social life at multiple levels and across a natural diversity of agencies that diverge and reconverge in environments organized with or against our needs. Making these discrete levels of analysis - ecologies, strategies and niche dynamics - we can frame their interaction in ways that bring new levels of empathy, understanding and intervention to bear. Specifically, we see three stories. First, that life strategies are organized into adaptive (happiness) and purposeful (meaning) ways of being (i.e., "normal neurodiversity") that create unique paths to social success or failure, and consequently, unique paths through landscapes of buffering and injury. Second, we see how mental health biology is directly impacted by social injuries that drive the etiology of various disorders depending on the specific vulnerabilities of different life strategies, particularly those who express normal neurodiversity at clinical levels and turn up the trade-off intensity in a for-better or for-worse fashion. Finally, we see how different environments can be more nourishing or toxic to our individualized niche needs either by mismatch or by their moral valence, and therefore require diverse moral contributions to either change the worst, or maintain the best, of those systems. There may even be spiritual

implications in that these evolutionary meta-narratives are increasingly thought to have a direction to life, and a complementarity of cognitive purpose, that could intentionally evolve toward a sense of meaning, purpose and shared success aligning to this direction consciously as a global meta-narrative (Heylighen, 2023; D. S. Wilson et al., 2023).

The interacting narrative shifts involved help to resolve many [unjust] fragmentations in the mental health sciences, while aligning with one another in a consilient paradigm shift. This biopsychosocial, contextual, evolutionary and integrative (Gilbert, 2019) perspective could be seen as a tentative validation of the contributions of consilience; a path toward epistemic justice in reframing unfair stereotypes that exist to justify a “natural” social order; and a path forward for thinking about more hedonic/nurturing ways of organizing our individual and collective niches for better social outcomes and more constructive social discourse and praxis.

At a meta-level, this theory also frames the need to resolve a tension between two ways of knowing - analytical problem-solving and model-level mentalizing - and their important contributions to the understanding of human flourishing. As Jonathan Haidt said of psychology, much of the topography of the social sciences has been shaped by “systematizers” and not “empathizers” (Haidt, 2013), and indeed, in many ways this makes up the opposing poles of neurodiversity itself, represented in Table 3. This is true of the medical model with its bottom-up, problem-focused views of people and problems at its core, as a seemingly intuitive problem-solving approach. Yet mechanistic cognition fails to be counterbalanced without the clever holism of mentalizing cognition to wisely evolve the problem-solving paradigms themselves. While the two likely have

reciprocal influence on human knowledge evolution writ large, mentalizing is likely more underutilized in the modern world, and with it, the influence of holistic, contextual, functional and integrative thought is neglected in the social sciences. The historic segregation of neurotypes between the bottom-up sciences and top-down humanities has likely exacerbated the divide, with the humanities arguably having been dealt the weaker influence of late, yet with a growing gulf likely to their mutual detriment. This dissertation articulates the problem anew, suggesting that two neurotype specializations offer a yin-yang complementarity to knowledge evolution that should not be ignored. The two may need to play in the same intellectual sandbox to provide critical checks and balances to a common discourse. Academia currently trails further in its inability to support a holistic, pattern-based science methodology to make mentalizing contributions more rigorous and legitimate, and this is what consilience could be. Doing so might provide a secondary societal gain: an underrepresented neurotype demographic could gain access to an important niche role with a moral valence, a way to gain the important mental health benefits of prestige and support for those missing the altruistic opportunity of a legitimizing social voice.

### **CHAPTER III: METHODOLOGY**

The purpose of this study was to explore the subjective impact of a training model of neurodiversity on mental health practitioners as delivered by a professional workshop consisting of ten hours of video lecture content and two hours of virtual meeting to discuss and synthesize. This chapter will detail the research design and methodology used in the study.

#### **Research Design and Methodology**

Qualitative research is best used for systematic study of social phenomena in natural settings, particularly if a researcher is interested not just in testing reality, but testing people's views on reality (Teherani et al., 2015). Berelson (1952) originally defined content analysis as "a research technique for the objective, systematic and quantitative description of the manifest content of communication" (p. 18). Downe-Wambolt (1992) framed content analysis as "a research method that provides a systematic and objective means to make valid inferences from verbal, visual, or written data in order to describe and quantify specific phenomena" (p. 314). Cavanagh (1997) called it a flexible method for analyzing text data (Hsieh & Shannon, 2005). Content analysis is primarily a means of categorizing text data with a system of coding to make rigorous, credible and trustworthy interpretations of the meaning of the data. A central strength of content analysis is to study social behavior, views and messages without influencing them by performing analysis of various forms of media from newspapers, books, speeches and television broadcasts (Fraenkel & Wallen, 2006).

Content analysis can be approached through a variety of methods - for instance,

conventional, directed, summative - depending on the researcher theory and interests and problem to be solved (Weber, 1990). In this study, we will use directed content analysis as a theory driven approach to coding performed before and during data analysis to interpret the open-ended questions of workshop attendees before and after they attend a neurodiversity workshop. The theory-driven coding of the themes is performed through iterative rounds of the process, classifying patterns of meanings found across texts for the purpose of identifying broad themes relevant to answering the research question and befitting the purpose of DCA more broadly as "provid[ing] knowledge and understanding of the phenomenon under study" (Downe-Wamboldt, 1992, p. 314).

Workshop participants were given a list of open-ended questions to take before and after the workshop which will then be coded for themes relevant to answering the research question. Analysis of how these themes changed from the initial answers to the latter answers were relevant to answering the research question. Given that respondents created the media to be analyzed at the prompt of the researcher, translating to a text medium did not eliminate threats to validity (for instance, giving answers influenced by their desire to appeal to the researcher) but it did minimize this threat by avoiding direct interaction with the researcher, and making answers non-contingent on any rewards or punishments the researcher can link to participation.

### **Participant Recruitment**

The number of 12 minimum participants for a qualitative study has been identified in the literature, though in practice, authors note there is significant variance

and little agreement (Clarke & Braun, 2013; Fugard & Potts, 2014; Guest et al., 2006; Vasileiou et al., 2018). That is, a variety of theory-driven, or thematic-driven qualitative analytical studies have converged on 12 interviewees as a point of saturation, though this may be a minimum number as many of these studies achieved this based on relatively focused, homogeneous studies, and that larger, more heterogeneous studies may require more (Guest et al., 2006).

### **Participant Inclusion and Exclusion**

The study recruited mental health providers inclusive to all specialties by license, including licensed professional counselors, licensed social workers, licensed marriage & family therapists, licensed psychologists, and board-certified psychiatrists. The exclusion criteria consisted of any participant who did not meet the inclusion criteria. Participants self-selected themselves for the study based on the information included in the recruitment flier or post, and their interest in the workshop topic area. Screening consisted of self-reporting the providers' professional license when signing up for the workshop, including providing an active license number. Had participants not met the inclusion criteria based on the initial screening, then the following would have been recited or sent to the participant via email – "thank you for your interest, but unfortunately I am unable to accept you as a participant for this study. I am including some follow-up resources should they be helpful for you."

### **Recruitment Settings**

Veduta Consulting—a Chicago therapy, supervision and consulting practice specializing in supporting doctoral counselor students as emerging

professionals—collaborated in setting up and deploying the workshop. This included distributing workshop fliers (see: Appendix B1 & B2) through their established presence in local and national professional networks (e.g. professional listservs such as CESNET, professional groups such as “chicagotherapists@groups.io”, and social media sites such as the Chicago Area Mental Health Therapists Facebook group) as well as information about the study on a separate recruitment flier. Appendix A includes the permission letter from Veduta Consulting granting permission to recruit from their professional networks in this fashion. Veduta had discretion to consider other networks to recruit from in the event of using a moderated social network or organization, and a letter was created asking for permission to do so (see: Appendix B3) giving permission for the moderator to send out recruitment materials.

### **Recruitment Procedure**

Fliers for the study were circulated alongside fliers for the workshop (see: Appendix B1, B2 & B3) and distributed to the social networks, organizations and online forums outlined above. Self-selected participants either clicked a link for online registration included in the emails circulated with the attached fliers, or reached out to a Veduta contact through the provided contact information on the flier, where they were directed by email link to online registration and online consent form. Participants were not offered remuneration or incentive for the research aside from getting continuing education units (CEUs) for completing the workshop, which did not require completion of the research.

Consent was obtained by electronic signature on the flier (see: Appendix C) or

checkbox on the online form. The consent was furnished to participants by emailed pdf and included in Qualtrics to be affirmed electronically before filling out survey questions. The form explained the importance of ongoing consent, as well as the circumstances under which consent might change, as well as steps to take to notify the PI that they redact consent. A reminder of consent was provided at each step of the study (i.e. at the outset of the second round of open-ended questions, where participants reaffirmed consent). As member checking played out, reminders about consent were included through online communication. The extent and limits of confidentiality and privacy were included on the informed consent form, as was the IRB assessment that there was little risk and no direct benefit to participants.

### **Development of the Workshop and Questions**

#### **Theoretical Base and Reference for the Inclusion of Elements**

#### ***Research Findings Informing the Inclusion of Workshop Elements***

The workshop was broken into four video modules of relevant lectures with slideshows and a final virtual conference to synthesize and discuss elements, as well as explore its application to clinical vignettes. To do this, the research was used from Chapter II as follows:

**Video 1 - Neurodiversity and Epistemic Injustice: Problems.** This video explored current problems with the medical model as a frame for understanding and treating neurodiversity. This video highlighted problems with the medical model from an epistemic justice lens in general, but the video was bookended with considerations about neurodiversity in particular. This research came largely from part 1 of the

literature review (Chapter II) and synthesized the critical literature about the medical model into six domains of relevant critical analysis: a) the medical model is associated with mental health stigma, b) the medical model's utility is flawed, c) the medical model has social costs, d) the medical model's theory is flawed, e) the medical model frames information about mental health in ways that are both inaccurate and create worse outcomes, f) the medical model's assumptions about a singular form of normalcy are a particular impediment to understanding neurodiversity as a diversity of norms. The concept of *epistemic justice* (Fricker, 2007) is framed as highlighting the importance of getting these training models correct, as the ways in which people are known (hermeneutical justice) shape their treatment and reception in society, including the way they relate to themselves, which can drive stigma. This sets up the alternative training model of the rest of the workshop, which can usefully frame treatment, but can also capture an understanding of diverse strengths and strategies, and contextualize relevant challenges and optimal niches in light of them. Overall, this video contrasts the assumptions of a training model of medical pathology and considers what may be different using a model built on diverse ways of being.

**Video 2 - Neurodiversity and Epistemic Injustice: Frames.** This video explores parts' 2 & 4 of the literature review by framing a) human mental well-being as a property of social animals (in contrast with a default state that is disrupted only by disease and dysfunction), and b) neurodiversity as a congruent model that emerges from a consilience of social science information just as social animal personalities are tailored to niches in their own social ecologies. In the first part, human beings are framed as a

special case of social animals, with the similarities and differences of both outlined.

Well-being is considered a functional property of an evolved nature that seeks to motivate prosocial cooperation and coordination while suppressing self-interest, and where social feedback is instrumental in a) energizing cooperation toward mutual goals, or b) shifting people into this self-interested survival mode that is often associated with poor mental well-being. In the second part, four social science models are evaluated for a consilience paradigm of neurodiversity as emerging at the crossroads of two universal dimensions of human nature that are found in each of these sciences. Framed in terms of temperament, these two dimensions are, broadly speaking, a) more or less sensitivity to reward (the behavioral activation system, or BAS) and b) being more or less sensitive to threat (the behavioral inhibition system, or BIS). These two dimensions are validated in research from genetics, including gene-culture coevolutionary theory, personality, life history research, and moral psychology, with most of the presented findings being tied to major integrative models in the respective fields that agree on this two-dimensional approach. Here, each field's contribution offers different implications to an overall holistic gestalt about neurodiversity and its strengths, challenges, trade-offs, values, strategies, mechanisms, optimal environments and more. This synthesis model is framed in the author's own "quadrant model" (plotting these two dimensions against one another results in four emergent combinations that can be visualized as quadrants). This is considered in relation to "complementary cognition," a major evolutionary contribution to framing neurodiversity as diverse yet complementing cognitive strategies that create a productive tension in driving cultural evolution, and a high-level

framework that may come to serve as a critical strengths-based reframe to contextualize the challenging trade-offs of neurodiverse people as being critical to the human project.

**Video 3 - Neurodiversity and Epistemic Injustice: Biosocial Models.** This video explores part 3 of the literature review, which draws on what is called there “embodied relational theory,” and what is called in the workshop “biosocial models.” Here, a recap of social animal frames is used to explore how social animals are energized, or buffered, in their resilience through positive social feedback, and “injured” through negative social feedback, including the major pathways of this feedback: feedback about goals and barriers to them, feedback about ingroup safety and belonging, and feedback about social status and wins and losses. Models are used to attempt to capture these dynamics as health bars, gas tanks or thermostats, where accumulating stress (“allostatic load”) is a pathway to mental health diagnoses, as is the erosion of resilience, and these synergize into spiral dynamics that can play on different identities or social positions differently. The relevance of environments of scarcity or abundance are considered, as these organize social environments of injury or buffering, and create environments where vulnerable people are more likely to be marginalized or oppressed, or more likely to be celebrated by having unique and specialized contributions. These are considered in terms of a) correctly attributing mental health problems, as well as b) the importance of niche-construction, i.e. the need to help people find their optimal environment of function as a way to frame the goals of mental well-being as long-term sustainability in a niche that can support people in their unique strategies and trade-offs. All of this is briefly summarized relative to neurodiversity, as validating the burnout and “belief in a

“just world” models of unsustainable well-being and misanthropic worldview, which can come to shape neurodiverse well-being.

**Video 4 - Neurodiversity and Epistemic Injustice: ADHD & ASD.** This video explores part 4 of the literature review, focusing on the sections about ADHD and ASD. This is done primarily through linking the research on ADHD and ASD to the implications of video 2 (parts 2 and 4 of Chapter II) which are connected to the diagnostic criteria, clinical presentations and neuroscience findings of both diagnoses, as well as implicated trade-offs of strengths, challenges, values and niche considerations that can be framed by the quadrant model. This is contrasted with treatment information drawn from the author’s own clinical practice, which explores more nuanced understanding of real clinical presentations in light of the quadrant model framework, and considers potential relational treatments that are implicated and which have been tentatively validated from the author’s clinical practice.

#### ***Research Informing the Inclusion of Questionnaire Elements***

The qualitative instrument used to generate the material for the content analysis was a survey questionnaire with seven open-ended questions (see: Appendix E2). Below are instruments used to inform the questions asked by drawing on the domains from the Therapist Training Evaluation Outcomes Framework (TTEOF) workshop assessment methodology such as demographic forms, knowledge assessment, attitudes scales and additional questions. These domains are considered for their influence in shaping the 7-item survey questionnaire.

**Sociodemographic Characteristics Form.** Typically used in conjunction with

TTEOF assessments. Questions in the demographics form are typically tailored to information specific to the study, which was here relevant to experience in the field, their neurodiversity status, professional training and theoretical modality as it speaks to their underlying values, attitudes, and beliefs. Consequently, these questions included age, sex, gender, race, ethnicity, neurodiversity status, degree completed, license held, certifications, years of experience, and theoretical orientation (as determined by rank ordering their top three modalities of choice).

**Assessment of Reactions & Barriers, Modified from Bartholomew et al.**

**(2007) and the Evidence-Based Practice Attitude Scale.** From the TTEOF. Reactions to the material and barriers to implementation. Example questions include: this training was beneficial; this theory and knowledge in this training will be useful; the psychoeducation models and interventions in this training will be useful; what was the most useful element of this training? This section informed the last three questions of the questionnaire examining a) what participants hoped to gain/did gain from the workshop, b) barriers/constraints to understanding or using workshop information, and c) how participants hoped/saw the knowledge impacting their work/care of neurodiverse clients, with A assessing expectations about gained knowledge and understanding, and C assessing hopes about changes to clinical behavior and practice.

**Knowledge Assessment.** A type of assessment in the TTEOF. It is common to assess knowledge gained as a workshop outcome, most commonly using multiple choice or true-false questions in a pre-post design (Decker et al., 2011). Some designs have

used knowledge tests creatively, such as to give different tests based on whether the material was presented in workshop format or by computer application, and whether there were differences in knowledge gained (Gega et al., 2007). Other tests of knowledge looked at whether techniques/modalities were indicated for different treatment populations before and after a training (Knowledge of Evidence-Based Services Questionnaire; KEBSQ; Stumpf et al., 2009). Assessments in changes to knowledge are thought to be captured in questions 3 & 4 on the questionnaires, as these assess prior and gained knowledge of neurodiversity and ADHD/ASD.

#### **Attitudes Assessments.**

***The Neurodiversity Attitudes Scale.*** The 24-item neurodiversity attitudes scale (NAS) measures attitudes toward Autism through the medical model versus the neurodiversity social model as a way of capturing stigma from the former. Both exploratory ( $N = 249$ ) and confirmatory ( $N = 259$ ) factor analysis run on the NAS showed the instrument to have adequate reliability and validity, with high construct validity but some issues with internal consistency of some of the subscales (VanDaalen, 2021). Endorsing the social model was shown to be correlated with social activism, high self-esteem and lack of negative views toward disabilities, effectively showing the destigmatizing effects of switching from the medical model in terms of both positive psychological and social consequences. This instrument was used to highlight the utility of contrasting the medical model with neurodiversity, as well as the role of characterizing the nature and origins of neurodiversity in establishing latent attitudes and stigmatizing assumptions about neurodiversity.

***Stigmatization towards Adults with Attention Deficit Hyperactivity Disorder.***

The 37 item Stigmatization toward adults with attention deficit hyperactivity disorder questionnaire (STAADHDQ) captures stigmatizing views toward ADHD. The STAADHDQ showed high internal consistency with subscale reliability ranging from .61 to .87, with .60 being the minimum allowable and .80 indicating good reliability (Fuermaier et al., 2012). The STAADHDQ demonstrated that each subscale captured different aspects of stigma, and that teachers and physicians - two populations with special references and access to ADHD populations - each demonstrate unique domains in which their training affords less stigma on a specific subscale, suggesting good construct validity. As with the prior instrument, this instrument revealed how stated beliefs about the nature and origin of ADHD could be used to reveal latent stigmatizing views, attitudes and beliefs about ADHD, which informed the decision to ask questions about ADHD and ASD separate from a more value-laden construct such as neurodiversity.

Decker et al. (2011) found that a variety of studies have sought to understand changes in attitude as a training outcome, including changes in attitudes towards training models (for instance, parent training and family therapy with the Therapist Attitude Inventory; TAI; Herschell et al., 2009), evidence-based practices (Evidence Based Practice Attitudes Scale; EBPAS; Henggeler et al., 2008; Herschell et al., 2009) or delivery methods (for instance, Attitudes Toward Treatment Manuals; ATTM; Henggeler et al., 2008), changes in beliefs toward the philosophical models (for instance, toward the disease model of alcoholism versus the psychosocial model with the Understanding of Alcoholism Scale; UAS; Morgenstern et al., 2001), and toward competing therapeutics

approaches (for instance, in the treatment of alcoholism with the Treatment Processes Questionnaire, TPQ; Morgenstern et al., 2001). Some of these were studied as an attempted predictor of clinical use of a new therapeutic modality, but were congruent in capturing changes in attitude. This research informed questions 1 & 2 on the survey questionnaire, which considered attitudes toward the medical model and a potential relationship with mental health stigma. It is thought that the assumptions of the medical model stand in contrast with the assumptions about neurodiversity, ADHD and ASD as presented in this workshop, and so if attitudes could be seen as changing with regard to the latter, they may be accompanied by changes in attitude toward the former.

**Additional Questions.** Extra questions were included with the neurodiversity attitudes scale from VanDaalen (2021), including questions about familiarity, beliefs and support of the neurodiversity movement. Each question given with basic multiple-choice responses from strongly agree through strongly disagree, with the last two questions offering open-ended responses for a mixed methods qualitative component. Questions include: 1) how familiar are you with the neurodiversity movement?; 2) how much do you agree with the goals of the neurodiversity movement?; 3) how important/necessary is the neurodiversity movement?; 4) how beneficial is the neurodiversity movement to people with disabilities?; 5) how would you define the goals of the neurodiversity movement; 6) what is your opinion of the neurodiversity movement? These questions were useful to probe how revealed attitudes about one's support or attitude toward the neurodiversity movement itself might relate to revealed attitudes and beliefs regarding different ways of framing ADHD and ASD, as well as

attitudes toward stigma and the medical model. This shaped inclusion of question 3 which asked about neurodiversity specifically, separate from ADHD and ASD alone, as this more value-loaded construct might elicit different results from asking about ADHD and ASD, which would prime different schemas, beliefs and attitudes.

### **Workshop: A Training Model of Neurodiversity Informed by Epistemic Justice**

#### ***Format***

The workshop was developed by the primary investigator based on the research findings in Chapter II with some input on workshop best practices from the practice owner of Veduta, a counseling and consulting agency that had been accredited by the Accrediting Council for Continuing Education and Training (ACCET). Information about Veduta, and the research assistant furnished by Veduta, was given to the IRB to ensure that only those critical to the research had access to sensitive information, what information could be accessed by the assistant, and who the individuals in question were. The workshop was developed as a continuing education unit (CEU) training eligible for credit toward the continuing education requirements required by state and federal law, and as such, provided an incentive to partake in the training. However, participants could drop out of the research at any time, so this did not amount to an incentive to complete the research. A variety of promotional materials through the agency were used to disseminate information, including a brief description of the project and contact information available in the marketing materials of the training.

The workshop utilized a “flipped classroom” style, using four pre-recorded videos and a final virtual group conference to discuss and synthesize the content. This

allowed participants to take in a content-heavy training model at their leisure, and come together for shared elements of group discussion and activity. Participants had two weeks prior to the virtual meeting to consume the four videos which amounted to 10:07:16 hours of content. The recorded lectures would normally have been given in person, but presenting them as recorded content instead allowed clinicians to take in the material at their leisure and focus on group process for the final virtual portion, which was three hours in length. Providing materials this way, like the training equivalent of a “flipped classroom,” had the advantage of cutting down on the necessary time needed for a final in vivo group process, which was deemed to be a useful consideration given the ongoing uncertainty of the global pandemic that played out throughout most of this dissertation.

### ***Descriptions of the Workshop Videos and Lectures***

The following is a broad content overview of the video presentation content as well as lecture and activities in the virtual workshop session.

**Video 1 (1:06:31): Neurodiversity & Epistemic Injustice: Problems - What Are We Trying to Solve?** 1) a brief history of neurodiversity: a) neurodiversity history: a movement, b) neurodiversity movement: [thematic] overview, c) summary: neurodiversity may be misunderstood; 2) problems with current frames: a) what's in a frame? (visual metaphor of pathologizing diversity), b) Higashida quote, c) epistemic injustice, d) problems with the medical model, e) study finding: medical model and stigma, f) study finding: DSM problems, g) study finding: social costs, h) study finding: theoretical problems, i) study: autobiographical information, j) study finding: role of

normalcy, k) neurodiversity catch-22, l) summary: medical model as a single relationship to well-being; 3) paths forward: a) normal neurodiversity, b) evolved cognitive styles?, c) study: burnout model, d) study: belief in a just world, e) models: disease vs diversity, f) proposed neurodiversity definitions

### **Video 2 (3:20:36): Neurodiversity & Epistemic Injustice: Frames - What is Neurodiversity?**

**1) frames & lenses:** a) neurodiversity consilience overview, b) humans as social animals, c) social animals and personality diversity, d) complementary cognition, e) model: connections & injuries, f) empathic imagination;

**2) neurodiversity: genetic research:** a) genes: real role, b) sensitivities, c) smoke detectors, d) gene-culture interactions, e) quadrant model: level 1, f) summary: neurodiversity is genetic diversity;

**3) neurodiversity: personality research:** a) cybernetic big five theory, b) cybernetic big two, c) personality research metatheory, d) quadrant model: level 2, e) summary: neurodiversity is personality diversity;

**4) neurodiversity: life history research:** a) model: fast-slow-defense, b) FSD: basic model, c) FSD: extended model, d) evolutionary psychopathology, e) quadrant model: level 3, f) life history strategy & diagnosis, g) summary: neurodiversity is a diversity of life strategy strengths & challenges;

**5) neurodiversity: moral psychology:** a) study findings: politics and temperament, personality and brain differences, b) study visual: ideology in two dimensions, c) quadrant model: level 4, d) complementary cognition, e) summary: neurodiversity is diversity of moral purpose;

**6) conclusion: quadrant model synthesis:** a) quadrant model: all levels, b) quadrant model: left vs right, c) quadrant model: up vs down, d) quadrant model: meaning matrix, e) quadrants: other findings, f) quadrants and ADHD/ASD, g)

summary of summaries.

**Video 3 (2:48:44): Neurodiversity & Epistemic Injustice: Biosocial models - How**

**Should we Think about Mental Health Issues?** 1) biosocial models: a) overview, b) neurominority pain & dysfunction: quote, c) epistemic injustice revisited, d) evolutionary functional analysis; 2) social animals and mental health: a) social animals revisited, b) social animals and major mental health findings, c) social animals become predictably depressed under certain conditions; 3) embodied cognition: a) autobiographical information: social biochemistry, b) brain as prediction machine, c) visuals: cybernetic loops and psychosocial injuries & buffers, d) visuals: social mentalities, e) visuals: psychosocial injuries as chronological experiences, f) visuals: social positions shape psychological dynamics, g) summary: experience is embodied; 4) embodied psychosocial injuries: a) findings: entrapment, b) findings: isolation, c) findings: defeat, d) psychosocial injuries and psychopathology: depression, anxiety, psychosis and trauma, e) visual: a model of injuries and buffers, f) study findings: biosocial sustainability, g) sustainability and epistemic injustice, h) social buffering, i) therapeutic implications; 5) self-regulatory strength: a) overview: three metaphors for science communication, b) visual: metaphor 1 - gas tanks, c) visual: metaphor 2 - health bars, d) visual: metaphor 3 - thermostats, e) visual: health bars and neurodiversity; 6) toxic and nurturing environments: a) structures, contexts and positions, b) study findings: toxic and nurturing environments as agonic and hedonic environments, c) visual: agonic and hedonic environments, d) environments and growth vs fixed mindsets, e) study findings: social inequality and mental health, f) study findings:

nurturing societies and mental health, g) quadrant model and environmental diversity, h) quote: environments and epistemic injustice, i) therapeutic implications: niches & buffers, j) intersections & spiral dynamics, k) sustainability; 7) injurious environments and neurodiversity: a) Higashida quote revisited, b) study: burnout model revisited, c) study: belief in a just world revisited, d) therapeutic implications 2, e) further reading

**Video 4 (2:51:35): Neurodiversity & Epistemic Injustice: ADHD & ASD -**

**Neurodiversity Mechanisms and Treatment.** 1) ADHD & ASD: a) overview, b) quote: neurominority pain & dysfunction revisited, c) typical assumptions; 2) frames: a) concepts and language, b) quadrant model revisited, c) visual: neurotypical trade-offs versus neurodivergent, d) quadrant model: lower left trade-offs versus lower right, e) quadrant trade-offs versus ADHD/ASD findings; 3) Attention Deficit Hyperactivity Disorder: a) ADHD facts, b) ADHD brain, c) strengths of imagination, d) summary: ADHD as a trade-off model, e) ADHD treatment implications, f) ADHD organization tool, g) ADHD values & strengths, h) ADHD summary: ADHD may not be a disease; 4) Autism Spectrum Disorder: a) ASD facts and basics, b) ASD brain, c) summary: ASD as a trade-off model, d) ASD treatment, e) ASD: values & treatment; 5) therapeutic application: a) quote: Higashida quote revisited, b) visual: neurotype buffering, c) visual: giftedness model, d) visual: burnout model revisited, e) visual: nurturing societies revisited, f) visual: ikigai, g) quote: lost connections

**Virtual conference (2:00:00): Synthesis: Case Studies and Discussion.** 1) lecture recap of the three modules: a) neurodiversity frames, b) neurodiversity definitions, c) quadrant model recap, d) lower quadrants and ADHD/ASD, e) compensatory strengths,

f) biosocial models, g) internalized toxicity, h) gas tank model, i) ADHD/ASD as neurodiversity, j) models: burnout, belief in a just world, k) model: burnout spiral, l) burnout therapy, m) breakout discussion: impressions, impactful concepts, struggles, relevant clients, personal relation?; 2) Case study vignettes: a) 4 case studies and discussion, b) review treatment concepts and tools, c) breakout discussion: reactions, salient concepts, techniques or applications?; 3) closing: a) medical model and the well-being continuum, b) model: injuries and connections, c) epistemic injustice and neurodiversity, d) purpose not pathology?, e) autobiographical information, f) communication not accommodation, g) disease vs diversity

### **Workshop Questionnaire**

Participants were given two forms to complete prior to the workshop. The first was a demographics questionnaire (Appendix E1) which collected basic demographic information (age, sex, gender, race, ethnicity, neurodiversity status) as well as information focused on professional experience (license held, certifications, years of practice, theoretical orientation). The second was the pre-workshop questionnaire (Appendix E2) which consisted of seven open-ended questions assessing information on three domains - assumptions / beliefs / attitudes about the medical model, neurodiversity and subjective reactions to the workshop.

Following the workshop, participants were also given the post-workshop questionnaire which was identical to the pre-workshop questionnaire with the exception of some altered verb tenses to reflect that participants had been exposed to the salient information. The following is a list of the seven open-ended questions used on the

workshop questionnaire. The first two questions assess beliefs and attitudes about the medical model of training/psychopathology; the second two questions assess beliefs and attitudes about neurodiversity and representative diagnoses such as ADHD and ASD; and the final three questions assess expectations (on the pre-workshop questionnaire) and reactions (on the post-workshop questionnaire) to the training model.

1. The neurodiversity movement is partially defined in resistance to the medical model of diagnosis and treatment - what is your relationship to the medical model as a frame for understanding people's mental health troubles and their treatment?
2. In relation to the medical model, what is the risk of stigma, and how does it impact our understanding of mental health troubles and treatment?
3. What is neurodiversity in your view, and how have these views evolved?
4. What are your beliefs about the origin and nature of ADHD/ASD?  
I.e. what IS ADHD/ASD?
5. What do you hope to gain/did you gain from a neurodiversity workshop?
6. What would be/was a barrier or constraint to understanding or using neurodiversity workshop information?
7. How do you hope/see this knowledge impacts/ing how you move forward in your work/care of neurodiverse clients?

### **Data Collection**

Two weeks prior to the workshop, participants were sent email communications

orienting them to the flipped classroom workshop style and schedule, including links directing them to pre-training materials such as informed consent, information about the purpose of the study, the demographics questionnaire and the pre-workshop questionnaire. Following completion of these, participants were sent links to the video modules hosted at private YouTube links with disabled comments. As a mechanism to ensure engagement with the video content, four-digit audio codes were added to random sections of each video module that were required to be reproduced on the final survey before a participant could complete the training and obtain their CEUs.

Participants were given two weeks to complete the materials. After the workshop, participants were given one week to complete the post-workshop questionnaire. Participants were told to expect the possibility that the researcher could follow up on this second questionnaire with some final targeted questions to extend and clarify their answers (this was not exercised) and that researcher would follow-up after the study to employ member checking to ensure the trustworthiness and credibility of the results.

Member checking was carried out following data analysis and guided by three questions: 1) Do the transcribed responses match your intended sentiment?; 2) Do you want to change anything?; and 3) Do you want to add anything? These questions were drawn from the Birt et al. (2016) as an approach to balance numerous ethical and logistical challenges in the member checking process. Appendix F includes the email used to explain the member checking process. Transcripts were sent to participants as attached Microsoft Word documents with the email offering guidance on what to do if they sought to alter their answers. Select passages in the transcripts were highlighted

for potential ambiguous meanings or dual interpretations and accompanied by a researcher comment on why the passage was chosen. Participants were invited to clarify, comment or elaborate on these and other passages, though it was made clear that participation was not mandatory in process, and participants were not required to alter any answers beyond their own desire for clarification of intention in the research. No participant elected to make changes.

Participants were given the option to opt out of the research at any time without penalty (this information was provided in the initial materials), but they would still need to complete the final post-workshop questionnaire to demonstrate that they engaged the workshop materials in order to get certified that they had completed the training and gain their CEUs.

The initial email communications directed participants to use a secured Qualtrics survey to complete the pre-training materials: an informed consent form, demographics form, and the open-ended questionnaire. This information was captured in a secured Qualtrics account by the research assistant furnished by Veduta, who then sent the PI the information aggregated in password-protected spreadsheets with the identifying participant information removed, and each participant instead identified through a self-selected four-digit pin that only the assistant could connect back to the participant's email. Following the workshop, participants were given one week to complete the post-workshop Qualtrics-hosted questionnaire, and again, the research assistant sent a transcript of the de-identified and password-protected data as an Excel spreadsheet to the researcher, who stored the results on a password-protected private computer in a

locked residence.

### **Data Management**

A Veduta research assistant was always available to liaison communications between the participants and researcher or vice versa to maintain the de-identification procedures as needed. Identifying information was removed from all results, and participants were identified through self-selected four-digit pins as part of the initial Qualtrics pre-workshop survey. Secure email was used for most correspondence, which linked to a protected Qualtrics account to host the survey data entry used in the study, including pre- and post-workshop questionnaires, demographics forms and informed consent forms. Transcripts of these results were auto-generated and aggregated into password-protected spreadsheets, sent to the primary investigator for analysis and stored on a password-protected private computer. The study data will remain only on the researcher's password-protected computer for five years following the publication of the dissertation.

### **Credibility and Trustworthiness**

In qualitative research, statistical rigor is replaced by attempts to ensure credibility and trustworthiness using a variety of means that control for various kinds of bias on the part of researcher and participants. In this study, we employed triangulation by using multiple data controls and techniques to ensure the credibility of the data and ensure powerful, comprehensive themes (Lincoln & Guba, 1985). These techniques included using detailed researcher notes to ensure confirmability of the methods used in the design, a software program to verify themes generated are neutral, and an

iterative coding process (see: data analysis; Creswell, 2007; Patton, 2002). When the software-assisted coding failed to generate robust codes, multiple coding passes optimized separately for general coding themes before a separate pass to answer the research question, in the hopes of obtaining a neutral benchmark for codes to check against the more subjective interpretative process. Transferability was also aided by the use of feedback from experienced interviewers (previous committee chair, Dr. John Beckenbach) in designing the open-ended questions. Member checking was also used to ensure clarity of accuracy in respondent intent and researcher interpretation. A member checking process was adapted from Birt et al. (2016) was used to address logistical complexity, respondent burden and trade-offs in implementing feedback (see: data collection). Researcher self-awareness was heightened and self-disclosure of bias was articulated in service of trustworthiness, including the outlining of study limitations to draw clear demarcations on what conclusions can be drawn from the results garnered and ways in which the implications can be transferable.

### **Data Analysis**

Directive content analysis uses theory to extend an existing theory or research that might benefit from further description (Hsieh & Shannon, 2005). Given that much of the consilience framework from within this model represents a novel synthesis, this workshop constitutes a pilot, and theory-directed questions may have multiple benefits: a) in framing the salient theme of epistemic injustice as it relates to ways of understanding the neurodiverse, b) by extending theory as it is given meaning to participants who grapple with its meaning to their own lives, practices and worldviews,

c) in gauging the intended and unintended implications of these models as a basis for refining their utility for their intended purpose, and d) for assessing the implications of knowledge reception as it pertains to the ethics of knowing and understanding, including potential implications for how the neurodiversity community is viewed, or how the neurodiverse themselves might receive this information.

Theory guided coding and interpretation in multiple ways (see: the development of the workshop section above). The TTEOF framework provided a framework for productive capturing of the functions of a workshop training. The neurodiversity attitudes assessments guided questions about stereotypes and stigma facing the community, and the direction knowledge might ideally move instead. Epistemic injustice and autobiographical information framed issues relevant to the role of understanding and stigma. Finally, the SAP on mental health and neurodiversity was used to encode frames relevant to new perspectives as they may shift considerations of epistemic justice. Where necessary, it was important to highlight contradictory frames and perspectives such as the medical model or other counseling or political theories that may not support researchers' biases and assumptions as a means of ensuring credibility and trustworthiness. Here the goal was a) to see whether frames and meanings from the workshop impacted questionnaire answers following the workshop, b) subjective reactions on the usefulness, implications and directions of the work, and c) whether the subsequent answers can derive any changes with regard to epistemic injustice.

The coding process was iterative to ensure maximum credibility, trustworthiness and accuracy (Bengtsson, 2016). A software program (NVivo) was used to systematically

detect themes for potential codes in an automatic analysis, with the researcher left to identify and name potential patterns, though this was found to generate superficial codes (i.e., “mental health” and “mental health practitioner”) which was not useful to answering the research question. This software was intended to be used in conjunction with the primary researchers’ coding by identifying patterns that may agree or disagree with the primary researcher’s approach, and incorporating them as one might a second coder, which can be used in qualitative analysis to improve trustworthiness through triangulation. However, as this failed to generate a robust check on the researcher, the PI instead employed two coding procedures, one coding for general themes with no particular goal, and one generating themes relevant to answering the research question, and using them in conjunction to triangulate the data to ensure trustworthiness and credibility. A note taking process was used to externalize the process and create transparency around the thinking informing coding, including the congruence between the two coding attempts by the PI. Per Hsieh and Shannon (2005), it was expected that data analysis would begin with a close reading of all responses, followed by generating an initial bank of codes between the researcher and the software including an exploration of where their codes agree or disagree (Creswell & Miller, 2000); a second reading iterated the coding process for accuracy, and a last pass on the codes sought to develop consensus on the final codes to be used in the data analysis (Neuendorf, 2002). This was indeed the process, with an added pass seeking to seek general themes before a subsequent pass was used to generate themes relevant to the research question, with the first pass used to check against the second to ensure clarity of meanings separate

from the PI's interpretation of the meanings relevant to the research question. The resulting data analysis was sent back to the participants for member checking, to further ensure trustworthiness and credibility in the data, but no emails were returned with changes to be made.

### **Researcher as a Person**

In qualitative research, seeking clarity, awareness and transparency about one's biases are important to manage one's subjective interpretation of ambiguous results. This offers a tool to incentivize objectivity and achieve credible results (Creswell, 2007). The effort requires considering oneself as an aspect of the study (Denzin & Lincoln, 2011). The most salient dimensions to consider are the researchers' status as a neurodiverse (ADHD) participant researcher, his family-of-origin as having multiple neurodiverse members, his own experiences with epistemic injustice in the mental health field, and his current status as a therapist with a predominant neurodiverse focus.

As a clinician, my experience of the mental health field has been shaped by years of practice watching people suffer, as well as transcend that suffering by turning pain into purpose. My entry into the field was as a calling to do this, not as a believer in my current role, but as someone who once felt let down by the system. As a young man, I saw how a family members' major mental health diagnosis changed his relationship with his wife, children and community. His treatment was a mixed blessing - he experienced intermittent pharmacological relief, but saw his identity reshaped by the institutional meta-narrative that turned him from quirky mad scientist to pitiable figure that few

engaged with; a community pariah. Later, when the researcher wrestled with his own neurodiverse issues, this family member became a threatening genetic link that implicated a poor prognosis through the specter of bad genes. Mental health providers reinforced this stigma by mandating testing for this link. The available frames for psychological pain made the researcher lose faith in himself and his family, and his struggles became far worse before improving. Feeling profoundly misunderstood felt like an injustice, and only a calling to help others who felt similarly could turn pain into purpose by resolving to help others find constructive, non-stigmatized relationships to their problems.

This backstory animates an interest in helping people make sense of challenges that may not be understandable or justifiable from within a narrow frame, culture or experience. Social narratives have enormous impact in reshaping individual narratives to one's self and others. These power imbalances create an enormous responsibility to understand the implications of such stories on vulnerable people, lest helpers become a tool of internalizing oppression rather than a last line of support in the face of adversity. Throwing away many of the assumptions about biological determination in mental illness can be an important part of healing. This has led to a journey of seeing eccentricity not as an expression of mental instability, but as a valuable trade-off intrinsic to the human condition, one that must be normalized to embrace important strengths, values, strategies, niches, and contributions that are found among unusual people (Del Giudice, 2018; Oller, 2019). The mental costs of these trade-offs can sometimes be a necessary sacrifice to serve a unique role in the human project. What is

needed now more than ever is a lens to understand the logic of our natural diversity, and how to position ones' self to capitalize on strengths and mitigate the challenges in an often-hostile world. Orienting people to epistemic justice as a common ground to unite disaffected groups is one example of the prosociality needed to turn pain into purpose. Mental vulnerability requires creating effective allies to understand one another beyond narrow experiences, allying against the systemic barriers that maintain individual problems. People must work together to create social niches and meta-narratives that are favorable to diverse forms of thriving if everyone is to make it.

These beliefs create a potential for systemic bias in this study. Sources of bias include: a) bias against the medical model (for instance, even using terms that medicalize suffering such as "mental illness" is something I notice myself resisting), b) a bias in the outcome of the study, c) ideological assumptions that might shape the interpretation of the data, and d) being invested in how these ideas are received and might impact emotional needs for validation, safety, hope and empowerment. These are biases, emotions, and assumptions to bring into relief when interpreting the results, to be mindful of when having emotional responses, and to be aware of to avoid becoming attached to outcomes. Triangulation tools may help to strategize around these factors, such as journaling and processing thoughts and feelings. It is my hope that awareness of these factors will help harness the positive dimensions of motivation, while avoiding biases that might harm the validity of the study.

## CHAPTER IV: RESULTS

The purpose of this study is to explore the subjective impact of a training model of neurodiversity on mental health practitioners as delivered by a professional workshop consisting of 10 hours of video lecture content and two hours of virtual meeting to discuss and synthesize. The study used a qualitative method to explore the nature and change of their beliefs and attitudes about neurodiversity and their expectations of, or reactions to, the training model captured in questionnaires given both before and after the workshop. The methodology employed was directive content analysis, where a curated form of media is coded for salient themes, and the term "directive" refers to the interpretive process being theory-driven. The theory used to guide coding and interpretation was derived from the research synthesis presented in the workshop including a) framework for evaluating workshop best practices, b) neurodiversity-informed questionnaires to inform the range of attitudes and beliefs about neurodiversity, c) forms of epistemic injustice and their consequences, d) a neurodiversity consilience drawn from four major social science domains, and e) a social animal theory of mental health sustainability. The questionnaire assessed positions on these issues in three parts - beliefs and attitudes about the medical model (questions 1 & 2), beliefs and attitudes about neurodiversity (questions 3 & 4), and expectations/reactions to the training model (questions 5, 6 & 7) - both before the workshop, and afterward, to determine the nature and direction of any change that resulted from the workshop. The goal was to answer the following questions: Does a neurodiversity workshop that seeks a de-stigmatizing frame on neurodiversity, to

provide epistemic clarity on a nebulous topic area, and to derive adaptive community-congruent self-knowledge, resonate with providers as useful in working with neurodiverse clients; how might perspectives of practitioners change regarding epistemic justice, social animal perspectives, normal neurodiversity and consilience as they serve this goal? The questionnaire answers seeks to answer these question by a) determining whether there are any positive endorsements of the material presented both in-line with the answers to the post-workshop questionnaire, and in the final section of the questionnaire asking about reactions to the training model, and b) determining if there are any changes to the way opinions about the medical model and neurodiversity (including ADHD and ASD specifically) are framed in the post-workshop questionnaire relative to the pre-workshop questionnaire. Responses to the seven-item questionnaire were coded and analyzed using a content analysis method where codes were created to be partially inductive, i.e. informed by direct observation, and partially co-occurring, where codes could overlap and segments could have more than one code.

In this chapter the results of the qualitative content analysis are reported. The first section reports the return rate and effects on the design, as well as participants and demographic information. Section two reports the codes and select excerpts produced from the pre-workshop questionnaire. Section three reports the codes and excerpts from the post-workshop questionnaire. Section four brings in relevant reactions from the workshop debriefing.

### **Response Rate and Participant Demographics**

Thirty-one participants signed up for the workshop in two days. Of those 31, 19

began the data collection procedures (meaning 12 only expressed interest in the workshop by registering for it but did not attempt to complete it): one did not consent to the research process; one consented, but did not give any information; five began to give demographic information, but did not begin the pre-workshop questionnaire; four completed only the pre-questionnaire, and five completed both the pre-workshop questionnaire and post-workshop questionnaire. More demographic information is presented in Tables 4-8, including age, sex, gender, race, ethnicity, neurodiversity status, degree, professions, certifications and years licensed and theoretical orientation.

### **The Pre-workshop Questionnaire**

The pre- and post-workshop questionnaires broke the research question into seven questions assessing three domains - beliefs about the medical model (n=2), beliefs about neurodiversity (n=2) and reactions to the workshop (n=3). The responses were asymmetric, with nine questionnaires completed before the workshop and the five questionnaires completed after the workshop, i.e. the loss of four participants to attrition. In terms of coding, all nine of the pre-workshop responses were kept from the original response cohort to maximize rich thematic saturation; the impact of this choice will be bracketed and discussed more in Chapter V.

Directive content analysis was used to extend research and theory that might benefit from further description (Hsieh & Shannon, 2005), so code categories were generated by theory-guided interpretation. A number of sources were used, including a) a variety of journal articles offering constructive criticism of the medical model on issues of stigma, utility, theory & social costs; b) the concept of epistemic justice by Miranda

Fricker (2008) and autobiographical information by MacDuffie and Strauman (2017a; 2017b) as they help to frame the cost of pathological narratives and contribute to the disempowerment of neurodiverse communities; c) a consilience framework on neurodiversity connecting the function of strengths tied to challenges as derived from a variety of social sciences including moral psychology, life history research, temperament & personality theory, and genetic plasticity trade-offs; and d) a gold star workshop assessment, the Therapist Training Evaluation Outcomes Framework (TTEOF; Decker et al., 2011) and two neurodiversity assessment instruments, *The Neurodiversity Attitudes Scale* (24 items), and the *Stigmatization towards Adults with Attention Deficit Hyperactivity Disorder* (37 items), as they may aid in assessing how to glean value gained in a workshop format, particularly around questions of neurodiversity.

The qualitative data analysis software, NVivo, was used to generate an initial round of codes on the pre-workshop questionnaire data. Running a coding pass without existing codes was found to generate superficial data; for instance, an initial pass on all of the answers to question one of the pre-workshop questionnaires found two auto-generated codes - “mental health experiences” and “mental health practitioners” - which were overly abstracted and without insight for the purposes of interpreting themes relevant to answering the research questions. The primary researcher instead worked toward intracoder reliability by first generating a set of codes across all questions irrespective of the specific questions, and then recoding the data question by question, with the determination that the coding systems used were more or less identical (more on this in Chapter V). A combination of inductive coding (codes

generated through close reading of the text) and co-occurring codes (overlapping codes where a text segment could have more than one code) were used, while interpretation would be driven by the theory outlined above. This was to a) increase reliability by avoiding a priori assumptions early on, and b) creating rich saturation to the point of redundancy (multiple possible meanings for different code segments), where later analysis could prune and abstract away in the most parsimonious and salient fashion.

For example, many respondents levied criticism toward the medical model that was multidimensional, suggesting the problem was complex and multifaceted, and giving scant attention to any one problem in depth in favor of intimating many overlapping problems in brief. Consequently, it was less appropriate to characterize a singular theme about the problem with the medical model, and more useful to characterize a multidimensional issue emerging across respondents. Thus, ideas were broken down both within and across responses to illustrate micro-themes that became robust across responses. Statements that had elements of two overlapping forms of criticism would therefore be coded both ways. The below criticism invokes two glancing themes that emerged more fully across responses, that a) the medical model assumes a narrow normativity ("the right...or appropriate way") and b) the medical model is built on 'deficit-based assumptions' ("problematic or in deficit"): "The medical model makes an assumption that a specific and narrow way of processing and responding to information and stimuli is the "right" way or the only appropriate way. Any other way is considered problematic or in deficit."

A note on categorizing respondents, the five respondents who were present for

the pre-workshop through to the post-workshop are listed as A through E, while the four respondents who did not complete the post-workshop survey are listed as Z1 through Z4 to maintain separation between these groups to track differences between those who completed the post-workshop questionnaire and those who did not.

### **Beliefs about the Medical Model of Psychopathology: Pre-workshop Questions 1 & 2**

The themes from this section of the results were derived from the following two questions on the questionnaire: 1) The neurodiversity movement is partially defined in resistance to the medical model of diagnosis and treatment - what is your relationship to the medical model as a frame for understanding people's mental health troubles and their treatment? 2) In relation to the medical model, what is the risk of stigma, and how does it impact our understanding of mental health troubles and treatment?

**Theme 1.1: Most participants have negative views of the medical model due to its flawed utility and harmful approach, while some acknowledge its utility.** The most representative theme that emerged in the initial round of questions regarding the medical model is that it is largely held in a negative light by most of the clinicians surveyed. This could be categorized into two types of criticism: 1) problems with the medical model's perceived clinical inadequacy, and 2) problems with the medical model's social costs. In terms of inadequacy, the emphasis was on the medical model's clinical limitations, with four sub codes emerging: a perceived lack of conceptual accuracy; an "overly simplistic" understanding of "human being's mental health experiences;" a sense the medical model is not the most effective or client-aligned treatment system; and the incompatibility of the medical model and counselor values of

self-acceptance. Here a few representative quotes about its perceived clinical inadequacy:

From Respondent A: "I do not like the medical model as I don't feel like it accurately captures issues pertaining to mental health and neurodiversity."

Respondent B: "...However, the medical model used exclusively is overly simplistic in understanding a human being's mental health experiences and ways to partner with them in their care."

Respondent E: "As a mental health professional, I want to do my best to encourage acceptance of how one is and how one feels, and I don't think the medical model does a good job of acknowledging this kind of idea."

From Respondent Z4: "The medical model is not inclusive and does not give a proper explanation of the clients we serve."

The second source of criticism was on the unforeseen social costs and externalities of the medical model, in three major forms: the creation of social barriers, marginalizing forces, and the role of stigma. The medical model was considered to drive barriers to both "quality and long-term care," as well as care-seeking behavior. The medical model was considered exclusionary, with clinicians using language like "ostracize," "marginalize," and "not inclusive." Given the emphasis on the second question, the role of stigma as a proxy for the salient theme of epistemic injustice in the dissertation, many clinicians believed there was a significant role in the medical model regarding stigma prior to the information from the workshop. This theme could be broken further into A) causes of stigma, B) mental health consequences of stigma, C)

clinical consequences of stigma, and D) inability to treat root causes.

Regarding the causes of stigma, several clinicians emphasized the role of the language, assumptions and/or philosophy of the medical model in being defined based on perceived negative characteristics. Words like "condition," "deficit," "disorder," "illness," and "labels" were all suggested to be problems, sometimes ambiguously referring to the language, connotation, metaphor or assumption implied therein.

From Respondent A:

A big problem with the medical model and stigma is that everything is defined as a 'disorder.' When it comes to ADHD we get 'deficit' and 'disorder' all in one diagnosis which is just a lot. It is really problematic to me that this neurotype is literally defined by its supposed deficits rather than its strengths. I wish there was different language and conceptualization for this.

From Respondent E: "The language used by the medical model--"disorder", "condition", "illness" already reinforces stigma."

Respondent Z4: "We treat and diagnose symptoms, not root causes."

Another approach was to emphasize what was missing from a medical model framework rather than the presence of something negative, including one respondent addressing a perceived inability of the medical model to quantify client strengths, as well as the loss of clinical curiosity or the seeking of client understanding. For example, Respondent Z4: "The over pathologizing and use of labels in the medical model increases stigma and decreases curiosity and understanding."

Finally, other causes mentioned included what might be considered overreach,

the “over-pathologization” of the medical model, and the lack of understanding that stems from the inadequacy of the model. For instance, Respondent C: “Stigma is related to all of society not fully understanding what neurodiversity means, nor how to interact and provide services to those who are neurodivergent.”

A major theme around stigma was how it directly led to compromised clinical care. Several clinicians addressed this directly, including the role of a) limiting assumptions, b) fear, both of complex mental health issues and as a driver of treatment, c) punitive treatment, d) diagnoses with strong negative associations, e) diagnosis as limiting access to services, and f) the role of shallow understanding as a risk of misattribution to pathology, and misdiagnosis.

From Respondent Z3:

One example of the risk of stigma is in a therapist group, when therapists write down the functioning level of an autistic client, the information that is assumed can limit the client's access to therapists. If someone says, high functioning autistic client, a therapist may already make assumptions about that client's relationship to the world and their support needs. Not allowing the client to talk about their own experience in the world and how they are functioning in it.

Respondent E:

I think with mental health in particular, the risk of stigma within the medical model can be huge. For example, the pathologizing of personality disorders and diagnoses (e.g., borderline personality disorder) is rampant, and these conditions have such negativity associated with them.

Respondent C: "There is risk [from not understanding neurodiversity] of people "blaming" some diagnosis, both those who have it or those who do not."

Respondent B:

The risk of stigma is great! I have had colleagues who have said, "I'll never work with someone who is (insert mood disorder here)." I think it creates heightened vigilance when it comes to observing the struggles people with complex mental health issues face and treatment is often framed as punitive and based out of fear.

Clinicians also singled-out how stigma caused a variety of mental health consequences for the clients. Codes included problems with A) creating barriers (to authenticity, self-acceptance, self-compassion, positive identity and care-seeking behavior), B) negative emotionality, negative self-belief and negative self-relationship, C) as a driver of "secondary" symptoms, D) social consequences (negative social experiences, pressure to mask, perceived differences are seen as negative) and E) lack of resources to support non-pathological differences.

From Respondent A:

But the stigma is there and prevents people from seeking care and/or there are parts of their internal world that feel very ashamed and self-negative. I find that almost all the neurodiverse people I work with have negative self-beliefs related to their neurodiversity and perceived difference from others, as well as trauma related to experiences with school or other childhood/adolescent experiences.

This creates additional symptoms and barriers to developing a positive sense of

self or the capacity for self-forgiveness/acceptance.

Respondent Z1:

The medical model reinforces stigmatization of neurodivergence and reinforces guilt and shame in those who interact with and respond to their experiences in different ways. We understand that when people cannot be authentic to who they are and how they function, it increases risk for developing mental health struggles as well as negatively impacting how neurodiverse folks understand themselves and advocate for themselves. There is pressure to hide their authentic and unique differences and meet the expectations that others claim should be "strived" for (i.e., masking).

Respondent Z2: "The risk of stigma can be limiting and disempowering."

Finally, the only other themes that emerged might be called ambivalence about the medical model, and the difficulty of reconciling clinical practice that is incompatible with the medical model to working within a system guided by it. Regarding the former, some clinicians acknowledged that the medical model either may or does have some utility in organizing information or organizing symptoms, while both balanced these attributes with criticisms. Another clinician embodied ambivalence by having strong negative feelings about labeling, while also suggesting an exception to when such labels might be useful, presumably despite the risk of stigma.

For instance, from Respondent B: "The medical model may be helpful in organizing symptoms but I find it to be limiting and an oversimplification of humans in regard to mental health."

Respondent D: "The whole idea of labeling by diagnosis is repugnant to me, unless there is profound disturbance such as psychosis that is less amenable to counseling."

Several clinicians intimated ways in which they accommodated their practice to their incompatible feelings with the medical model.

From Respondent A:

I do work within the medical model in my work, due to the fact that taking insurance is an important way to make therapy financially accessible to clients. I typically have collaborative conversations with clients about using diagnosis and the medical model to be able to access care but that we are going to work to understand and meet their needs as an individual.

From Respondent D: "I do not orient myself to the medical model or DSM diagnosis. I've been counseling for 50 years, as a school counselor and in private practice for 46 years. I do my own assessment based on the clients history."

Lastly, two clinicians did not express negative feelings toward the medical model. Respondent C expressed confusion about what was meant by the medical model, while Respondent Z2 said they were "trained on the medical model but open and interested in other approaches."

#### **Beliefs about Neurodiversity: Pre-workshop Questions 3 & 4**

The themes from this section of the results were derived from the following two questions on the questionnaire: 3) What is neurodiversity in your view, and how have these views evolved? 4) What are your beliefs about the origin and nature of

ADHD/ASD? I.e. what IS ADHD/ASD?

**Theme 1.2: Neurodiversity is broadly considered to be natural differences in human beings that manifest as multidimensional or holistic differences in functioning, interacting and self-expression; it is unclear how neurodiversity the identity relates to neurodiversity the diagnoses, which are often conceptualized in the pathological language of developmental disorders and gene-environment interactions, which was previously considered problematic for neurodiversity the identity.** Nearly all respondents (n=8) endorsed some variation of neurodiversity being a difference in the way people experience the human condition. The language here was nuanced; some (n=3) emphasized neurodiversity as “natural” and being at the species level, ala “the human equivalent of biodiversity” or “variety within the human species” or “the naturally existing spectrum we all fall within.” While emphasizing the difference relative to the whole tends to centralize the normalcy of difference relative to a species-wide whole, others (n=5) talked about neurodiversity in a more narrow or reductive way. This included defining neurodiversity as “variation in neurocognitive differences” or “brain differences” and emphasized how brains “function at different speeds or dimensions,” or “the varied range of how each person processes and responds to stimuli/information internally and externally” or “the naturally existing spectrum of...brain development, functioning and processes.” We might consider this an emphasis on substrates, or specific and narrowly defined differences in embodied pathways in the body such as brains, nervous systems, cognitive processes, etc.

A third category might be people who tried to get at something more holistic,

person-centered or socially intersecting. That included language like “individuals have different ways of processing, understanding and reaching to the world” (where ‘understanding’ or ‘reaching the world’ could be considered more holistic or socially-intersecting processes) or “there is a wide range of capacities and experiences for people and these arise in different ways due to both genetics and lived experiences” (where ‘a wide range of capacities and experiences’ creates an expansive and inclusive view of the nature of differences). This category was more involved with the holistic interaction with the world, what might be called differences in “ways of being;” they also emphasized neurodiversity’s relationship to the social context. For example, one respondent who defined it primarily in terms of a social majority-minority dynamic.

From Respondent D: “In my view, neurodiversity means a way of thinking that is non-normative. It could be any way of thinking or processing information that isn't linear, isn't accepted nor acknowledged by mainstream society as being legitimate nor ‘correct.’”

The relationship of a person with their social and economic context tended to echo a theme of neurodiversity as at least partially defined by its history of being misunderstood, mischaracterized, oppressed or devalued socially.

From Respondent B:

Neurodiversity is a way to describe a way people might show up in the world in regard to how they think, present to others, body movement. Historically, society viewed people who are neurodiverse as "mad" and it seems that things have softened and there is a deeper understanding of neurodiversity in modern

culture. We're by no means affirming but we are doing better than 100 to 300 years ago.

From Respondent A: "I also try to understand these differences as inherently valuable and important, even when they do not fit neatly within societal conceptions of worthiness like "functioning" or capacity to work under capitalism."

To acknowledge neurodiversity as a form of social difference or as problematic relationship to the social context is to acknowledge the current lens on understanding neurodiversity may feed into the problem. One respondent even emphasized some of the controversial or problematic areas of thinking around the neurodiversity movement itself, typically considered part of the solution, not the problem.

From Respondent A:

Often when people are discussing neurodiversity now they are talking about people with ASD or ADHD but I think it is a much broader concept that I would like to see better defined. I also don't like to see neurodiverse contrasted with neurotypical as I don't really think anyone is neurotypical and that those conceptions of normalcy are very problematic and a slippery slope towards eugenics-oriented belief systems. I do like the autistic/allistic language and wish there were more versions of that to essentially describe if the person does or does not have a specific type of neurodiversity.

Of final note, while several people used language and concepts informed by neurodiversity advocacy (i.e., neurodivergence versus neurotypical), only one person addressed the possibility of strengths in neurodiverse individuals, including language

that invoked the possibility of neurodiversity having an innate social function or purpose (“integral to the ongoing development of the human species.”) This was the only direct reference to strengths and neurodiversity.

From Respondent A:

I also want to add that I think ADHD/ASD neurotypes are related to increased capacities in certain areas like creativity and scientific thinking and that much of our modern world is driven by technology and innovation devised by neurodiverse people. So, relating this back to biodiversity I think ADHD/ASD are integral to the ongoing development of the human species in some way.

Two themes emerged in the evolution of people’s views on neurodiversity: that they had evolved throughout adulthood, particularly in the most recent three to four years, and that they had evolved in part based on personal experiences with neurodiversity. Regarding the former, of the five people who acknowledged that their views on neurodiversity had changed in their life, three mentioned specifically the last 3-4 years as being a leap forward in understanding, with one only becoming aware of the concept of neurodiversity in that timeframe. The other theme was the change being informed by personal experience. Three respondents mentioned having a diagnosis themselves; two mentioned working with neurodiverse children or clients; and one mentioned having a child or family member with a neurodiverse diagnosis. In the answer to a separate question, another respondent also disclosed a neurodiverse diagnosis, bringing the total to four of the nine pre-questionnaire respondents having a neurodiverse diagnosis, while three of the five who stayed through the full study did as

well. Interestingly, it was only the four respondents who disclosed a neurodiverse diagnosis that also acknowledged that their views on neurodiversity had evolved. Three of these four wrote about the role of personal experience with neurodiversity as instigating a change around their views, while the remaining respondent only suggested that there was still more to know.

From Respondent B: "However, I've come to understand in the last 4 years since 2019 that neurodiversity is so much more diverse than we've conceptualized."

A personal experience was at the heart of longer-form stories about evolving views. One of those responses made special mention of their growth in terms of ableism and their own experience with seeing the costs of misunderstanding in their own evolution on the topic.

From Respondent A:

My views around neurodiversity have evolved a lot throughout my adulthood. As a younger person I certainly held uniformed and ableist views around ASD, ADHD as well as other disabilities, consistent with the problematic ways neurodiversity and disability are portrayed in the media and public discourse. I was not diagnosed with ADHD until I was in graduate school, though I struggled with the symptoms much earlier and was simply told to "try harder." So there has definitely been a parallel process between understanding, accepting and accommodating my own ADHD and working with neurodiverse clients to better understand and support them.

Respondent A would go on to include another personal anecdote that informed

their understanding of ADHD etiology with a thought experiment in their response to the fourth question (see: below). Respondent D emphasized the growing popularity of the term, but also emphasized their own deep grappling with applying views to their experience, this time as a struggle with the positive implications of the advocacy movement.

Even as someone with ADHD myself, I often forget that my "neurodiversity" is okay, is acceptable, because the norm is to view yourself in relation to normative, mainstream society. It's still easy to feel like there's something wrong with myself because I have difficulty focusing sometimes.

Finally, while the last respondent was vague about their journey of personal understanding, they alluded to receiving limited academic supports and discovering the limits of their own views in supporting both students and their own child.

From Respondent Z3:

I was dx [sic] with ADD in college, and I had no idea what to make of the diagnosis, nor was there much support for me. I also worked in a school where I had autistic children and ADHD children on my caseload and I attended their IEP meetings or 504 meetings. At that time, I thought I was supporting them but my understanding of it was extremely limited. Since entering private practice, my son being dx autistic, and discovering my own autism, I have learned more about neurodiversity.

Regarding the nature and etiology of ADHD and ASD, the most common response (n=4) about the speculative origins of these constructs was that ADHD and ASD

were considered to be an interaction of genes and biology. This is an interesting response because it could be viewed as in-line with the medical model's stress-diathesis vision of mental health, where genetic vulnerabilities are activated by environmental triggers, or a somewhat competing non-pathological interpretation that innate yet normal differences interact with environmental factors in the development of all people for good and ill, with the latter view not necessarily carrying the pathological connotations that a role for biology must inherently be to pre-dispose neurodiverse people to "vulnerability" or "pathology."

One of the four respondents with a nature plus nurture view elaborated on some of the specific environmental factors in a thought experiment with personal relevance, which highlights the potential complexity with which some people may envision the interaction:

From Respondent A:

I do understand these traits to be something we are born genetically inclined towards and that as our brains and nervous systems interact with our environments we grow and develop in the ways that we do. Family systems are a big part of this as our families often have similar neurotypes or traits, and that can effect us as well. For example, my parents who both have ADHD traits (though they don't understand themselves in this way), struggled with emotional regulation when I was growing up. I do think this had a significant and in some ways traumatic impact on me which did impact my ADHD symptoms, my own capacity to regulate, and my sense of self. Still, it is impossible for me to know

what my life would be like had I had perfectly regulated and attuned parents. I imagine I would still have ADHD but it would probably look different. I realize this is a personal example but I try to use this to understand the origin/nature of ADHD/ASD and how the "born with"/"live experience" pieces of this are pretty inseparable feeling to me when it comes to talking to actual people who have lived actual lives.

Respondent Z3 took the stance that they were ADHD and ASD were biological in nature ("I believe that you are born autistic or ADHD") which again, may or may not subscribe to the medical model; one could subscribe to the view that neurodiversity reflect pathology genes while alternatively one could believe in genetic 'differences,' not deficits, that lead to neurodiverse phenotypes.

A sixth respondent explicitly used the framing and terminology of the medical model. From Respondent Z4:

Both ADHD and ASD are developmental disorders of the brain, meaning that in development some (external or internal) factor(s) altered the brain's ability to develop in a healthy way, causing impairments in many different areas depending on the time of the disturbance to development.

This is a classical medical model way to frame ADHD and ASD as "developmental disorders" because "[brains have an] altered...ability to develop in a healthy way" due to "disturbed development."

A seventh respondent maintained neurodiversity-centered language when framing the nature of ADHD and ASD. From Respondent B:

ADHD / ASD are both variations within the human species and show up differently in people. I believe we have always had neurodiversity, throughout the course of humans existing on this planet....“ADHD/ASD is a variation of being human. It's just another way that people show up in this world.

Interestingly, between these two statements, Respondent B attempted to characterize their understanding of ADHD & ASD at the substrate or etiological level, leading to a more medical model characterization that invoked the language of [developmental] disorder:

ADHD = executive functioning within the brain is different and impacts the ways a person organizes themselves in the world (several researchers I've read, call it a disorder of time). ASD is what folks call a difference in the way someone's brain and body function. I know that some folks around me call it a developmental disorder.

An eighth respondent focused on specific etiological mechanisms in the manifestation of ADHD and ASD. From Respondent Z1: “I remember learning that ADHD is contributed by less neurological pruning during brain development in babies. I don't recall learning anything about specific origins of ASD.”

The final respondent, Respondent C, expressed deep confusion and uncertainty and had more questions than answers, while focusing on some of the mechanisms that are more marginal to the common consensus, but which may be said to be related to a medical model conception. This includes people who subscribe to the view that ADHD and ASD are a pathology, and heavily weigh environmental causes from the plausible

(food dyes and toxic contaminants; Arnold et al., 2012) to the less plausible (vaccinations; L. E. Taylor et al., 2014). However, this respondent is also open to experiential roles for things like trauma, and generally suggests they are open to information, including to the plasticity for change:

Truly, I have no idea. Some say childhood, or Yellow 5 or whatever, so I honestly have no clue. Also, sometimes it might just be trauma, and I don't know how that is or is not ruled out, or how that impacts someone having ADHD. Also is it a permanent thing to the brain or can it be lessened over time?

Not everyone fully characterized their understanding of ADHD and ASD beyond the etiological nature, but among those who did, no two talked about it identically. Respondent A endorsed a nature/nurture interaction talked about ADHD and ASD as traits, and included the thought experiment example of “emotional regulation” as a trait interaction that played out in their family system. Respondent B used neurodiversity-centered language thoughtfully to engage a deeper functional presentation of ADHD that is often considered an evolution on the medical model, such as psychologist Russell Barkley’s work that emphasizes what the respondent here calls “a disorder of time” and suggested ASD to be a ‘difference’ in functioning:

ADHD = executive functioning within the brain is different and impacts the ways a person organizes themselves in the world (several researchers I've read, call it a disorder of time). ASD is what folks call a difference in the way someone's brain and body function. I know that some folks around me call it a developmental disorder.

Here the respondent attempts a balance between medical model language (“disorder of time” and “developmental disorder”) and neurodiversity-centered language (“different...ways a person organizes themselves in the world” and “difference in the way someone’s brain and body function.”). Respondent Z1 attempted a pithy way to address clinical ‘functioning’:

With regards to what is ADHD... my understanding is that attention and activity are primary areas of functioning impacted, which can influence how a person functions/navigates in various areas of functioning (i.e., social, work/academic, cognitive, emotional areas); and ASD primarily influences sensory processing and socialization, which can also influence how a person functions/navigates in those same previously mentioned areas.

Respondent Z3 advocated for being “born with” ADHD and ASD and only characterized autism, emphasizing a nervous system sensitivity “where you are living in a mobilized state.”

#### **Expectations about the Training Model: Pre-workshop Questions 5, 6 & 7**

The themes from this section of the results were derived from the following three questions on the questionnaire: 5) What do you hope to gain from a neurodiversity workshop? 6) What would be a barrier or constraint to understanding or using neurodiversity workshop information? 7) How do you hope this knowledge impacts how you move forward in your work/care of neurodiverse clients?

**Theme 1.3: Respondents want more information, clinical benefit and tools for justice work from a neurodiversity workshop; they see barriers to learning the**

**material, implementation of the material and challenges to accepting the materials; finally, they hope that the material will improve their clinical confidence, clinical efficacy, holistic understanding/case conceptualization, ability to empower/destigmatize, and clinical relationship.** This first question about the information to be gained in the workshop had three major themes: a) respondents wanted knowledge and understanding about neurodiversity - i.e. "I truly hope to learn more about neurodiversity and how people navigate their world" - b) to be able to better support clients and loved ones - i.e. "I want to learn ways to better support people (my clients and family members) who are neurodiverse." - and c) to understand more about the role of neurodiversity and justice - i.e. "more information on autism and justice."

Respondent C was interested in better practice with neurodiverse people, but framed their interest as coming from a place of fear:

Working with people with ADHD at a past job was terrifying because I didn't know what I was doing. I didn't know what services would really help. Now I have a couple adult clients in my private practice who tell me they have ADHD or are on the autism spectrum, and again I don't know what to do with that. I don't know that I need to do anything about it.

Many of these responses were blends of the three. Two respondents were interested in the intersection of knowledge and justice-related issues. From Respondent A: "I would like to learn a lot more about de-stigmatizing neurodiversity and also if there are important pieces of concepts that I am missing." Respondent E said:

More appreciation, understanding of neurodiversity and how this can manifest in people. Also, the recognition of neurodiversity as a social justice issue, something that affects how people in society are perceived, and how people receive privilege from thinking only in one kind of way that.

Other respondents (n=) emphasized the intersection of knowledge and practice, such as Respondent D: "More knowledge to make me more effective."

Respondent Z2 echoed: "Greater knowledge of the research and how to work with neuro diverse individuals."

Respondent Z4 added: "To better understand myself as a neurodiverse clinician and better support my neurodiverse clients," though it is worth noting that this last excerpt emphasized the role of knowledge for self-understanding as a person with neurodiversity.

The question about anticipated barriers to using the information brought about a range of information with no consistent theme. The only answers approaching a similar code might be said to speak to personal barriers to learning such as time constraints, personal limits of "comprehension and retention," and sensitivity to social pressures.

For instance, Respondent Z3: "The platform of online learning, limited information access, and sensitivity to expectations of recalling or restating information in the "right" way."

Others included barriers of implementation: lack of supporting materials - "If the workshop didn't provide collateral materials (handout, resources, etc.)" - and insufficient post-workshop supervisory support - "If the workshop didn't provide

collateral materials (handout, resources, etc.)" - or barriers of testing - "Barrier for people to be properly tested, if that's necessary." One respondent was wary of the government - "In these times, governmental interference." One thoughtful response focused on what might be considered a tension at the heart of the material, the need to validate the struggles of those with neurodiversity alongside a need to include and accept neurodiverse strengths:

From Respondent E:

Something that might make it difficult to use workshop information is a client's willingness to see neurodiversity as a strength, and something to accept rather than fix. I think a lot of neurodiverse people (including myself at times) want to minimize what makes them neurodiverse so that they can fit in at their jobs, relationships, etc. Therefore, the perspective of affirming/celebrating neurodiversity might be encountered as something that isn't necessarily desired by many people.

The final part of this question involved a more specific hope for how the respondent envisioned the material being used to help their work with neurodiverse clients. Here, most addressed a variety of clinical implications in their answers, that could be broken down thusly: clinical confidence (n=1), clinical efficacy (n=4), holistic understanding/case conceptualization (n=4), empowerment/de-stigmatizing (n=4), improved relationship (n=4).

*Clinical confidence:*

From Respondent C: "Better understanding, more confident and less scared."

*Clinical efficacy:*

From Respondent A: "...increase capacity and well-being for neurodiverse clients."

From Respondent B: "I hope it provides me greater insight into how I might be a better therapist, parent, friend to people who are neurodiverse."

From Respondent Z4: "...This will help me to make adjustments for myself and clients in a way that is more catered to their unique brain functioning."

*Holistic understanding/case conceptualization:*

From Respondent Z4: "As a trauma informed clinician I believe that neurodiversity is an important identity to consider when looking at the whole person."

From Respondent A:

I would definitely be bringing this knowledge into my work as an individual therapist with neurodiverse clients. I love the idea of a non-medicalized approach to understanding neurodiversity and I think that fits with my current approach of understanding, accommodating and accepting neurodiversity.

*Empower/destigmatize:*

From Respondent E:

I definitely want to have more information on how to use neurodiversity and the concept of differences in ways of thinking/being as sources of empowerment for clients, rather than something that makes them feel "wrong" or "deficient". I also want to help clients understand that society at large makes people feel like they have to conform to be "successful", that there's nothing inherently wrong

with neurodiversity.

From Respondent Z1:

My hope is to be able to be a more supportive and understanding practitioner so that anyone I work with can feel more pride and empowerment in connecting to their authentic selves and attend to their needs and goals in ways that feel good for them.

From Respondent Z3: "I try to use all the information to empower and inform my clients."

*Improved relationship:*

From Respondent Z3: "I try to use all the information to empower and inform my clients."

From Respondent B: "I hope it provides me greater insight into how I might be a better therapist, parent, friend to people who are neurodiverse."

From Respondent Z2: "Better informed to understand, relate to and respond."

### **The Post-workshop Questionnaire**

Five of the original nine respondents completed the closing questionnaire (see: discussion for implications of the asymmetric response). For the purposes of answering the research question, the remaining respondents did exhibit differences in how they answered the questions as well as characterized ways in which the information had an impact. To capture these differences, the information will be coded to reflect a) the nature of the response, and b) the nature of the change from the original answer to the question.

**Beliefs about the Medical Model of Psychopathology: Post-workshop Questions 1 & 2**

The themes from this section of the results were derived from the following two questions on the questionnaire: 1) The neurodiversity movement is partially defined in resistance to the medical model of diagnosis and treatment - what is your relationship to the medical model as a frame for understanding people's mental health troubles and their treatment? 2) In relation to the medical model, what is the risk of stigma, and how does it impact our understanding of mental health troubles and treatment?

**Theme 2.1: The medical model may offer some specific functions in coordinating care, reimbursement and offering ways of thinking about symptoms, but it is limited, narrow and reductive, with pronounced consequences for stigma.** Of the five post-questionnaire responses, two remained unchanged either implicitly or explicitly. Respondent B explicitly said that the beliefs remained unchanged, while Respondent D gave pre- and post- responses that would be coded similarly as de-prioritizing the guidance of the medical model ("It is far down on my list of approaches in my assessment when meeting someone.").

Respondent B did change in the way they reported their answer, in that they elaborated that the workshop had deepened and helped them understand their stance better.

...As a social worker and a youth worker who is now a practicing therapist, I have always understood human behavior/constitution to be directly related to the environment that one is baked into. After the workshop and pre training videos, my understanding is more grounded in the science of why this has always made

sense to me.

Respondent A did not change or disavow the stance of her original answer, but the question brought out an entirely different focus, which could be said to be about the function of the medical model in coordinating care while maintaining their original stance that the medical model did not offer them any clinical utility:

I used the medical model to be able to work with client's insurance and make therapy financially accessible to people. I also think that this is the system we have in place to allow people to get help for distress and other clinically significant systems so I use it because I cannot remake the system myself. That said the medical model does not significantly impact how I conceptualize clients and this training was helpful for broadening my understanding of neurodiversity and relevant treatment strategies. So, I suppose my relationship to the medical model is that I utilize it functionally for accessibility purposes and it is less meaningful to me.

The nature of the change in their answer may be considered a "role-clarification" for the medical model and its use in their clinical practice, as they have articulated a way to resolve their ambivalence with the medical model from their first answer, with their ongoing need to work within this system. This ambivalence and need to work within the system was a theme in several pre-questionnaire responses.

Respondent E grappled with their ambivalence about the medical model while working within it, but emphasized a different dimension to this struggle, one that engaged with their ambivalence about the impact of the medical model in shaping their

clinical understanding of people and problems. In relation to their first answer, which endorsed a strong disdain for the medical model, this follow-up response might be considered "growing awareness and movement," as the respondent began with new information - a recognition on the impact of the medical model in shaping clinical judgment - and the praxis of taking action on this by facilitating new, particularly social justice framing:

I am trying to move beyond the medical model as a frame for understanding mental health. However, at the same time, it would be unrealistic for me to say that my perception of mental health issues hasn't been influenced by the medical model and "impairments/deficits" as a lens through which to view people's challenges. My interest in this training is an attempt to get me realign my value of social justice with the clinical work I do with clients and to center people's strengths instead of seeing them through the medical model.

Respondent C, who had not heard of the medical model in the first questionnaire, now affirmed that there is a role for the medical model, while also highlighting the limitations. This represented a change in terms of growing awareness.

It seems that the medical model can be helpful for people to sometimes get some sort of affirmation of their brain functioning in a different way. The buck does certainly not stop there, as there is much more to learn and understand on an individual level.

In terms of question 2, all five answers still maintained that there was a moderate to significant risk for stigma from the medical model. However, there was

significant change in how they reported this information. The most significant change was that people elaborated with new nuance and clarity about the problematic implications of the medical model framing while invoking alternative considerations. Respondents who had not previously mentioned specific problematic aspects of the medical model now articulated the medical model as reductive, unchanging, narrow and decontextualized, while contrasting the medical model with alternatives that were more holistic, dynamic, complex and contextualized.

For instance, while Respondent A had been critical of the medical model in their first answer, here they added all new emphasis:

The risk of stigma is high, as well as the risk of understanding people's distress and symptoms as individual dysfunction rather than culturally or environmentally determined/influenced. It also doesn't allow for change over time and frames challenges as inherent and immutable. For example, that idea that some people "outgrow" their ADHD does not make sense to me - I would conceive of that as a person who is still of the ADHD neurotype but was able to learn about themselves, have a good enough environmental fit, and develop effective strategies for accepting and accommodating their individual needs.

New here is a) the role of social context, b) castigating the reduction of the medical model to the individual or intrinsic factors, and c) the static, unchanging nature of diagnostic constructs. Respondent A also invokes a specific workshop-based understanding of how a person might holistically and contextually change and grow through a maturing relationship to their environment and a niche-of-fit.

Respondent B, who had given an example of stigma risk in the pre-workshop questionnaire, also became specific on the medical model's failings:

In the medical model the risk of stigma is great. The medical model locates the problem within the individual and tries to "fix" what is "broken" or not normal. It offers up limited, narrow and rigid diagnoses that often don't account for the variation of what is happening within the individual. Further, it doesn't acknowledge or take into account in treatment, the ways in which the world around the individual creates a toxic environment that may and often does, injure the person(s).

The respondent speaks to a) the externalities of a problem-solving frame in assuming intrinsic dysfunction and abnormality, b) a reductive and static frame, and c) an inability to account for contextual factors and social determinants of mental health. They contrast "limited, narrow and rigid diagnoses" with normal variation, and use workshop-driven language to characterize "toxic environments" that lead to "injury:"

Finally, Respondent E who had given an example of stigma in their first response, articulated some specific problems of the medical model:

The risk of stigma is almost inherently tied to the medical model; when you see mental health issues as "something wrong" with someone, it's hard not to view the person experiencing them through a lens of negativity. The medical model also lacks sufficiently detailed explanations of how social contexts affect people's behaviors and moods, as it places so much of the responsibility onto the person with the diagnosis, rather than onto the social world.

This respondent addressed a) the problem-based view of individual mental health as a source of “negativity,” and b) the role of decontextualization in misattributing blame to individuals.

Regarding the final two respondents, neither gave answers to question two that could be attributable to the workshop per se. Respondent D, they acknowledged the risk of stigma in stark terms, but did so in a way that did not significantly depart from their first response. Respondent C took a balanced approach that acknowledged some people may find a diagnosis useful, but that stigma can impact care, an answer that cannot be attributed to the workshop in any obvious way.

The most consistent pattern across answers to questions 1 and 2 was that the medical model lacked a role for social determinants of mental health, and failed to address contextual, environmental and cultural factors. Secondarily, there was an attempt to address the specific characteristics of the model that prevented seeing clients holistically, dynamically, contextually and as embodying normal variation. The other answers were either a) entirely consistent with their original message about the dangers of the medical model, or b) presented overly general answers about the nature of stigma that could not be attributed to the workshop or represent meaningful change in understanding.

#### **Beliefs about Neurodiversity: Post-workshop Questions 3 & 4**

The themes from this section of the results were derived from the following two questions on the questionnaire: 3) What is neurodiversity in your view, and how have these views evolved? 4) What are your beliefs about the origin and nature of

ADHD/ASD? I.e. what IS ADHD/ASD?

**Theme 2.2: Neurodiversity is a multi-level phenomenon where normal biological differences between people create emergent cognitive differences and behavioral strategies that shape how people move through the world to create a natural diversity in “ways of being” that may in fact complement each other, and some think this at least partially extends to ADHD and ASD itself.** The original pre-questionnaire codes for the answers on neurodiversity consisted of those who a) took a species-level or “big picture” view of diverse human expression, b) took a narrower mechanistic or reductive view of differences in brains, functions or processes, and/or c) took a more holistic, person-centered and socially-interacting view. Of the pre-workshop responses to this question, one respondent did not attempt to characterize neurodiversity, two took a species-level view, one took a reductive view and one took a person-centered or socially-focused view. Broadly speaking, most respondents changed their answers following the workshop by synthesizing their original sentiments with a more nuanced, comprehensive and workshop-informed perspective.

A contribution of the workshop was to frame how multiple levels of analysis (biopsychosocial) interacted normally in understanding neurodiversity. Accordingly, three respondents added multiple levels of analysis to their framing of neurodiversity in their questionnaire answers. Of the two respondents who originally characterized a species-level view of neurodiversity, for instance, both added some of the mechanistic ways in which biological factors interacted with social experience in a normal and diverse way.

From Respondent A:

Neurodiversity to me is the normal diversity/range of expression of human brains/nervous systems. I think this is both genetic and based on experience/injury/trauma as we know there are real, physical changes to the brain that comes with trauma and injury.

From Respondent B:

Neurodiversity refers to the ways in which the human species is organized. Specifically, there are distinct profiles of ways that humans may show up internally (think inner constellation of genetics, brain aka executive functioning, body/sensory) and each of these ways of showing up results in complimentary cognition. We need ALL types of brains/bodies to help the species evolve and survive.

Each response captures several levels of analysis drawn from the workshop. The “normal diversity/range of expression” captures the gestalt or “big picture” of neurodiversity, as does characterizing the way “the human species is organized.” Each answer also addresses the role of differences in brains and cognition, while also bringing in some dimensions of the social world, either in a role for social experience and [social] injury which was shown to shape neurodiversity or the way in which cognitive diversity enriches the social milieu through complimentary cognition, both of which were drawn from the workshop.

Alternatively, Respondent E, who emphasized “non-normative thinking” in their original answer, offered a more social-level explanation while integrating other

dimensions of neurodiversity in their post-workshop response. Their definition of neurodiversity itself - “I would say neurodiversity means different cognitive strategies for different people” - has elements of the big picture/functional perspective (ala biodiversity) and mechanistic/substrate perspectives captured in “a diversity of cognitive strategies.” They elaborated:

My knowledge has evolved from the stereotypes of ADHD and ASD (“inattention”, “hyperactivity”, “difficulty reading emotions and empathizing”) to incorporate different ways of engaging with the world based on things like reward sensitivity, exploration, and brain plasticity.

The second half of this response not only highlights the movement in their perspective, by invoking three concepts from the workshop, they are inherently highlighting biological differences that were used to illustrate biosocial interactions, or physical interactions between people and their social environment, which is a more holistic/social framing.

Respondent C, who originally defined neurodiversity in a more reductive fashion (“It's an umbrella term for highlighting how brains function at different speeds and dimensions”) answered in a similarly coded way after the workshop: “It is the range of how people organize naturally in their brain.” Similarly, Respondent D, who did not try to characterize neurodiversity per se in their pre-questionnaire answer - “The science research giving us greater insight to neurodiversity gives us guidance on how to help people who are neurodivergent as well as those who are not identified or self-identify as such” again avoided directly characterizing the nature of neurodiversity in their

second: "My knowledge of the specifics of neurodiversity was enhanced by this session. I see it as fitting in the many areas of diversity and multiculturalism that must inform our profession."

The other part of the prompt for question three asked how their views on neurodiversity have evolved, and everyone acknowledged some role for the evolution of their views. Some respondents also added their subjective reactions to the workshop in answering this, despite it not being part of the prompt. One person offered a critique of the workshop model, yet seemed to offer a view that was explicitly compatible with the model. From Respondent A:

Also contrary to the quadrant model, I think of all brains as expressions of neurodiversity and those considered "neurotypical" as people with neurotypes that are given more power and validation in our society. I really eschew the idea that there is a "normal" or "typical" way of being.

The statements the respondent expresses are in agreement with the model, prompting curiosity if this was accidentally misframed with the word "contrary" (more on this in the discussion). She went on to characterize the evolution of her views: "Those views have certainly evolved over my lifetime and from this training as well - lots of unlearning to be done."

On the other side, one respondent offered high praise for the workshop content while characterizing the evolution of their views which they attribute to the workshop itself. From Respondent B:

As a result of attending the pre-training videos and workshop, I've got more

language and science backed research that helps me articulate what I've had an inkling around my entire life! Specifically, that people who are "different" think ADHD/ASD, are in fact so important within our species and are just a variation of what it means to be human. No better than/or less than neurotypical people...I absolutely LOVED this workshop, the videos and suggested reading. I'd love to be in a consult group with Morgan Kinney as the lead!

Most respondents fell in the middle, with neutral to positive evaluation of the effect of the workshop in shaping their views on neurodiversity.

From Respondent C: "I think the views in general and for myself have shifted to see more range in all the world, and see it as a positive thing to be desired."

Respondent D said: "My knowledge of the specifics of neurodiversity was enhanced by this session. I see it as fitting in the many areas of diversity and multiculturalism that must inform our profession."

Respondent E: "My knowledge has evolved from the stereotypes of ADHD and ASD ("inattention", "hyperactivity", "difficulty reading emotions and empathizing") to incorporate different ways of engaging with the world based on things like reward sensitivity, exploration, and brain plasticity." It is worth mentioning in regards to the evolution of views, that three of the five respondents used language and concepts from the workshop in framing their integrated post-workshop understanding of neurodiversity.

Regarding opinions on the etiology of ADHD & ASD specifically, Respondents A and C report being "still unsure." Respondent A elaborates on this with an answer that

draws on a constructive understanding of the workshop information and framing, and may thus be acknowledging the ambiguity remaining within the workshop's information itself:

I am still uncertain of the origins of ADHD/ASD but understand it in the context of neurodiversity and biodiversity - that there are a range of types of brains as well as a range of what those brains need and are good at. I understand these as differences that are largely heritable and related to our family systems but also influences and perhaps "activated" by adverse experiences and environments.

Respondent C adds: "I'm honestly still not sure. I would have to review the videos if nature and origin were covered. If it was it honestly did not sink in for me."

Respondent D asserts a perspective more informed by the medical model: "These are conditions that have a much higher "nature" component than "nurture" than many of the other conditions and issues we treat. Consequently, neuropsych testing is much more relevant than in other issues."

The final two respondents, B & D, offer workshop-informed answers with the latter being more nuanced. From Respondent B: "ADHD and ASD are variations of the human species and show up to help the species adapt so that it cannot only survive but thrive!" Respondent D:

I think ADHD and ASD result from a complex interaction of biological factors, environmental factors, the influence of the social world on the individual, and family influences. These "conditions" really are just different cognitive strategies that certain people have, and different ways of processing and relating to

different kinds of information (emotional, technical, details, big-picture thinking, among others).

### **Reactions to the Training Model: Post-workshop Questions 5, 6 & 7**

The themes from this section of the results were derived from the following three questions on the questionnaire: 5) What did you gain from a neurodiversity workshop? 6) What was a barrier or constraint to understanding or using neurodiversity workshop information? 7) How do you see this knowledge impacting how you move forward in your work/care of neurodiverse clients?

**Theme 2.3: The workshop was useful in different ways for different people in terms of framing and working with neurodiversity; it may be too big and/or complex in its current form and require some shifts in how it is presented, but it offers a variety of frames and treatment approaches that hopefully will prove, or have already proven, useful with clients.** Respondents all agreed they had gained from the workshop.

From Respondent A: “There was lots of wonderful information in this workshop...”

Respondent B: “I gained inspiration, gratitude, a more robust understanding of neurodiversity, a few people that I will keep in touch with AND so much KNOWLEDGE that has immediately impacted the way I move and practice therapy.”

Respondent C: “A new way to approach understanding. It was honestly so packed with information...”

Respondent D: “An expansion of my knowledge base”

Respondent E: “I definitely gained a more social justice-oriented understanding of

neurodiversity; specifically the idea that neurodiversity is not a "problem" or "impairment" with the individual..."

All but one respondent went further to characterize the nature of what they gained. Respondent E focused on the social justice component:

Rather [than neurodiversity being an individual 'problem' or 'impairment'], neurodiversity encompasses normal cognitive strategies for different people, and many challenges related to neurodiversity result from society and culture being invalidating and inhospitable to any deviations from the norm.

This feedback, it should be noted, not only embraces a thesis of the workshop, it draws on concepts from the workshop such as cognitive strategies and poor "niche-of-fit," which reflect changes in thinking about neurodiversity relevant to previous questions 3 and 4.

Another respondent said that in addition to gaining information, they found the workshop "inspirational," and their overall characterization may be coded as the workshop offering a "meaningful" experience or informational framework. From Respondent B:

Oh my goodness! I literally can't stop talking about all that I've learned in the workshop. I wish we could continue to study and help (soon to be Dr) with his research/ intervention. I gained inspiration, gratitude, a more robust understanding of neurodiversity, a few people that I will keep in touch with AND so much KNOWLEDGE that has immediately impacted the way I move and practice therapy. Babam!!

Respondents A and C offered multi-faceted responses to a more complex reaction. Respondent A might be said to have deepened her existing knowledge base (her original responses did speak to a thoughtful familiarity on the topic):

There was lots of wonderful information in this workshop. Many concepts were things that I already understood about ADHD/ASD but had not seen named as clearly or outside of real people sharing their experiences. Some things were entirely new to me. The strategies for understanding and treating burnout were all very helpful and more nuanced than a simple "you need to do less/take things off your plate" approach.

Respondent A emphasized that existing concepts deepened as a result of the workshop, while new concepts proved useful.

Respondent C emphasized a "new way of understanding" that outlined specific concepts and ideas that resonated, as well as the overall subjective resonance of the material despite the fact that they did not have a neurodiverse diagnosis:

A new way to approach understanding. It was honestly so packed with information. As I think about it now, a few days later, I had liked the niche of fit, the burnout spiral due to values friction. I liked re-learning the word "misanthropic... I found that various ideas of organization suggested could be helpful to me, and I do not currently, nor have I ever in past, had a neurodiversity diagnosis (doesn't mean I'm not! haha). But it makes me think about how the ideas may or may not be applicable to all humans, not just those with atypical neurodiversity.

Regarding the barriers of the workshop, the themes that emerged was that the scale/volume of the material, the pacing/presentation of the didactics, the complexity of the material, and translation of the material, were potential impediments. Two respondents, respondents A and D, both thought the scale/volume of the material was a barrier.

From Respondent A: "The length/volume of material was a lot to take in."

Respondent D: "The overwhelming flood of information that was totally germane and useful."

Respondent B felt the pacing was mismatched with their learning style, and respondent A had other thoughts related to the way the material was presented to make it more digestible and build more logically for them. From Respondent B:

Hmmm, the videos and workshop day happened so fast. My brain/body moves a bit slower. I think the pacing for me was a bit of a barrier. I had to slow the YouTube videos down and I often replayed the videos over so that I could fully grasp the information. It was definitely worth it though!

Respondent A:

As you continue to develop it, I think finding ways to repeat/revisit the information along the way might be helpful and fit well with adult learning styles. Additionally, I do wish things were flipped and we started with the 4th module. Or maybe made the 4th the 2nd instead. There was a lot of really great information in there and I think it would have been nice to know going into module 2 and 3.

Respondent E felt the complexity was overwhelming:

The complexity and technical language of neuroscience (genes, alleles, brain pathways, etc.). I sometimes struggle with providing psycho-education for precisely these reasons. The more digestible the explanations, the easier it is for me to incorporate them into my work with clients.

Finally, respondent C was still considering how to use the information clinically: “I’m not yet sure how I will build your ideas (and research/researched ideas) into sessions with people I work with.”

In regard to how the respondents hoped this information would prove useful to clients, one respondent said they would need to digest the material more fully before they could give an answer, but four respondents offered ideas for how the material might offer some clinical utility.

Respondent C was brief: I like idea [sic] of talking with how your needs are being stimulated or not throughout the day.” Here Respondent C refers to treatment approaches that can frame efforts to self-manage in terms of their ability to meet heightened needs for stimulation with ADHD, for instance, also framed in the sustainability metaphors (health bars, gas tanks & thermostats).

Respondent E emphasized the role of systemic and oppressive factors, and speculated about the role of some of the neuroscience: “I definitely plan on incorporating ideas about systemic oppression and moving away from the medical model with neurodiverse clients. Also, some of the neuroscience concepts... might be really helpful for some clients.”

Respondent B focused on factors that focused on the relational and sustainability dimensions of the workshop: "Oh my goodness. I've already incorporated the concepts of "buffering" into my daily practice, not only with my neurodiverse clients but with neurotypical people as well! I also have been using some of the framework Morgan suggested, think - gas tank, health bar, thermostat. This has helped me reconceptualize how I approach working with clients. From how I ask questions to what I "contact" in the therapy room with the client." Respondent B refers to social buffering, a way of conceptualizing how relationships can be used to actively mitigate stressors, while the "framework" refers to metaphors for communicating the concept of sustainability. Interestingly, Respondent B brings in a more abstract or deeper role of the workshop material, which is in reframing what clinicians can and should therapeutically "contact" for neurodiverse clients.

Respondent A had a similarly thoughtful take on the metamessage of the workshop:

This will certainly inform how I work with neurodiverse clients and in some ways all clients around issues like burnout. It was very affirming, empathetic and compassionate towards people of all neurotypes. I think someone had the comment that "this is useful information for all clients, how does this connect to neurodiversity?" To me they are right but we often and historically have not extended compassion/empathy/humanity to neurodiverse folks and rather pathologized them and focused on deficits, dysfunction and disorders. So really,

it's just about understanding the specific strengths and needs of neurodiverse people and extending compassion/empathy/humanity to them as we would people who are considered "neurotypical." This has really fleshed out my conceptualization of neurodiversity and supporting people with these experiences/presentations. Thank you for sharing and I would love to do additional training/consultation with you!

Respondent A grapples with the deeper message of the workshop, which is to shift the assumptions about neurodiversity from one of reference to a narrow demographic defined by diagnostic-concerns, to a lens of universal relevance and broad explanatory power; this will be discussed more in Chapter V.

## CHAPTER V: DISCUSSION

### Demographics and Design Factors

One factor that influenced the results is participant attrition. The workshop was closed to participants after 32 people signed up within two days, but of those who reserved space, only 9 people filled out the pre-workshop questionnaire, 7 attended, 1 had to leave early, and 1 did not complete the final questionnaire. In retrospect, this is likely due to the low cost of expressing interest and reserving a spot in a free workshop, and consequently, the ease of being non-committal about a free workshop, particularly one that carries the commitment of participating in a study. Attrition during the study may have been compounded by the discovery that the length of the materials required once participants finished the pre-workshop materials included over 10 hours of video content. Indeed, two of five respondents commented that the length of the material presented a barrier to using or learning the material on the post-workshop questionnaire. It is worth noting that a consequence of participant attrition may be a hypothetical limit on thematic saturation; that is to say, had more participants completed the post-workshop materials, there may have been more codes to inform the overall thematic picture. This is particularly true for the post-workshop questionnaire, which saw the 9 pre-questionnaire respondents shrink to just five. However, this is not deemed to present a fatal flaw to the study, as even within the smaller participants' response pool, a sufficient range of responses were observed to suggest a diversity of opinions, while patterns between responses also suggested a robustness of themes. While a boosted sample size would be an obvious target for improvement to this or

subsequent studies, useful reaction data was gleaned for the purpose of answering the research question being asked. Most importantly, while there is guidance regarding the number of participants that results in thematic saturation in qualitative studies - Guest et al. (2006) found thematic saturation after 12 interviews - this may be considered an ideal with no consensus about the importance or operationalized value of any particular number (Vasileiou et al., 2018).

It should be acknowledged, however, where this creates challenges to be aware of in interpreting the data. An area of note is the asymmetry between the number of respondents who completed the pre-workshop questionnaire ( $n=9$ ) versus the number who completed the post-workshop questionnaire ( $n=5$ ). While one option would have been to strike the four respondents who gave pre-workshop data but did not complete the study, a qualitative study affords other ways to view this scenario given that this asymmetry does not pose challenges to validity in the way it would to a quantitative study. In this case, the pre-workshop questionnaire and post-workshop questionnaire were coded as separate events that are only partially informed by one another. In terms of the value of the pre-workshop questionnaire responses, for instance, having more information about the assumptions brought in by clinicians ahead of the workshop could be considered useful without knowing how those respondents may have felt about the content area after the workshop per se. Consequently, the primary researcher made the decision to keep the extra four pre-workshop response sets to achieve greater thematic saturation about the pre-workshop themes, while bracketing those data sets using identifiers (Z1-Z4). This allowed a clearer demarcation between the respondents

who did not complete the study and those who did, Respondents A-E, whose pre-workshop data and post-workshop data could be compared to one another in search of changing views influenced by the workshop.

By retaining the answers of pre-workshop questionnaire respondents Z1-Z4, we introduce the possibility that there is some systemic difference between those who completed the workshop and those who did not, and therefore this influence should be explored for any hypothetical effects on the data. For instance, if the difference between those who decided to stay in the study versus those who did not was that more of those who stayed were neurodiverse clinicians, the resulting data would carry opinions filtered through hidden demographic factors. This may not be a threat to validity in the quantitative sense, but it should be considered nonetheless. As this influence is speculative, we can only consider some of the demographic information available for possible trends when comparing the group who stayed versus the group that did not. For instance, of the psychologists (n=2), social workers (n=4) and counselors (n=3) who registered for the workshop, four social workers and one counselor completed the entirety of the workshop and post-workshop questionnaire. Perhaps there is something about the workshop that retains social workers more than counselors and psychologists, and one could speculate further that this might have to do with a focus on social context and justice issues or perhaps, views critical of the medical model. On average, those who stayed to complete the workshop and post-workshop materials offered longer, more engaged answers in both their pre- and post-workshop responses, and this perhaps points to differences in early commitment and engagement,

though it should be noted that these differences are only slight. Finally, the average number of respondents who were neurodiverse was higher in the core group (n=3, or 60%) who stayed than those who left (n=1, or 25%), and again, this may be a slight influence that neurodiverse clinicians could be more open and interested in themes that are critical about the medical models' way of handling neurodiversity, epistemic justice regarding neurodiversity, researcher from a neurodiverse participant-researcher (Respondent A stated this explicitly), general interest on the subject or any number of related factors.

Separate from differences between those who stayed and those who left, it should be noted that the participants of the workshop are unlikely to be a representative sample of the US population, for instance, because the demographics of the helping professions are skewed toward women among other things, and that is before we consider the subset of this group who are more likely to be drawn to this topic area. Thus, it is worth being aware of general demographic trends for potential demographic factors on views stated both before the workshop and after, including the potential receptiveness to the ideas stated. Of those who completed the pre-workshop materials, for instance, more were female (n=6), while of those who completed the post-workshop, more were male including (n=3; 2 assigned male at birth, 1 trans male). Of those who completed the pre-workshop materials, most identified as racially White/Caucasian, while only three identified as ethnically non-European: 2 who identified as Jewish, and 1 who identified as Hispanic. Of those who completed the pre-workshop materials, 5 of 9 identified as neurodiverse, while 3 of 5 who completed the

post-workshop materials identified as such. While some of these factors implicate the demographics of the helping professions overall, some may reflect a subset interested in neurodiversity and epistemic injustice; beyond this, there is no speculative discussion to be had about this demographic information, but it should be noted that there may be hidden factors here that are useful when considering the views offered in both sets of responses.

One open question to the researcher was the degree to which training and/or theoretical orientation might predispose people toward being more or less open to the message of the training model. For instance, those trained in modalities that are more congruent with the medical model, such as cognitive behavioral therapy, versus modalities such as humanistic or relational-cultural or feminist, which have more of a social justice orientation, may show more pre-disposition to be either closed, or receptive, to the message of the workshop as the workshop may be more congruent with the underlying beliefs and attitudes in some modalities more than others. We can only speculate about this, particularly as this is not a quantitative design and there was no systematic control for such variables; consequently, this discussion won't busy itself excessively with this consideration. That said, we might consider for the pre-workshop questionnaire in particular, and post-workshop questionnaire to some degree, mixed support for the idea. For instance, within the core cohort that completed the study, those with a more behavioral therapeutic approach (respondent's D & E) showed either less engagement overall, or more initial support for pathological causes of neurodiversity, in line with medical model positions. Congruently, those with more humanistic, relational,

feminist, or anti-oppression/queer, were generally more outwardly endorsing of a) neurodiversity friendly positions in advance, or b) the workshop materials in the post-workshop questionnaire. However, one of the more explicit medical model interpretations of neurodiversity in the pre-workshop questionnaire came from someone who endorsed a relational-feminist, trauma-informed and feminist orientation, emphasizing ADHD and ASD as developmental disorders, impairments and the “disturbance of the brain’s ability to develop in a healthy way.” To the extent that this might example might illustrate an interesting exception to a very nominal trend, one possible interpretation is that neurodiversity as a justice issue does not yet possess the same recognition about the source of its oppression - epistemic injustice from a misframing of its nature as a fundamentally deficit-based diagnosis - and as such, people who are otherwise highly sensitive of power relations such as feminist practitioners, many not be aware that such frames are disempowering. The idea that many people who intersectionally consider themselves social justice practitioners may not orient to known and unknown neurodiversity issues, is an area ripe for expansion of awareness and discourse.

### **The Pre-workshop Questionnaire**

#### **Beliefs about the Medical Model of Psychopathology: Pre-workshop Questions 1 & 2**

A discussion of the results begins by positioning the interpretation theoretically. The theory of the workshop was driven by a) a body of literature offering constructive criticism of the medical model, b) theories that inform the concept of “normal neurodiversity,” which grounds normative biopsychological differences between

individuals across the social sciences, c) epistemic injustice and related programmatic ways of addressing stigma created by mental health theory and practice, and d) workshop evaluation tools that guide how such information should be presented and assessed. The first section of the questionnaire, questions 1 & 2, falls most clearly with the scope of medical model criticism and epistemic injustice, while questions 3 & 4 are driven by neurodiversity, and 5-7 are informed by questions of evaluation of a workshop.

Regarding information about the medical model, the primary researcher was of the belief that many clinicians harbor misgivings about the medical model's role in clinical practice. It was nevertheless a surprise to find that most participating clinicians agreed that the medical model was burdened by compromised utility, theory and sociopsychological costs. What is noteworthy from the first set of responses about clinicians' attitudes toward the medical model and its potential role in stigma, was how many clinicians came to the workshop with well-articulated critiques - only one clinician who completed all materials was unaware of what was meant by the medical model, while another who only completed the initial materials expressed somewhat neutral views ("I was trained on the medical model, but I am open to other approaches."). Among those who expressed criticisms, many expressed negative to strongly negative views.

Negative views on the medical model included problems with the utility of the medical model - a lack of rich explanation or understanding; a limited ability to partner with clients in their goals; and the incompatibility of the medical model and counselor

values of self-acceptance and authenticity. Alternatively, many clinicians singled out the role of the medical model as creating negative social externalities such as stigma; that is, that the medical model has unintended consequences in creating social barriers (to treatment, for instance), social mistreatment, social exclusivity and self-stigma through its frames, language and assumptions. Some took this a step further by attributing these outcomes to creating further mental health symptoms, pressures or negative emotions and self-beliefs. This may explain the significant degrees of negative sentiment toward the medical model, as these forms of social stigma are the antithesis of the clinicians' espoused values of inclusivity, rich self-understanding and self-acceptance and partnership. The perceived incompatibility between these positions is made worse by the fact that clinicians must frame clinical judgment, conceptualization, intervention and care coordination from within a system dominated by a model they are sometimes ambivalent about at best, or don't believe in at worst. In other words, if the medical model is both a necessary gatekeeper of care and reimbursement, while also a driver of mental health pressures that those services seek to treat, the resulting tension may be particularly egregious to mental health providers who are most explicitly misaligned with the medical models' values and propositions. After all, for some, this may be less of an incidental consideration and more of an urgent dimension of all clinical work. Several clinicians highlighted the way in which this stigma pervaded the culture of treatment itself; for instance, Respondents B, E and Z3 all articulated ways in which stigma created a climate of judgment which could then create barriers to care and influence treatment. Clinicians who feel that their clinical efforts are hampered by the lived culture of their

field and profession may feel demoralized, helpless, alienated or frustrated by their participation in a system they do not fully endorse, something which may cause moral injury.

It should be noted that the question itself may prime either certain kinds of answers, or certain identities in the answering. Furthermore, the prevalence of this type of critical response may have been due to a self-selecting group of workshop participants; indeed, multiple people endorsed being neurodiverse clinicians, which may have further biased them away from the medical model or undergirded their own tensions with it. However, if true, this later point may then highlight the unique position of neurodiverse clinicians that they be asked to work within a system guided by a model that they consider to be problematic to one of their identities or those of their clients.

#### **Beliefs about Neurodiversity: Pre-workshop Questions 3 & 4**

The pre-workshop responses to the questionnaire were elucidating for the kinds of beliefs people have about neurodiversity in the current cultural and psychoeducational climate. This may be said to reflect the rise of the concept of neurodiversity and neurodiverse advocacy alongside a growth in information about ADHD and ASD from more traditional psychological and psychiatric research, and the inevitable conflicts between them. This has arguably created a social tension that polarizes the two into A) a science-based paradigm that rests on assumptions of deficits and dysfunction, and B) a political advocacy perspective that is identity-affirming but is largely antagonistic with the former.

Broadly speaking, the responses offered by clinicians, many of whom are

neurodiverse and who are interested in a workshop about justice, reflected a tentative engagement with both the science and advocacy frames. Where there were attempts to traverse both, there was arguably some contradiction between the stigmatizing and non-stigmatizing language being used, not due to confused thinking in the respondents themselves, per se, but due to incommensurability of the underlying paradigms. For instance, in moving between questions about neurodiversity and questions of ADHD and ASD specifically, several respondents switched from identity-affirming language to the more technical language of “disorders,” and the effect sometimes seemed to move from between the identity-affirming frames to the deficit-based frames that those people had espoused struggling with. The codes for talking about neurodiversity itself were ultimately chosen to be parsed in terms of three partially-contrasting and partially-complementary perspectives as these seemed to correspond to three theoretical influences through which respondents engaged with the construct of neurodiversity. The first derives from the literature on neurodiversity itself, which may include anything from an identity-affirming political discourse about neurodiversity as an identity or advocacy, to a “big picture” conceptual view of neurodiversity as a natural evolutionary diversity akin to biodiversity which offers a technical counter-narrative about the function and origins of neurodiversity that diverges from more pathological narratives. The second perspective is a comparatively analytic or mechanistic emphasis on neurodiverse substrates like brains, nervous systems, processes, speeds and so forth, and may involve any attempt at a technical understanding of how the various neurodiverse diagnoses “work,” to a more reductive or deficit-based influence on how

neurodiverse diagnoses are framed by traditional psychiatric assumptions. Finally, some thinking seemed to reference a more person-centered, humanistic or socially-interested perspectives, which could represent people who are not steeped in the neurodiversity movement per se, but may carry a general humanistic, multi-cultural or justice-based orientation poised to see neurodiversity as an issue of minority-majority dynamics, oppressive social contexts, and accommodating societies ala the disability rights movement.

Each of these three dimensions could themselves be seen as either a) a partially complementary perspective on the multifaceted nature of neurodiversity as a phenomenon, or alternatively, b) as an ideological predilection for certain kinds of thinking on a subject, which may reference deeply incompatible values, identities, narratives and agendas. For instance, as complementary perspectives, there is a role for understanding the evolved origins of neurodiversity; the identity-affirming implications of an equitable political framing; the mechanistic differences that inform the strengths and challenges of these differences; and the just or unjust nature of the relationship between neurodiverse people and their social context. Alternatively, as ideological influences, each may respond to competing identities and influences on ways of thinking about neurodiversity between a) neurodiverse people and allies b) scientifically or clinically-minded professionals, and/or c) humanistic social justice advocates. For instance, those motivated by the neurodiversity movement may struggle with information that seems to reify scientific frames that are perceived to slide into eugenic-style beliefs about ranking people's worth, while those motivated by clinical efficacy and

accuracy may find anything that challenges evidence-based understanding to be disqualifying; those who are motivated by a socially critical or humanistic lens may struggle with information that does not affirm a broader view of cultural relativism and social justice. It is useful to consider that each of these intellectual influences represents both an objectively important dimension to the question of what neurodiversity is, as well as the potential for different lines of ideological influence that could shape incompatible assumptions about what makes a good neurodiversity workshop.

Depending on how information is framed and integrated, those who are more or less interested in a given area - neurodiversity advocacy, diagnosis and treatment, or social criticism and justice - may find information presented to trigger strong opinions that could disqualify the authority of the workshop from one or more directions.

As evidence for how this framing might bear itself out in the responses, consider Respondent A's initial answers. Respondent A affirmed views consistent with an advocacy perspective when A) advocating that neurodiversity represents a form of biodiversity, and B) exploring the identity-based discourse of whether language like "neurodiversity versus neurotypical" had problematic dimensions by reifying rejected concepts of normalcy in a neurodiversity framework. In addition to being important and thoughtful considerations in their own right, these points credibly track the political advocacy literature which emphasizes the framing and identity of neurodiversity. As an example of the potential conflict this could have with other perspectives, many authors who contribute these topics have chafed at using a scientific lens at all in understanding neurodiversity, rejecting any use of scientific or evolutionary conceptions that attempt

to inform how neurodiverse diagnoses are understood (Chapman, 2021b; Meadows, 2020); people advocating this frame might reject technical or functional understandings of neurodiversity when they verge into deficit-based frames ala “disorder,” though it should be mentioned that Respondent A did not. Respondent A also demonstrated a critical consciousness befitting the political advocates in regard to valuing neurodiverse differences even when they don’t align with “societal conceptions of worthiness like ‘functioning’ or capacity to work under capitalism” as well as the previously mentioned resistance to neurotypical versus neurodivergent frames for reifying “normalcy” that can be a slippery slope to “eugenics-oriented belief systems.” Defining neurodiversity based on economic value and output has been as a slippery slope to eugenics-style beliefs has been explored before by political advocates (Chapman, 2021b; Meadows, 2020); similarly, the social injustice propagated through problematic beliefs and frames that are themselves oppressive has been considered (Walker, 2012), though this could also be seen as brushing against the third perspective of social critical thought.

Alternatively, of the core group, Respondent C offered several responses that offered a view that may have default by training to a more medical model perspective. Respondent C a) had not heard of the medical model, and was therefore unaware of it as a paradigm influence; b) focused on a mechanistic or substrate-based explanation of neurodiversity as “an umbrella term for highlighting how brains function at different speeds and dimensions,” and c) espoused some etiological ideas about ADHD and ASD that might be more deeply shaped by medical model views of deficit and dysfunction, such as ADHD as caused by environmental contaminants such as “Yellow 5.”

As an example of the third influence of socially critical thought, Respondent E is the closest exemplar. Respondent E defined neurodiversity as “non-normative thinking” which did not reduce neurodiverse people to the mechanisms of diagnosis (such as executive dysfunction), nor did it take a high-level or identity-based view of neurodiversity as a natural biodiversity. Respondent E emphasized non-linear thinking and the society that deems that those styles of thoughts might not be “legitimate nor ‘correct.’” This view looks at the whole person view between the high-level and reductive perspectives, and the way social differences manifest in marginalizing or exclusionary forces. This line of thinking may not stem from any one branch of humanistic, multicultural or social justice thinking, but may reflect any kind of “critical consciousness” perspectives and influences that lead to a critical awareness about marginalized groups including the neurodiverse.

While the examples above highlight both valuable perspectives and potential ideological or interpretive influences, it should also be mentioned that they are not mutually exclusive and indeed, several people embody more than one. What is relevant here is that these can sometimes represent fragmented views and perspectives that might be artificially compartmentalized. Indeed, in this workshop, we attempt to disentangle the seemingly incompatible agendas and assumptions of different starting point and potentially show a path through them all that is more complementary and integrative, so it is interesting to note in this pre-workshop period where people fall back on views that are more polarized into different camps and influences before presenting a workshop that attempts to blend the three and assess the extent to which it

was successful.

It is interesting to note that there may be a tension between questions 3 & 4, as question 3 primes the more identity-affirming political lens of “neurodiversity,” while question 4 primes a more evidence-based lens on diagnoses like “ADHD and ASD.” Several respondents in the pre-workshop questionnaires in particular answered question 3 using identity-focused language, while question 4 was answered with talk of biology versus environment and the language of disorders. This is interesting, because at a deep level these two frames can be viewed as deeply incompatible. For instance, the medical model relies on a nature-nurture framing of deficits and disorders when invoking the stress-diathesis hypothesis of dysfunction, which holds that environmental adversity activates latent genetic vulnerabilities in expressing psychopathology. However, one non-pathological interpretation of the role of nature and nurture could be to not assume any invocation of biology is synonymous with pathology genes or chemical imbalances, but instead references normal biological differences that interact with different experiences to create different clinical presentations, and indeed, this workshop presents some evidence to this effect. However, while possible, these reference points are not necessarily common or widely known, and a potentially more plausible explanation is that respondents answered each question simply by priming different schemas and using the appropriate references and language for each, regardless of any personal ambivalence or ideological conflict between them. As an example, Respondent B, took pains to initially characterize ADHD and ASD as “variations within the human species and show up differently in people” and closed their answer

with ADHD and ASD being “just another way that people show up in this world,” yet between these statements Respondent B characterized ADHD as a “disorder of time” and ASD as a “developmental disorder,” two stances that are at least partially challenged by their own affirmations and this workshop. This may suggest that even among those who are inclined to resist medical model frames and affirm neurodiverse identities, respondents may feel forced to draw on language or assumptions primed by different questions or lenses, i.e. drawing on deficit-based technical knowledge the “further they get” from talk of neurodiversity, and the “closer they get” to clinical conceptualizations of ADHD/ASD.

Finally, many respondents invoked thoughtful insights at the cutting edge of the current zeitgeist on neurodiversity. Respondent A invoked the question of whether the very conception of neurodivergent versus neurotypical is antiquated and problematic, for even the idea that some are “neurotypical” could be seen as staking claims to “normalcy,” which necessarily pushes neurodivergence toward a position of social deviation, potentially reinforcing problematic dynamics. Respondent A also highlighted the need for critical awareness on the way “functioning” can be a hidden proxy for evaluating people based on economic value, not intrinsic value. They challenged the assumption that neurodiversity should be effectively synonymous with a narrow range of disorders like ADHD and ASD, while suggesting that the broader conceptual nature of neurodiversity remains ill-defined. On this point, it should be noted that this workshop agrees with this position, but necessarily takes a stance that ADHD and ASD can be considered significant signposts that are useful in structuring a broader conversation;

furthermore, the workshop presents a quadrant model that tentatively characterizes the broader conceptual topography in question. Respondent B suggested that historically, much of what societies called “madness” may have been related to neurodiversity. This is not only an interesting theory about neurodiversity throughout history, it poses a question about the current foundations of the psychopathological taxonomy and whether we continue to make the same mistake; again, this is something the workshop touches on, and lends some credence to. Respondent E suggested that neurodiversity is synonymous with “non-normative thinking,” an insight that suggests that pathologization can be a crude proxy for assigning deviance to all divergence from the social mainstream, a criticism that has been made about the mental health field before, and is fairly compatible with some of the propositions of this workshop despite not being particularly central to the modern-day advocacy movement. All of these are not just useful questions, they are relevant to the workshop at hand in that A) the workshop addresses issues that are at least relevant to these observations, and B) these assertions may be worth revisiting directly on subsequent presentations.

### **Expectations about the Training Model: Pre-workshop Questions 5, 6 & 7**

In terms of how the clinicians hoped to use information about neurodiversity, most clinicians wanted variations on knowledge, clinical tools and more about the justice perspective. The fact that these interests did not have any major themes per se may speak to the relative novelty of the neurodiversity concept in the clinical domain, particularly as it offers a novel framework with unclear clinical implications. Many are potentially still unsure of what a change in framing means not just for those affected,

but for those supporting those affected, which could include new identity dynamics, therapeutic interventions, case conceptualizations and more. In terms of social justice, there is also a question of the social implications - how can clinicians both respond to client needs more compassionately or understand the injustices clients face for therapeutic benefit, and how can clinicians better advocate for these clients? Of particular interest for many at the intersection of these questions is how to destigmatize neurodiversity, thereby tying back to the tension evident in questions 1 and 2 where clinical roles and values were seen to conflict with the stigma of the medical model. That this was at the forefront of answers from people like Respondent A, suggests the importance of the tension in section 1 to clinical issues for this population.

Other answers of note were Respondent C suggesting they had fear of working with neurodiverse people prior to this - “terrifying” was the word they used. This could be because of a lack of understanding the clinical needs and beneficial interventions, but it could also reflect a perceived exoticism attributed to those with the diagnosis and which may translate to a lack of comfort with an unrelated “other,” something that might impact the clinical alliance. Alternatively, Respondent B suggested a holistic orientation to the role of neurodiversity in session by centering the same issues faced by non-neurodiverse people and a more oblique role for neurodiversity as it might shape these traditional clinical concerns: “I've got several clients in my therapy practice that see me for specific issues (grief, anxiety, life transition, etc.) and happen to also have ADHD...I'm hoping to get more understanding of ADHD and ways it impacts my clients adult lives.” Several spoke in terms of trying to understand different “ways of being” or

how people “navigate” or “move through their world.” This again, is a productive way of framing the role of neurodiversity according to this workshop, as a normal difference in how people differ but the challenge of finding ways of characterizing this difference is evident. This difference has been invisible both culturally and clinically, and it is interesting to see how clinicians are beginning to characterize these differences as “ways of being” to try to carve out this hidden clinical domain.

In terms of potential barriers, there were few themes and most people considered the kinds of typical issues that face all workshops: supplementary learning materials, post-workshop support, personal limits of comprehension, lack of intuitive or supportive learning platforms. A neurodiversity-specific answer was barriers for clients getting testing, which spoke more to clinical barriers for neurodiverse people more generally in the mental health field. One interesting answer from Respondent E was the internal tension they felt when grappling with affirming messages implicit in the neurodiverse concept. The idea of neurodiverse strengths felt at odds with his own intuitive goal to mask and fight his neurodiversity, not accept and embrace it. This is a great point at the emotional heart of a workshop like this one, and another good point to follow up on directly in subsequent presentations, as it gets to a central meta-message of the material: that to truly work with one’s neurodiversity one must accept it and work with it, not against it. This could be framed as an acceptance strategy applied at a deep identity level, or as a second-order solution to a deep first order problem where even the social narratives add unhelpful layers to the struggle.

In terms of ways in which clinicians hoped the information might prove useful,

clinical confidence and efficacy was common. A different theme, clinical holism (treating the whole person) and improving clinical relationships are interesting for understanding a counterintuitive mechanism of change - counter to the expectation that neurodiversity should be finding “specific ingredients” for therapies targeting “exotic” diagnoses, the information a frame to make neurodiversity more relatable and understandable, which may unlock normal mechanisms of alliance and empathy in all clinicians. Finally, empowerment/de-stigmatization as a direct clinical intervention emphasizes the role of therapeutic intervention around the role of stigma caused by medical model stereotypes. Several respondents address “non-medicalized ways of knowing” and not making clients feel “deficient” which are being emphasized as the most important therapeutic goal, i.e. mitigating the impact of the medical model itself. This suggests that reinforces the clinical concern of some clinicians that the system of care itself may present the biggest harm. Respondent E expanded stigma to include all unhelpful social messaging by expressing a desire to see their clients be able to understand the difference between an assumption that neurodiversity is inherently “wrong” from the persistent pressures and “failures” to conform. This would be a novel therapeutic approach built on a certain critical consciousness, but one that might be as effective as it is radical by addressing marginalization in session.

#### **The Post-workshop Questionnaire**

##### **Beliefs about the Medical Model of Psychopathology: Post-workshop Questions 1 & 2**

After the workshop, few people changed the basic direction of their belief about the medical model, and Respondent B, for instance, said as much explicitly. However,

this is largely in line with the researcher's initial surprise at how well-developed many critiques of the medical model were prior to the workshop. What is most significant in this section is the nature of how responses changed from their pre-workshop responses to their post-workshop responses.

Respondent A acknowledged the practical utility of using the medical model to coordinate care, but felt it was otherwise "meaningless" which was in line with their first response to the question in the pre-workshop questionnaire. Respondent B expressed appreciation at having an alternative from the workshop in the form of the diversity model, and expressed not a shift in their feelings (their first response espoused being strongly against it) but that they now felt clearer and more grounded in why they felt the way they did.

Respondent E and Respondent C both grew in awareness around the medical model discourse, but in different ways. Respondent E was able to more clearly see the contours of how the medical model had shaped their views on mental health, stating they wished to "move away from the medical model" while acknowledging that it influenced their views about "impairments/deficits," and that they valued this workshop as an attempt to facilitate this transition. This could be seen as a positive growth in self-awareness around the influence of the any model on their thinking, and the ability to reflect and make choices about how those influences matched their values. Respondent C went from having no frame of reference for 'the medical model' - "Medical model? I am not sure that neurodiversity has ever come up in PCP visits..." - to an opinion, which is also a constructive rise in awareness. However, their post-workshop response should

be unpacked, as it ostensibly espoused a positive function to the medical model that some might dispute. Respondent C said the medical model “can be helpful for people to sometimes get some sort of affirmation of their brain functioning in a different way.”

Critics might take issue with the medical model as affirming differences in brain functioning,” as such labels have been controversial as they can entrap people in a pathological sense of deficiency; meanwhile, much of the language used has been attributed to the neurodiversity movement which has sought to redress exactly these issues by affirming differences in brain functioning while also validating that they can still be associated with real distress and suffering. However, a plausible explanation here is that Respondent C may be talking about the sometimes-cathartic role of having a diagnosis, which many people have found to be a validation that they are struggling with something real, and which even neurodiverse advocates have acknowledged (Chapman, 2021a). Given the confusion, we can conservatively say that Respondent C has grown to engage the discourse around the medical model in a new way, a success in terms of the workshop.

With regard to stigma, again, most respondents felt similarly to how they felt when they answered the pre-workshop questionnaire. However, as with question 1, their answers were on the whole more specific and comprehensive in how the limitations of the medical model were articulated, as opposed to using more anecdotal information on the first questionnaire. Much of this more specific language also drew on the workshop information to highlight problematic dynamics of the medical model as static, reductive, narrow or limited in contrast to ways of understanding that are

dynamic, holistic, contextual and evolving.

For instance, Respondent A talked about the misattribution of social problems to individual problems which held echoes of the first module of the workshop. They also alluded to assumptions of the medical model about disorders being static and unchanging, in contrast to the workshop which illustrated in several ways how ADHD and ASD can be dynamic and changeable:

[The medical model] also doesn't allow for change over time and frames challenges as inherent and immutable. For example, that idea that some people "outgrow" their ADHD does not make sense to me - I would conceive of that as a person who is still of the ADHD neurotype but was able to learn about themselves, have a good enough environmental fit, and develop effective strategies for accepting and accommodating their individual needs.

Respondent B also picked up on the individualizing attributions of the medical model, as well as the problematic implications of misapplying a problem-solving approach which bears out a view of people as being in need of "fixing," or similarly, as being "broken," both of which contribute to stigma. Respondent B characterized the medical model using words like "limited, narrow and rigid" that, like Respondent A, failed to capture the dynamic variation that happens within individuals. They pointed to the inability of the medical model to incorporate social etiologies like "toxic environments" as stripping important context away from understanding and treating people, also echoing workshop material. Finally Respondent E also focused on the problems of the medical model as misattributing causes, a lack of complexity and promoting negative

connotations. They felt the medical model creates individualized assumptions that people have “something wrong” with them, creating a negative connotation, and like Respondent A and B, invoked the missing role of social context, which can lead to misattributing social problems to individuals, offering the obvious relationship between a person and their context in shaping moods and behaviors as an example.

Each of these suggests the medical model constrains the dynamism of real-world mental health issues and misattributes them, obscuring the relationship with etiology that is useful for treatment, empathy and understanding, while also blaming individuals as an unintended externality. Each drew on the workshop to contrast the medical model with a more dynamics alternative, sometimes using workshop examples (i.e. “toxic environments” and the relationship of ADHD and environments of fit). The workshop seemed to help people articulate the specific properties of a limited paradigm while also offering a vision of dynamic yet useful alternatives to help people articulate the ways in which the current model can constrain clinical thinking with problematic externalities. While sentiments changed little, the way they were communicated changed significantly, with greater depth of understanding, articulation and possible alternatives in the post-workshop responses seeming to be a pattern in line with the workshop’s goals.

#### **Beliefs about Neurodiversity: Post-workshop Questions 3 & 4**

The answers respondents gave about the nature of neurodiversity changed more from the pre-workshop questionnaire to the post-workshop questionnaire than did their responses about the medical model. In their original answers, many responses gave

answers that were simpler and drew from a singular perspective, leaning toward advocacy language, medical model framing or something more humanistic. Following the workshop, answers drew on several perspectives and were thus more multi-faceted and integrated. Responses that attempted a deep characterization of neurodiversity (n=3) drew largely on the workshop information to blend some combination of the three frames, functional/identity, mechanistic/substrate and humanistic/social.

For instance, Respondent B attempted a concise summary of what could be considered the neurodiversity thesis of the workshop:

Ah, this is a great question. Neurodiversity refers to the ways in which the human species is organized. Specifically, there are distinct profiles of ways that humans may show up internally (think inner constellation of genetics, brain aka executive functioning, body/sensory) and each of these ways of showing up results in complimentary cognition. We need ALL types of brains/bodies to help the species evolve and survive.

Respondent B illustrates the functional/conceptual framework in the way “the human species is organized,” while also incorporating a role for diagnostic substrates: “think inner constellation of genetics, brain aka executive functioning, body/sensory.” Respondent B closed by referencing “complementary cognition,” a concept which embodies all three perspectives - functional/identity, mechanistic/substrate, and humanistic/social as it frames the evolutionary origins and roles of neurotypes as they contribute to a collective human project, affirming the value of all differences therein. All of these are drawn from the workshop in an integrative, multi-level and multi-

perspective way.

Respondent E invoked conceptual frames from the workshop that spoke to a functional/conceptual framing as well as differences in diagnostic substrates:

I would say neurodiversity means different cognitive strategies for different people. My knowledge has evolved from the stereotypes of ADHD and ASD ("inattention", "hyperactivity", "difficulty reading emotions and empathizing") to incorporate different ways of engaging with the world based on things like reward sensitivity, exploration, and brain plasticity.

The reference to cognitive strategies employs a workshop construct that inherently synthesizes a variety of perspectives. As a construct, cognitive strategies are styles of thought, action and emotion that are purpose-built for different social roles and niches, and as such are inherently identity-affirming as they are not deficit-based. Cognitive strengths also carry the humanistic and social dimensions as it emphasizes the whole person in their environment and highlights the importance of social determinants of sustainable or unsustainable mental health. That is, cognitive strategies imply adaptive strengths optimized for specific roles and niches, and when one is mismatched to their environment, strengths are minimized and challenges highlighted in an unsustainable and accumulating way. Finally, Respondent E extended this to explicit substrates that highlight how these things work at a mechanistic level by mentioning "reward sensitivity, exploration and plasticity" as constructs that help organize and interpret research data on how some of these properties work in the brain and behavior. The respondent frames this as a movement from relatively superficial understanding of

ADHD/ASD “stereotypes” to something more robust. This response illustrates a respondent using information from the workshop to create a post-workshop answer that is more integrated and multi-perspective by drawing on constructs that are functional, identity-affirming, substrate-compatible, and carry multi-cultural and justice-based implications.

Respondent A had an interesting response that brought in other parts of the workshop:

Neurodiversity to me is the normal diversity/range of expression of human brains/nervous systems. I think this is both genetic and based on experience/injury/ trauma as we know there are real, physical changes to the brain that comes with trauma and injury.

This answer is integrative of a functional frame of neurodiversity - normal differences in brains and nervous systems - while also incorporating physical substrates like genes and “experience/injury/trauma.” Here, Respondent A brings in some of the biosocial model presented in workshop section three, that explores the specific mechanisms and brain changes that emerge from lived experience and “social injury” which has biogenic effects. Respondent A also took issue with an implication with the workshop’s framing of the quadrant model, synonymously referred to as the diversity model:

Also contrary to the quadrant model, I think of all brains as expressions of neurodiversity and those considered "neurotypical" as people with neurotypes that are given more power and validation in our society. I really eschew the idea that there is a "normal" or "typical" way of being. Those views have certainly

evolved over my lifetime and from this training as well - lots of unlearning to be done.

This part of Respondent A's answer is intriguing, as it disputes an implication of the material, which is a valid reaction to have. However, complicating this discussion is that the quadrant model is not as incompatible with the respondents' position as is stated: the quadrant model holds that there is no typical or normal way of being, and in fact, those neurotypes associated with being "neurotypical" simply have more power and validation as the respondent says. What may have been missing from the workshop is the explicit underlining of a point that remained more of an implication: the quadrant model offers a possible explanation of why some neuro-communities are invested in conformity to norms (more socially conservative neurotypes use norm conformity to create coalitions central to their social adaptive strategy), and while they are often associated with the word neurotypical, this word would in fact be a misnomer (more on this below). This begs the question of whether this comment highlights a potential misunderstanding or miscommunication about the presented information, which may be useful to consider in clarifying the way the workshop message going forward, or whether there is a more real and subtle disagreement that may yet persist.

To consider that there is a real disagreement that persists, one possibility based on Respondent A's other answers, is that they emphasize individual differences of neurodiversity more than the "subgroup" differences characterized in the quadrant model. This may reflect a similar concern in the advocacy literature highlighting the problematic political implications of framing neurotypes in terms of "neurodivergence

vs neurotypical." There is a perceived problem that this framing may reify an imbalanced power dynamic by implying that any group can lay claim to normalcy as a kind of "default" neurotype, and by extension, this may prove a slippery slope to group-level eugenics-style comparisons that historically lead to concluding some groups relative inferiority, something pointed out by Respondent A in their initial responses as well. The advocacy wing of the neurodiversity movement typically falls down on dealing with this problem by emphasizing individual diversity over subgroup differences, and indeed, arguments deconstructing concepts of race have used a similar strategy to good effect.

While the researcher does welcome and respect the possibility of good faith disagreement among neurodiverse participants, the researcher would have people consider that there may be several options to this problem, and so we may want to avoid losing important gains from these insights if these insights might also further progressive goals. First, a quadrant model is compatible with the idea of individual diversity, as all people exist along the same two interacting metatraits of temperament in a way that supports an analytical emphasis on individual differences. What this model suggests is that where individuals overlap in the poles of these temperament spectrums, there may emerge subcultural differences in the aggregate that help us understand valuable elements of the social context of well-being. If we fail to appreciate these emergent sub-cultural differences, we throw away a) the importance of these subcultures in creating environments of fit-or-friction that are critical for well-being depending on the neurotype, and b) that subcultures are necessary context to

understanding neurodiverse people in their optimal environment, including the way in which cognitive differences are naturally normalized, supported and found to be functional in these subcultural environments. These are important justice implications in their own right, and do not require eschewing concerns of neurodiversity political implications but may complement them. Finally, to return to the issue of neurotypical vs neurodivergent directly, socially conservative neurotypes construct normalcy to regulate their communities for better and worse, but a neurodiversity frame is particularly useful in highlighting why this a) makes sense as a social feature to have evolved for some groups, and b) that not all groups benefit from constructs and norm-enforcement like this, and may in fact find it oppressive. Consequently, the quadrant model can help us contextualize and normalize both the concern among advocates that this framework can be oppressive even as it suggests it is an inappropriate way to judge those who do not wish to use it. Demarcating these conceptual boundaries may even be useful in fostering intergroup understanding and harmonious relations. It becomes theoretically possible to address the political dynamics of an idea like normalcy, as well as the problems inherent in power imbalances between communities, without getting eschewing the value of acknowledging group-level cultural differences among neurotypes that happen to overlap at different places on the temperamental spectrums. Given all of this, we should consider that this answer could be a) compelling to the respondent, and so would need to be better explained in subsequent workshops to address concerns among similarly-minded people, or b) the answer still leaves room for disagreement and the discussion needs to evolve further. Both options are useful to

entertain when considering future research and conversational directions.

Finally, both Respondents C and D established that they valued and were changed in how they view neurodiversity by the workshop, while C went so far as to suggest that they see neurodiversity as a “positive thing to be desired,” while Respondent D was more minimal in their feedback.

It is worth noting as we prepare to transition to questions about feedback and subjective reactions to the workshop, Respondent B sprinkled several subjective reactions throughout their answers in the other sections, including passion for the material and the “vision” of the diversity model. This enthusiasm may reflect a sense of overlapping positivity that emerges from a model that can simultaneously a) explain and affirm neurodiversity, b) offer useful tools, and c) accomplish justice goals:

As a result of attending the pre-training videos and workshop, I've got more language and science backed research that helps me articulate what I've had an inkling around my entire life! Specifically, that people who are "different" think ADHD/ASD, are in fact so so important within our species and are just a variation of what it means to be human. No better than/or less than neurotypical people... I absolutely LOVED this workshop, the videos and suggested reading. I'd love to be in a consult group with Morgan Kinney as the lead!

Regarding the way the workshop shaped views of ADHD and ASD, there was less confidence in the specific implications, even as respondents showed evidence of internalizing the important subtext of these workshop sections, which was that these diagnoses may plausibly represent extreme values of normal differences in the ways with

which people embody challenges that are trade-offs of specific strengths.

For instance, Respondent A expressed uncertainty about the precise etiological origins of ADHD and ASD, but emphasized a contextual understanding that these diagnoses likely reflect “a range of types of brains as well as a range of what those brains need and are good at... I understand these as differences that are largely heritable and related to our family systems but also influences and perhaps "activated" by adverse experiences and environments.”

Respondent B puts a similar confidence that ADHD and ASD are well understood in the context of the neurodiversity frames presented by making their answer more concise: “ADHD and ASD are variations of the human species and show up to help the species adapt so that it cannot only survive but thrive!”

Respondent E follows a similar thread, suggesting that the same framework that is used to understand neurodiversity can be understood to frame ADHD and ASD as “a complex interaction of biological factors, environmental factors, the influence of the social world on the individual, and family influences... These “conditions” really are just different cognitive strategies that certain people have, and different ways of processing and relating to different kinds of information (emotional, technical, details, big-picture thinking, among others).” It is worth noting that Respondent E’s original answer involved “non-normative thinking,” and so their picking up on the implications of “cognitive strategies,” including different ways of thinking and shaping emergent differences in cognition, follows their preestablished interest in ways that suggest the workshop has room for people’s preexisting opinions. It should be noted here, where it

appears most directly, that there is a capacity after the information from the workshop to see questions about neurodiversity and ADHD/ASD as not polarizing into advocacy vs medical model language, but to suggest they are different sides of the same coin, which Respondent E articulates well.

Respondent's C and D may suggest the need to refine the workshop messaging over time for different reasons. Respondent C said they were not sure [about the origins and nature of ADHD/ASD] and would have to go back to the material; this suggests a lack of "stickiness" of the material, either in the length, complexity, understandability or salience. Respondent D invoked a view that was not particularly congruent with the workshop, but may rest on existing stereotypes and assumptions by emphasizing "a much higher 'nature' component than "nurture" than many of the other conditions and issues we treat... Consequently, neuropsych testing is much more relevant than in other issues." The workshop takes pains to emphasize the role of nurture in neurodiversity, and says nothing about neuropsych testing, suggesting Respondent D gave a "stock" answer rather than one relevant to this workshop and its materials. This may be a) a preexisting belief that was not altered, or b) the possibility of limited engagement with the workshop and its materials, which might further suggest a need to refine the messaging, length or other criteria for better likelihood or ease of consumption.

In closing, the implication of the responses given to the neurodiversity questions is that there is far greater congruence between the answers on question 3 and question 4 than there were in the pre-workshop questionnaire. In the pre-workshop questionnaire, it was noteworthy that the language used to describe neurodiversity was

“advocacy-friendly,” while the language used to describe ADHD and ASD was more medical model in using words like developmental disorder, dysfunction and other deficit-based views. Here, we see that ADHD and ASD were effectively able to stay conceptually consistent from question 3 to 4, in ways consistent with the workshop itself.

### **Expectations about the Training Model: Pre-workshop Questions 5, 6 & 7**

All respondents offered praise for the workshop material. Several people valued the scope of the information presented - “lots of wonderful information” and “so much KNOWLEDGE [sic]” and “honestly so packed with information.” Respondent A emphasized that, as someone knowledgeable with the topic area, many concepts they knew but had “not seen named as clearly or outside of real people sharing their experiences... Some things were entirely new to me.” Respondent E expressed a satisfaction with their goal of attaining a more social-justice informed lens and befitting his early ideas of neurodiversity as “non-normative thinking”:

I definitely gained a more social justice-oriented understanding of neurodiversity; specifically the idea that neurodiversity is not a "problem" or "impairment" with the individual. Rather, neurodiversity encompasses normal cognitive strategies for different people, and many challenges related to neurodiversity result from society and culture being invalidating and inhospitable to any deviations from the norm.

Several emphasized specific constructs they found useful including the burnout spiral, values friction, niche-of-fit and others. Respondent A emphasized what felt better

about the way the burnout spiral was framed and treated in this workshop as it was "very helpful and more nuanced than a simple "you need to do less/take things off your plate" approach." Respondent B suggested the buffering concept and the health bars/gas tanks metaphor had already proven useful to clients in their response to question 7:

Oh my goodness. I've already incorporated the concepts of "buffering" into my daily practice, not only with my neurodiverse clients but with neurotypical people as well! I also have been using some of the framework Morgan suggested, think - gas tank, health bar, thermostat. This has helped me reconceptualize how I approach working with clients. From how I ask questions to what I "contact" in the therapy room with the client.

Respondent B offered an insightful twist in how this material can be used clinically in a way the primary researcher found promising: as a deeper reorientation to the needs and challenges neurodiverse people face, which in turn shapes what the clinician can "contact" in the therapy room with the client." Respondent B also offered general enthusiasm, which was something of a pattern across all of their responses in the post-workshop questionnaire:

Oh my goodness! I literally can't stop talking about all that I've learned in the workshop. I wish we could continue to study and help (soon to be Dr) with his research/ intervention... I gained inspiration, gratitude, a more robust understanding of neurodiversity, a few people that I will keep in touch with AND so much KNOWLEDGE that has immediately impacted the way I move and

practice therapy. Babam!!

Again, this emphasis may speak to threading a needle of the material being accurate, useful, meaningful and justice-informed. To speculate more tenuously at the meta-message level, some may feel there is an unexpected repudiation to the comparatively simple medical model approach if a competing model can not only avoid stigma, but compete in terms of explanatory richness, empowering validation and practical utility; this may generate some excitement around the material.

Another unexpected quality of the information may come from Respondent C, who offers surprise at how personally relevant the material felt despite their own lack of diagnosis:

I found that various ideas of organization suggested could be helpful to me, and I do not currently, nor have I ever in the past, had a neurodiversity diagnosis (doesn't mean I'm not! haha). But it makes me think about how the ideas may or may not be applicable to all humans, not just those with atypical neurodiversity.

Respondent C's statement that the material may have unexpected resonance as someone who does not identify as neurodiverse may indeed be considered an optimistic goal of the researcher and a validation to the broader thesis of the "normal neurodiversity" as a reframe to challenge the idea that neurodiversity is a niche or specialty topic. That a non-neurodiverse- identifying person may expect to learn about their clients but be surprised to find the material personally relevant suggests that an integrative model may show a topic of general clinical and even broad appeal. This would be because it offers some explanatory and validating power as a universal

biopsychosocial lens across all demographics and people.

In terms of barriers, there were several themes in the responses. Respondent A felt the material's scope was "a lot to take in" while Respondent D put it even more succinctly that the barrier was "the overwhelming flood of information that was totally germane and useful." In a related fashion, Respondent B found the pacing difficult, likely because the researcher was trying to convey a large amount of information relatively quickly. Respondent E found the "complexity/technical language" difficult, an issue with attempting to build credibility in novel and ambitious framing. Respondent C said they were not yet sure how to use the information, a challenge perhaps that something of large scope does include a trade-off in not having a simple and tangible anchor to the material. It is worth noting that this may be a stylistic factor, as Respondent B and others had also suggested that they had already found the material useful, so there were differences in how immediately applicable people felt the material to be. Regardless, all of these legitimate concerns speak perhaps to the researcher's attempt to have a paradigm that is integrative, ambitious and inclusive to multiple different goals (i.e., accurate, useful and justice-based) that can balance these factors in a digestible fashion. Going forward, it may prove useful to find ways to do so even more economically and efficiently; perhaps breaking the material into smaller portions, or using some of the takeaways in these responses to focus how some of the material is presented. To that end, Respondent A had tangible suggestions to change the order in which the material was presented, something which may also be useful in maximizing the digestibility of the information.

Finally, in terms of the anticipated benefit for their neurodiverse clients, many respondents ended by emphasizing the emotional impact of the material as Respondent B had done more consistently throughout. This is where Respondent B continued their enthusiastic endorsement and emphasized that the buffering concept and the health bar metaphors had already proven useful both to neurodiverse and neurotypical people in their practice. Respondent C may have been echoing this when they said they found it useful to conceptualize how one's needs are being dynamically met or not met throughout the day, which is a way the metaphors can be of immediate use. Respondent E again returned to the utility of the justice perspective as they reinforce their own desire to evolve toward justice-informed models, while also seeing a benefit for the information on specific neurodiverse substrates:

I definitely plan on incorporating ideas about systemic oppression and moving away from the medical model with neurodiverse clients. Also, I want to go back and review some of the self-study modules to try and solidify my knowledge around some of the neuroscience concepts, since I think this might be really helpful for some clients.

Respondent A again had an interesting answer by addressing some of the subtextual aspects of the presentation, as well as echoing Respondent B that some of the point of the workshop is in the demonstrated stance of the material presented toward the community:

This will certainly inform how I work with neurodiverse clients and in some ways all clients around issues like burnout. It was very affirming, empathetic and

compassionate towards people of all neurotypes. I think someone had the comment that "this is useful information for all clients, how does this connect to neurodiversity?" To me they are right but we often and historically have not extended compassion/ empathy/humanity to neurodiverse folks and rather pathologized them and focused on deficits, dysfunction and disorders. So really, it's just about understanding the specific strengths and needs of neurodiverse people and extending compassion/empathy/ humanity to them as we would people who are considered "neurotypical." This has really fleshed out my conceptualization of neurodiversity and supporting people with these experiences/ presentations. Thank you for sharing and I would love to do additional training/consultation with you!

Respondent A grappled with the meaning of the workshop wherein by demystifying neurodiversity as normal variance of the human experience, the result is to extend compassion, understanding and insight as we would for any and all clients, and thereby make the material feel paradoxically universal. Contrary to the expectation that neurodiverse people are a "clinical other" and require unusually idiosyncratic approaches, here the innovation is to reframe our understanding to extend neurodiverse concerns to all people and make their concerns our own, tackling the problem in an altogether different way by making us see our common issues and empathic connection with the neurodiverse community. Respondent A thoughtfully integrates this paradox by recognizing that though the expectation for the workshop was subverted, this was in fact the point, helping us see neurodiverse people as we

would any other client, not as characterized by deficits and dysfunction, but with different challenges, strengths and needs. The result is to expand our normal clinical approach to people we previously felt to be an exotic *other*, and instead see ourselves anew, expanding the realm of normal counseling approaches more generally.

### **Conclusion**

Broadly speaking, the workshop fulfilled the primary researcher's goals, though the attrition rate means that the responses cannot be transferable beyond a non-clinical and neurotypical community and may be generally challenged as being less representative of the sample, and more illustrative that there may be merit in pursuing the training model further. A defensible statement may be that three of five post-workshop respondents significantly engaged with the material, and a fourth also displayed engagement despite signs of less familiarity and greater challenge with the material. This would allow us to say something like three or four clinicians out of five, with a bias toward neurodiverse clinicians, reported resonating with the utility or salience of the material presented. It should be noted that this could be because of either their professional identity, or their neurodiverse identity, or both to the extent that this material reconciled the two. This would not be an incidental point; as a community that feels that they are stigmatized by the medical model, the ability to reconcile a marginalized identity with the professional training that contributes to that marginalization may be empowering and align personal and professional identities to synergize advocacy and practice. Some signs in the responses included here suggest some positive support for that conclusion.

From the perspective of the researcher, the most noteworthy feedback from the respondents was: a) signs that the medical model limitations become clearer in contrast to a model that attempts deep dynamism, explanatory power, compassion, and utility; b) that there is potential for congruence between advocacy, identity, justice, clinical understanding and treatment; c) there may be a need to dive deeper into the question of neurodivergent vs neurotypical to position this model with respect to this important political/identity frame; d) that a deeper approach to framing and treatment can feel more rich, empathic and useful relative to current neurodiversity treatment approaches; e) that a subtext of this model is to create new ways of relating with neurodiverse clients including new forms of “psychological contact;” f) that the material may feel personally relevant even if one doesn’t have a neurodiverse diagnosis; g) that this workshop may represent a subversion of expectations wherein people are surprised to see their own neurodiverse identity rather than see a separate neurodiverse demographic; and h) that the material could be shortened and simplified. We will review these points briefly, and in summary of the takeaways of the respondent feedback, while also asserting a potential way they may build on one another productively.

1. Medical model critiques: that these critiques became “crisper” in the post-workshop questionnaire responses may speak to both a gained ability to articulate the limitations of the medical model, as well as the possibility that the diversity model highlighted these constraints by presenting an alternative that was at times holistic, dynamic, evolutionary, functional,

- contextual, biopsychosocial, empowering and compassionate.
2. Many respondents demonstrated a post-workshop view of neurodiversity with greater congruence among the perspectives in their answers. This may speak to a diversity model that attempted to integrate several elements: a) a deep framing of neurodiversity origins and functions that is identity affirming and politically progressive; b) technical information, descriptive richness and explanatory power about the diverse biopsychosocial substrates relevant in understanding and treatment; and c) holistic, contextual and justice dimensions that are useful to framing etiological, advocacy and social problems and solutions. That these can be made to harmonize in the right frameworks may be useful to aligning values, information and understanding, as well as aligning stakeholders who have heretofore been fragmented by incommensurable paradigms and agendas.
  3. The positioning of this model (see: above) on the nature of “neurodivergence versus neurotypical” as outlined by one savvy respondent may require explicit clarification to reconcile some positioning of this workshop material in service to the researchers’ stated goal of harmonizing stakeholders and perspectives. It is believed this model can speak directly to this issue with clarity and progressive insight by speaking to the concerns of advocates, clinicians and clients, who may benefit from how neurodiversity is not just an individual issue, but about subcultural contexts of fit-or-friction. Therefore, it may be important to address this insight directly in subsequent

presentations.

4. Respondent A's feedback suggested that some of the clinical techniques and approaches offered in this workshop felt more substantive than platitude-level advice often given to neurodiverse people, i.e. "take some things off your plate." The researcher agrees with the respondent that there is room for a deeper framework to better understand the challenges for improved empathy and intervention, including at the relational level (per Respondent B). The fact that this model might harmonize ideas to better understand neurodiverse challenges and solutions at a more complex and dynamic level may be practical in unlocking better tools and perspectives. Generally speaking, a model that can be useful has a better chance at spreading; a model that spreads, has a better chance of furthering its goal of promoting a de-stigmatized way of understanding; a model that is shared has a better chance at shifting the social discourse to better support neurodiverse people.
5. As mentioned, Respondent B's emphasis is noteworthy that significant benefit may come from the way a frame like "normal neurodiversity" may improve the way clinician relate to all neurodiverse clients. Once you see the logic of compassionate understanding from relatable frames, the innovation becomes in how clinicians can expand their latent compassion to new people including themselves or those that do not identify as neurodiverse as such. It may be part of the problem that traditional models maintain a problem frame that sees neurodiversity as a "special case of humanity," a clinical *other* requiring a

uniquely isolating and marginalizing view.

6. A model that creates new ways of orienting to diversity may find its unique value in expanding our understanding of everyone more than a particular subset. As Respondent C noticed, this feels like a subversion of expectations, but the upside is to make the material feel more universally salient and meaningful, including a whole new way of relating to ourselves and all clients with compassion, intelligence and strategic sustainability. It is an exciting possibility that this workshop may be seen as a way of reevaluating ourselves and our nature more broadly if it was picked up in only a handful of responses.
7. Finally, the idea that a framework can add a new way to relate to all people including ourselves across differences may create new ways of framing and solving social problems. This may include a latent ability to create more “surface area” for non-zero-sum games of cooperation and understanding that can be used clinically, yes, but also through advocacy in areas of justice, politics, culture and economics. It is perhaps an unexpectedly subversive point that the right paradigm that is in the words of Paul Gilbert, integrative, contextual, biopsychosocial and evolutionary, can be a tool to align stakeholders and agendas in ways that benefit all people, and that can include immediate benefit to clients.

### **Limitations**

There are several potential limitations to this study. Themes may have been

undersaturated as the original study had 31 participants which saw significant attrition as there were only 9 pre-workshop responses and 5 post-workshop responses to the questionnaires. Though there is no consensus on the number of participants necessary for qualitative saturation of themes and 12 may be a minimum number despite some question about whether establishing such a universal number even makes sense (Macnamara, 2018), the concern of under-saturation remains, particularly as 12 was considered a minimum number for small homogeneous studies; if this study were to increase in size and gain a range of cross-demographic participants, it would also be important to boost the number from 12 to achieve greater saturation across a heterogeneous sample. Even within this study, it is unclear what may have benefited from an expanded number of participants - new themes, depth, clarity of themes, or perhaps, a sharper sense of which themes were more prominent reactions, beliefs and attitudes, and which were less so. In qualitative research, this may be considered a challenge to transferability, or whether the findings could be said to "transfer" to similar contexts or individuals in the way generalizability works in quantitative research. For instance, here we see that many of the participants were neurodiverse, white, women, and thus, the findings may be said to be transferable to similar demographics, but it is a separate question of how the results transfer to mental health clinicians in general (or perhaps, to specific fields that were more underrepresented here), which on average belong to only some of these demographic categories.

Secondarily, the difficulty of creating this design during the global pandemic limited potential tools to aid in the triangulation of data for trustworthiness, particularly

the credibility gained from having multiple perspectives throughout the data collection process. For instance, as it became clear that the NVivo software would not prove to be a robust coding aid, the use of a second coder became particularly valuable to the credibility of the data, which is the need to have multiple perspectives in agreement about the data as presented as a dimension of trustworthiness. However, this was not easy to find in the pandemic environment, creating many challenges to study implementation. As explained in Chapter III, NVivo was originally supposed to provide a function similar to a second coder by generating automatic codes but the results were relatively thin, creating themes such as “mental health” and “mental health practitioner.” The researcher overcame this by creating two coding passes, one as a general set of emerging themes, and the second focused on the themes as they answered the research questions, with the hope being that the two produced similar results or at least, clarity when the researcher’s answers to the research question were becoming biased. This was an improvised method to create a diversity of perspectives, and while it was useful in boosting credibility, in a follow-up study, a clear path to improvement would be to find multiple perspectives throughout the data collection process.

Other aspects of trustworthiness were more effective, such as creating rich notes to track the data analysis process in the case of an external audit, which is considered a measure of dependability in qualitative research, or a rich documenting of the process to “follow in the researcher’s footsteps.” The choice to do two coding passes which added to a clear interpretive schema for coding, and a fairly comprehensive

understanding of the researcher's personal biases, likely helped with confirmability as another aspect of trustworthiness, the ability for the study to be recreated through a follow-up qualitative design.

However, there are other tools that may have helped to triangulate the data and establish credibility and trustworthiness. The ability to offer feedback on the reasons people dropped out of the study would have been valuable information in hindsight, as attrition was significant, and understanding the perceived barriers that turned into offramps to participation would have provided more direct understanding on what could aid in retention of participants in a subsequent design. Moreover, to combat participant attrition more generally, the material could be reshaped to fit into a more digestible length to compensate for the density of content, as this was a theme that emerged in the barriers section of the post-workshop questionnaire. This may be coupled with improving the format. While the flipped classroom was likely positive for allowing people to take in material at their pace, it is also unclear how the loss of social interaction was as a barrier to engaging the material particularly for social learners, and the need to create relationships and create a group dynamic within two hours of a final meeting may have put undue pressures on the ability for social dissection of the material.

### **Implications**

#### **Research Implications**

The research used here is drawn from interdisciplinary science using a consilience methodology, i.e. strong conclusions from converging findings.

Paradoxically, to get at fundamental issues of evolved meaning and purpose using a scientific approach, one must use a framework of the human experience that is complex, diverse, functional, evolved, contextual and biopsychosocial. Methodologically, this has led to weighting integrative theories, models and frames more heavily, with the greatest weight going to most integrative and comprehensive models. The advantage is a common conceptual space with room for multiple perspectives, stakeholders, values and agendas. Multilevel selection theory is chosen as an evolutionary meta-frame for its ability to frame these integrations, including social sciences from gene-culture coevolutionary research, personality research, life history research, moral psychology and more. The result has been an encouraging prospect of a) a complementary, not fragmented, set of conceptual tools, b) a rich and useful understanding of complex issues, c) concrete implications about human beings and their place in the world, including the “wisdom” of moral, social, political, economic and spiritual implications, and d) great promise for advancing our understanding of mental health at the paradigmatic level. The downside is that the academic climate favors studies of one or a few variables, and there is little support for inquiry at the level of frameworks, even when they may be important to solving existing problems. Given the contention of this dissertation, that modern mental health paradigms are limited and fail to capture some important observable and ethical issues, the advantages stand despite the challenges - the field is less in need of new data than new frameworks, and the status of such pursuits is worthy but in need of an outlet.

A consilience approach brings rigor to building useful frameworks despite the

difficulty directly testing them. However, the implications of such frameworks are highly testable if the frames themselves are not, and a significant amount of data already supports them. For instance, a number of existing studies fall outside of the current paradigms, such as data about the psychosocial variables contributing to depression, anxiety, trauma and psychosis, or the “normal neurodiversity” of subclinical traits shared by families. This data is not only used, but meaningfully centered by this frame. This could be considered progress befitting Kuhn’s theory of paradigmatic revolutions - that new paradigms come along and “win” because they build on older conclusions while accommodating new data, resulting in a more parsimonious account overall. In this vein, the model proposed herein incorporates a variety of useful frames including evolutionary psychological mechanisms of defeat, rejection and entrapment; self-regulatory resilience; social animal specialization; moral psychology, complimentary cognition, multilevel models of well-being, restorative capital, and more. The result is new, more congruent and integrative ideas about the topography of mental health well-being and suffering that are holistic and flexible, and may have important justice and ethics implications.

Some testable implications of the frame also follow. At the level of biosocial niches, for instance, one can test a variety of predictions regarding niche dynamics. First, that people may a) become depressed from the loss of connection to sub-niches, or from imbalanced dynamics therein, such as a lack of buffers relative to threats; b) that threats to “social survival” may engender anxiety about, and sensitivity to, future threats in kind; c) that one’s sense of progress toward an ideal niche confers resilience to

existing challenges, and that there is a relationship between current niche factors and anticipated niche factors; d) that many of the cognitive and behavioral elements associated with mental illness, such as loss of self-regulatory control or delusional positivity/negativity biases, are functional and driven by a perceived lack of present or future resources relative to costs; e) that many unique mental health qualia such as apathy, paranoia, and psychosis can be predicted from unique patterns of social injuries (such as entrapment, persecution and defeat); f) that individual differences interact with these niche dynamics not through deficits but trade-offs, for instance, those who are high in trait mentalizing may be more sensitive to social feedback, a “strength” in social learning, but also a vulnerability to social injuries; and g) that sustainability is real and operationalizable, for instance, as a capture of the frequency and magnitude of social injuries (or the anticipation of such injuries) relative to social resources, including one’s proximity to supportive niche as it shapes the distribution of both.

Regarding “normal neurodiversity,” the trade-off model could explore the connection between ADHD or ASD and the link to subclinical temperament traits. The model would predict, for instance, people with clinical neurodiversity would likely share traits, subcultures and jobs with people who have subclinical traits, which could testably verify the concept of strengths linked to challenges. Building on this, a testable hypothesis is that there is a major difference between one’s success with a life history strategy may be the extremity of the traits in question, which are more likely to be punished in unfriendly environments. A hypothesis that follows is that one’s proximity to a niche that values such traits, also captures their likelihood of being punished or

supported for having them. The role, prevalence and magnitude of social injuries in diverting someone from a niche path, for instance, by inhibiting developmental exploration, experimentation, or building social capital and reputation, among other things, is also testable. Framed differently, this model would predict that one can be high enough in temperamental traits to be diagnosable with clinical neurodiversity and still thrive in life, with the major difference being the degree to which they find roles, relationships and environments that are supportive particularly in finding altruistic opportunity, i.e. a sense of purpose, as a niche organizer for greater meaning and purpose in life. This model would anticipate that the potency of such findings would help not only avoid social stressors, but offer the resources with which to deal with them, lowering social and positional threats that drive existential angst and despair.

Finally, with respect to a third level, this model predicts a variety of attributions to psychosocial determinants of mental health. For instance, for each of the niche domains, there is a class of societal problems (social mobility, social media, lack of meaningful work, etc.) that are etiologically more relevant than the individual differences typically given attribution, and that individual differences only modify this based on how a social problem affects their specific niche specialization. This model would anticipate that toxic (agonic) versus nurturing (hedonic) environments predict different impacts in individual mental health outcomes relative to one's niche specialization, with the mediating variable being one's individual congruence between individual and cultural strategy. This model suggests that access to altruistic opportunity would predict better mental well-being across the board, as a sense of purpose is an

effective niche organizer, and that those without altruistic opportunity would feel demoralized by the inability to access this niche organizer, as attempts to compensate by boosting happiness, is unsustainable and leads to niche imbalances and addiction. This model would suggest that mental health is fundamentally more unsustainable in toxic cultures as a consequence as they are more likely to exploit and less likely to provide altruistic opportunity, and this is only compounded for those who are ill-fitting on top of this; furthermore, the moral injury of being complicit in systems that are mentally unsustainable for the community can be demoralizing, painful and overwhelming.

### **Training Implications**

The dissertation involved a workshop training to deliver therapeutic insights in the treatment of neurodiverse people using a niche model of well-being. The information was derived from a consilience approach which synthesizes findings across fields for strong conclusions from converging facts. This means using a strong primary source approach for basing assumptions for a model of well-being and its treatment, which is surprisingly uncommon for psychotherapies and mental health research in general (see: medical model critiques for more). For instance, CBT has been criticized for going against mainstream psychological findings about the role of rationality in well-being, and CBT contributor Paul Gilbert (2019) has echoed that the modality fails to incorporate key insights of modern psychology and human functioning. Similarly, the medical model has been criticized for lacking a strong theory of mental health, and while the constructs promoted are useful in coordinating interdisciplinary practitioners

in an insurance-based model of healthcare, they may actually worsen mental health outcomes and contribute to helplessness and alienation when used as a frame for scientific communication (see: autobiographical information). In both cases, the lack of a grounding with mainstream social science may be partially responsible as a system of mental health treatment that lacks such grounding is more likely to fill in the gaps with cultural values and assumptions, which are routinely unsustainable for many and marginalized groups in particular. By contrast, a consilience model may achieve many things at once, including a) constructive relationships to meaning and well-being; b) compatibility with primary science, c) centering social justice issues, and d) incentivizing prosocial and sustainable behavior for the individual and society. To the contrary, the medical model and CBT have been criticized for creating a managerial style of mental health with high dropout rates, diminishing clinical returns and an oppressive stigma that discourages help-seeking and worsens outcomes (see: medical model critiques). Models moving in the right direction may include PTMF (Johnstone & Boyle, 2018) and dimensional diagnostic taxonomies (Kreuger et al., 2018).

One way to ground treatment is to find useful frameworks that orient people to important aspects of the human condition. Recent evolutionary frames are useful for creating a contextualized, universal, functional and biopsychosocial framework (Gilbert, 2019). These frames grapple with the longstanding challenges that people face as a diverse social species across many environments, cultures and eras. Grounding the “meaning” of mental health treatment in the implications of such frames may yield multiple benefits relevant to current problems in the field. For instance, these modern

evolutionary frames normalize, universalize, contextualize and validate mental health challenges as intrinsic to the human condition; they have room for diversity that connect strengths and challenges as a basis for self-belief, self-respect and self-compassion; they give us tools to legitimize certain “social facts” such as the reality of psychosocial determinants of mental unsustainability, so as to stop blaming individuals for their suffering; and they instead identify important attributions for constructive social change as a “target of selection” for altruistic purpose. Arguably, these frames go some way to capturing the root causes of mental distress not as being in the genes, but as a kind of “feedback” about unsustainable problems of social life, which not only ravage individual well-being en masse, but levy millions of dollars in costly mental treatments to the collective “bottom line” each year in doing so.

All of these would not be possible without consilience as a strategy to “crowd source” insights from across social sciences to capture important wisdom based on more than the current cultural zeitgeist. Consilience favors ideas that integrate with one another to make sense across disciplines and thereby lend a robust truth content regardless of perspective. This helps to create frameworks for thinking about big picture issues with complexity and nuance, useful to therapists trying to understand complex human lives in context. Consilience is arguably a highly strategic way to approach learning about complex, contextual, biopsychosocial human beings. Multilevel selection theory, and its ability to integrative theories such as gene-culture coevolution, integrative personality research, life history research, and moral psychological metatheories, creates confidence that their significant overlap creates a fully realized,

culturally independent vision of human nature and well-being that can be fruitful to invest in and optimize going forward. It is useful for practitioners to ally with the data against the potential for cultural misframing when it may be important to client outcomes, even if that means becoming agents for prosocial change when problems clearly originate at the social level.

Consilient efforts begin with the need to heavily weigh the ideas that “fit” across sciences and models, identify theories and models that overlap on such ideas, and create discourse regarding how to use these patterns and implications to intervene on multi-level well-being. Next, a challenge remains in how to distill key concepts for the purposes of framing, communicating and understanding such information at the “ground level” of helping diverse individuals seek sustainable well-being. Finally, there is a need for a final layer of translation into meaningful and useful metaphors and tools that further condense the wisdom into client-facing tools. A constructive paradigm that succeeds at all three levels of translation may be of sufficiently broad utility to make itself spreadable in the way psychologist George Miller envisioned “giving psychology away” to society at large. This dissertation has attempted a first pass on some of these objectives, and has been used clinically to promising effect. Consilience is encouraging as a way of organizing prosocial and sustainable efforts in therapy going forward. There are several challenges with using this approach in clinical training. It has no precedent with which to build upon in the establishment training culture, and would need experimental support in graduate programs. Second, having focused on a base layer of strategic utility in this dissertation, there are likely higher-level implications that are not yet as fully

developed - many tools are implicated, for instance, but only few currently exist. Third, the complexity may be a hindrance to those seeking a practice-oriented education, though we should emphasize, the reward is potentially high - a flexible world model that can be tailored to the complex individual needs of different clients, rather than a reductive approach optimized to focusing on narrow issues, and bogged down at the complex intersections of real lives.

This theory, though, shows some promising first pass implications that may already be useful to a next generation of therapies. The idea of evolutionary psychological tools in orienting people to a compassionate understanding of how their struggles are functional, sensible and contextual to push back on stigma and take control; the concept of sustainability as a framework for constructive questions that incentivize long-term, prosocial wellness strategies; and the niche as a multi-dimensional way to frame individual and diverse needs based not on the transient standards of the culture, but on deep evolutionary wisdom about what a full, healthy life needs. That includes elements that may be missing, and forms of conflict, coercion and tension that are normalized, but shouldn't be. It is thought that this model, with three distinct parts - the biosocial niche, individual differences, and environments of injury or support - can prove the potential for dense information to be organized, distilled and ultimately communicated in ways that are ideologically empowering.

### **Clinical Implications**

To quote a poem by John Donne, "no man is an island." A central dynamic of a social animal therapy is that despite the individual being the locus of intervention, the

mental lives of individuals are enmeshed in a multitude of social dynamics - roles, identities, relationships and environments - that may or may not sustain at far deeper levels than once believed. While therapy is an individual intervention, individuals are not problems. Humans as a species are a special type of social animal that are intrinsically rife with vulnerabilities, trade offs and unsustainable dynamics, yet some individuals are relatively better positioned to attain resources and avoid injuries. That means that mental suffering does not come from the lack of therapist interventions, bad genes, rational frames, or childhood traumas because good mental health is never a given for social animals. In fact, cultures commonly expect people to endure scenarios that are considered "fine" by the cultural standards, even as those roles and environments are deeply unsustainable according to the niche needs of most social animals, and some neurotypes in particular. Indeed, toxic systems and cultures may even be motivated to gaslight people into believing they are the problem for burning out in such systems, particularly when they are incentivized to exploit those people. Let's review a few bullets about human well-being as a special type of social animal:

***Level 1: Biosocial niches***

A social niche is where people can find sustainable meaning and transient happiness, both of which moderate the frequency and impact of existential social pain. Niches are composed of a multitude of embodied relationships with different aspects of one's social environment. Social animals like humans require various connections with their environments - a hopeful future, social connection, status and respect, an enriching environment and so on - or else they begin to break down. Niches activate

social mentalities to provide the atomic elements of a meaningful life, which shapes one's worldview and lifestyle to be more or less sustainable following the evolutionary "logic" of what makes for a meaningful and purposeful niche. The following is not an exhaustive or systematic list:

- a. The meaningful and rewarding aspects of niches engender embodied psychosocial resources that are necessary for one's "social survival" - i.e. positioning oneself for a prosocial role in a social ecology. Resources include hope, control, trust, safety, confidence, etc., and they function to create diverse and necessary forms of energy, strength, pleasure and resilience to help maintain self-control toward one's goals.
- b. Threats to social survival can erode one's resources and create psychosocial "injuries" that are inherently destructive to the body-mind. Injuries and threats de-energize, weaken, hurt and disempower, proving unsustainable. Common dynamics are lose-lose scenarios or self-reinforcing spiral dynamics that hurt resources and social positions.
- c. "Social trauma" comes from overwhelming, unbuffered and seemingly catastrophic social threats that damage social positions. Complex social trauma is likely significant.
- d. Environments can be full of threats, especially toxic environments and environments that are mismatched to one's neurocognitive strategy.
- e. Social buffering is a natural way to ameliorate stressors and boost resources, because the default state for humans is to a) have a baseline of social resources, and b) encounter stressors in teams and relationships. Buffering not only energizes

- resources, it minimizes embodied stressors encountered previously, currently and proactively.
- f. Social pain & social buffering. Social pain is difficult to communicate about, receive support around, and be understood, largely because social pain can telegraph weak social positioning. This can be vulnerable (jeopardize social survival) particularly in competitive environments, and prevents help-seeking. Normal developmental issues compound with age, across multiple intersectional identities, positions, sub niches and life tasks, where it can be fundamentally difficult for lay people to buffer someone.
- g. Social pain. *Social pain rarely means what we fear it does.* Compromised social positioning is common to the human experience. The most common cause of poor social positioning is likely from systemic issues that are unjust and unsustainable including issues of class, marginalization, etc. Therapeutic best practices come from the norms of healthy social environments, which help validate, normalize, contextualize, universalize and externalize social pain. The unhealthiest frames for social pain are enshrined in competitive environments where positive regard is highly conditional, vulnerability is weakness, and masking is a survival strategy. Epistemic injustices build on the latter to turn social pain into a signifier of a natural social order, an intrinsic deficit, and a source of shame and threat. *Therapeutic microcultures must center frameworks with multilevel justifications for social pain at deep conceptual levels to offset toxic ideologies.*
- h. The antidote to social pain is discovering sustainable meaning in an altruistic

prosocial niche, which is key to both gaining resources and coping with social pain.

Discovering one's niche is a life project. It requires data gathering, cognitive and emotional processing, and iterating plausible experiments in sub-niches. This requires an extended vulnerable period in the "wilds" outside of one's niche. A lack of critical support in this period will fail to buffer against adversity and risk, particularly in environments of threat. In the wilds, one may find an imbalance of injuries, threats, and spiral dynamics. Consequently, social and mental pain easily push people off of the life task of discovering their niches. This affects poorly positioned people the most, who must make unfavorable trade offs constantly, and can wind up far outside a supportive niche.

- i. Self-regulatory strength or resilience is when people gain enough resources to maintain self-control toward important goals, including control over one's thoughts, emotions and behaviors. Perfect self-determination is a cultural myth, but those who are socially well-positioned relative to their niche of fit have more resources for better self-regulatory strength. This phenomenon is highly linked to well-being.
- j. Happiness is different from meaning, and they require different factors in a niche. Access to psychosocial resources can create transient "happiness," but only an "altruistic contribution" to "something bigger than one's self" can create a sustainable sense of meaning and purpose. Meaning is a "niche organizer," as it is not only required for niche elements like meaningful work and values alignment, it also offers access to happiness promoting aspects of a niche - community, status, hope, and so on.

## ***Level 2: Neurodiversity***

Individual differences make up the second level of a niche model. Neurodiversity is a type of social niche specialization, where different neuro-cognitive strategies are used to exploit different social niches. In environments that are dangerous or competitive (win-lose), life history strategies are geared toward survival strategies, and success may create happiness but rarely meaning. In healthy, nurturing communities, neurocognitive strategies may offer a win-win *complementarity* between other strategies in an interdependent milieu, and an evolved altruistic role can be fulfilled by aligning one's strengths and values to a need in the moral commons; i.e. the evolved basis for a "sense of purpose" in "something bigger than one's self." In either case, each strategy has strengths associated with it, and its challenges are joined at the hip as trade-offs: competitiveness breeds callousness, openness breeds instability, etc. This drills down into risks for specific psychopathologies that likely account for much of the genetic components of mental health disorders. This changes the role of genes, by implicating the importance of finding a niche-of-fit to align one's trade offs advantageously; to leverage one's strengths, regulate one's challenges, manage social pain, and find healthy environments where one's purpose can be used, rather than be exploited. Here are a few assumptions:

- a. Trade-offs. Trade-offs are constrained heritable strategies, made in advance of individual choice, that create strengths related to challenges: competitiveness at the cost of empathy, openness (creativity and intellect) at the cost of goal efficacy, and so on. Trade-offs create access to some mental resources over others, and a risk for

- some injuries over others.
- b. Niche strategies. Many moral, social, biological and psychological trade-offs align to make up a strategy that makes sense in a specific social niche. Life strategies focus on neurotypes as promoting adaptive happiness, i.e. finding roles, relationships and environments that allow one to compete, cooperate and consume to maximize pleasure. Meaning strategies capitalize on “altruistic opportunity” to make a values-aligned role contribution to the moral commons, i.e., to the social superorganism of which they are a part. Meaning is sustainable and can provide happiness, but the reverse is less often true. A well-rounded niche offers some of both.
- c. Niches of fit. Strategies often fit a particular environment. “Fast” strategies thrive in unpredictable risk-reward environments, while “slow strategies” thrive in more structured environments, for instance. Aligning a strategy to the goals, roles, relationships and environments that offer a niche of fit can leverage a strategy’s strengths and minimize their weakness. For instance, creatives typically have less trait conscientiousness - role dependability - but creative subcultures are normed to value creative strengths and tolerate eccentricity.
- d. Mismatches. Strategies can be punished in the wrong environment, leveraging one’s challenges outside of their niche. For instance, creativity isn’t valued in corporate environments, while creative eccentricity may be punished. Mismatches create environments of injury, where stressors/injuries are more prevalent, and buffers are harder to attain, creating an increased risk of spiral dynamics and specific clinical psychopathological risk.

- e. Strategies and self-regulatory resilience. All people require mental resources for optimal self-regulatory control, but different strategies gain or lose it in different ways. Fast strategies can become more impulsive, for instance, while slow strategies will become more inhibited. Niches of fit are critical for leveraging strengths to maintain one's developmental goals and positions toward a meaningful life.
- f. Clinical neurodiversity. ADHD and ASD likely represent extreme parameters of more "normal neurodiversity" traits, which are normally distributed. Here, the underlying strategy itself is not the problem, but it does not guarantee social success. The problem with heightening the strengths and challenges of a life strategy trade off is that it amplifies the risk-reward trade-off. Increasing both the strengths and challenges of a strategy turns individuals into niche "specialists" who only function optimally in rare and specific social niches. The role of genes is not to create deficits, it is to increase the sensitivity of a person to their niche of fit, which can be highly challenging.

***Level 3: Toxic and nurturing environments***

Many individual issues come from environments which organize the logic of social interaction in advance. Agonic (toxic) and hedonic (nurturing) styles of social living favor either win-lose power, or win-win community as the dominant logic of social living. Nurturing environments are more sustainable to mental health because they offer more "altruistic opportunity." There is more "surface area" for win-win cooperative games to create a lower conflict environment, and wider access to shared meaning and purpose allows diverse people to harmonize contributions to the moral

commons, i.e. be a part of “something greater than one’s self.” Toxic environments foster values in self-interest, competition and high conflict, which creates an environment of defeat for many, and an environment of privilege for a few, who must then defend their gains against the rest. The very experience of “meaning” likely evolved as an altruistic reward system to incentivize the creation of hedonic nurturing environments as a function of inclusive fitness. Hedonic systems therefore offer a “direction” to social evolution that aligns with the individual need for sustainable access to meaning. This offers an altruistic opportunity for “a sense of purpose” to align our agency with this prosocial direction to life. Depending on one’s meaning strategy, one may either support improvement to healthy systems, or change unhealthy ones. This is an important social-level layer to the meaning of distress: suffering can give us feedback about our collective niche and way of life.

- a. Cultural standards. Cultures evolve different expectations for what should make someone feel happy, find meaning or create purpose, and those standards are often unrealistic to the detriment of their members. Toxic ideologies may even be incentivized to get this wrong if it helps scapegoat individuals for collective problems, oppress marginalized groups, or motivate behavior that is economically or politically expedient. A niche model seeks a tool to step outside such obfuscation by grounding the science of a sustainable life and diverse ways of attaining it. The integrative frame can frame social facts non-politically, and appeal to reason; building useful tools that empower may spread the frameworks’ messaging. Adding the layer of social sustainability as a healthy “niche of niches” can curate praxis about the need

- to align the individual and collective good.
- b. Healthy environments. Meaning and purpose require critical social alignments that are common in healthy, nurturing, and prosocial environments such as the Nordic countries, which are set up to offer widespread “altruistic opportunity.” This is difficult in domineering, toxic and coercive environments where few benefit from many, where toxic narratives coerce a survival mindset force of threat, and power and strength become valued over altruistic contribution. Nurturing systems are those that constrain competition and hierarchy within an overall win-win social contract; toxic systems are those that constrain win-win alignment to a privileged few while the rest compete to survive. Systems that fit the latter description may cause depression, not the least of which because they force people to compete for materialistic hedonism and fail to provide sustainable meaning, a critical aspect of a well-rounded niche (M. Larsen et al., 2023).
- c. Social determinants of mental health. For every niche area that can lead to distress, there is a corresponding social problem that is implicated. Problems include lack of social mobility as a lack of hope; the loneliness epidemic as a lack of social connection; social comparison from social media as a lack of status and respect; toxic social values and populism; suburban blight as a disconnection from nature; epistemic injustices that pathologize brain differences; and others. These mental problems are not individual in nature, but implicate unsustainability in our shared way of life. They require mental health professionals to be able to authoritatively link mental unsustainability to social determinants to create social change, allying

- with people against toxic narratives and systems, rather than allying with toxic systems against individual well-being.
- d. High conflict, meaning-poor environments. Hierarchical and competitive environments conserve power and resist change, creating toxicity at the group-level. They create poor access to good social positions, offer less access to mental resources, unfairly distribute injuries, and polarize life strategies against one another as a win-lose fight over the moral commons. These systems are brittle in nature, and promote mental environments of defeat, isolation and uncertainty for all.
- e. Impoverished niche environments. Systems geared toward resource exploitation do not create roles for exploratory-oriented neurodiverse people. These niches are a luxury of social environments that create more “altruistic opportunities,” which creates more room for specialists along the fringe. Cognitive specialists are more abundant in systems that prioritize collective flourishing (such as the Nordic countries), as sufficiently prosocial infrastructure a) supports more specialist roles, and b) is open to social change to use the experimental and exploratory findings provided. These systems also foster less conflict stress through a “complementarity” of cognition, and create a less injurious social ecology friendly to neurodiversity. Systems without altruistic opportunities are more marginalizing and defeating to neurodiverse people.
- f. Narrative oppression. Toxic systems create the polarized thinking of absolute good and bad, smart and stupid, right and wrong. These epistemic injustices create ideological winners and losers that fuel self-criticism for those who do not thrive in

exploitation-oriented environments, which is in turn reified by concepts like “weakness,” “disorder” and “deficit.” The medical model unwittingly reinforces these concepts through biological, genetic and cognitive reductionism.

- g. Multi-niche narratives. A healthy pluralistic view might instead see deficits framed as tradeoffs at the population level. For instance, consider intelligence versus ideological conformity: “Intelligence” fosters cognitive realism at the cost of social friction, while ideological conformity may engender mass delusions, but the upside is mental group cohesion among members, and widespread access to ideological resources like hope, trust and confidence. Both are valid according to inclusive fitness, as both play a role in socially evolving sustainable meaning by serving different roles - one toward social progress and truth, the other to maintain what works in existing social systems (Haidt, 2013). The point here is that we can celebrate strengths and align them to a shared reality through seeing them through their respective prosocial niches, which brings out the meaning of these trade-offs in someone’s favor. To do this, we must also free people from oppressive narratives of shame and guilt, winners and losers, and that means changing the social discourse to be less injurious.

In summary, humans evolved the ability to be coregulated by a multifactor social niche, and there they can be protected from the social and existential struggles of life when sustainable wellness factors align with a role of meaning and purpose in a healthy culture. Mental health qualia and psychopathology represent a kind of data feedback about one’s relationship to their social world, including the sustainability of the ecology

itself. A social animal frame is about learning how to listen to such feedback, individually and collectively. Poor mental health may say something about the need for individual growth, but also constrained opportunities and unhealthy social environments; it may even be common for seemingly individual problems to originate from a lack of sustainable commitments.

### **Niche Tools**

Let us address a few clinical tools tailored to both levels of a social animal model.

First, with respect to niche logic:

- a. Niche construction. The feedback of life is not written in logic, and the mind is not separate from the environment. Emotional and intuitive data register patterns of positive and negative feedback that helps us to evolve our frames, strategies and resources to curate the good and minimize the bad. We seek niches of positive social positions to access the good, and avoid the bad, by creating an infrastructure of biological, mental, social and structural elements. Niches are optimized along a number of hidden variables: flexibility versus structure, resources versus threats, short-term versus long-term, and overall balance between sub-niches. Optimizing these concerns against one another is about harmonizing the *alignment* of trade-offs in one's favor: for instance, getting meaningful work in a job that fits one's life strategy, to have values-aligned community, to be respected for one's strengths and not judged for one's challenges, and so on. The niche construction framework sees these issues to constructively process and interpret the feedback of life across niche domains to wisely and strategically balance factors in their development. Goals may

- include aligning sub-niches for life balance, making healthy commitments or changing unhealthy ones, accessing more resources or preventing injuries and offsetting stressors, strategizing for long-term sustainability over immediate gratification, and others. Generally speaking, the truism that happiness is transient and meaning is sustainable means supporting niches to optimally organize around sustainable meaning, must include processing, experimenting and exploring avenues that help develop this potential.
- b. Sustainability. Sustainability starts with *understanding the embodied costs* of losing psychosocial resources or accumulating social injuries in eroding sustainable meaning. Many normalized social arrangements, including toxic relationships or workplace environments, can be psychically unsustainable even when the culture is comfortable asking people to endure them. Asking people about the sustainability of various strategies and commitments in their world can empower them against this fact by bringing awareness and wisdom to problematic niche dynamics in their own life, and may even promote awareness of the need to align their interests to supporting healthy organizations, communities and cultures as an externality. As a tool, priming “sustainability” can help people frame the cost of bad commitments to make difficult choices about change, or alternatively accept strategies that are only impeded by bad frames. The concept orients one to intangible costs, longer time horizons, and niche logic not about what can be endured daily (which may a toxic need to maintain a sense of “strength”), but what one is optimizing their life for in the big picture (a nurturing, process-based, and longevity-oriented frame). This may

involve roles, relationships or environments to frame the balance of resources versus injuries, frictions and alignments, and so forth. Clinical “symptoms” can be seen as a short-hand that the current balance of factors in one’s life is unsustainable. Orienting clients to their life as a meaningful data-gathering approach requires tracking, and not dismissing, patterns of social, emotional and intuitive data to update their profile of sustainability over time and across environments. *This takes “mindfulness” to new levels of intentionality*, using information consciously and strategically. We shift the work of cognitive therapies to use rational inquiry at the correct level of holistic niche psychology, by using the rational mind to understand the evolutionary psychology of irrational human needs and motives. Human nature is not optimized for rational self-control, but a niche that provides self-regulatory resilience is one that empowers intelligence, creativity and prosociality as externalities.

- c. Epistemic Justice and anti-gaslighting. Psychoeducation offers evolutionary psychology from a social animal perspective: trade-offs, mismatches, injuries, resources, self-regulatory resilience, and more. These concepts can help to *construct empowering heuristics while deconstructing epistemic injustices* in the same breath; for instance, the social injuries (defeat, rejection and entrapment) create embodied consequences from social causes, and naturally refute biologically reductive stigma. Alternatively, therapists should avoid *causing damage by attributing the meaning of weak social positions and social pain to absolute deficits*, which is a property of toxic narratives and systems. The medical model is guilty of this at the highest level by

framing mental health issues as “in someone’s head” or “irrational,” and implying that social pain and positioning are derived from fixed properties, flaws or deficits. The reverse is often true: the most unfairly positioned people face the most social pain, and this is not natural or just. Oppressive narratives enshrine social pain as innate, which worsens mental health, as advocates of autobiographical information tells us. *The niche model gives many ways to frame distress as a property of human nature*, while giving us tools to learn, strategize and reposition. It is crucial therapists help one make sense of and externalize social pain, without accidentally implying that one’s social positioning is in some way natural, inevitable, or derived from innate inequities; doing so is an advantage of this model, and creating hope and control at this level is possible.

- d. Evolutionary psychological mechanisms as empowerment. High-level frames implicate a psychoeducational language built on multilevel evolutionary psychology. These frames carry the subtext that biopsychosocial mechanisms of social pain (i.e. defeat, loneliness and entrapment) create positional angst that is often *universal, valid, external and predictable*, which is therapeutic on multiple levels. This undoes stigmatizing narratives, while creating hope and control. Psychoeducation need only be sufficiently detailed, while retaining key subtexts of the destigmatizing qualities. For instance, one might validate and attribute pain to unsustainable commitments and patterns of defeat, which builds motivation for changing those commitments; or evolutionary psychoeducation can be used to proactively anticipate a loss of self-regulation following an isolating move to a new city, reducing the self-stigma of

- feeling “crazy” and allowing for realistic goals of self-care. Generally speaking, orienting to embodied social dynamics helps make one “mindful” of the sustainability of their circumstances, which validates disquieting distress in destigmatizing ways, and empowers new levels of intervention.
- e. Functional analysis. Evolutionary functional analysis can be used to help people identify and frame their particular niche problems using social animal mechanisms. This may begin with tools to help people imagine their niche goals with intentionality, and bibliotherapy (such as Hari’s book as a niche model) may provide an immediate shorthand. Next, we can identify issues and barriers relative to one’s ideal niche, including dynamics that impede resources, social injuries, spiral dynamics, and more. This is helpful to *ally with someone against their issue*, which sets the clinician-client relational stance. This grounds social buffering as a therapeutic alliance to buffer stress and re-moralize resources against a problem. Framing niche issues also facilitates in-session processing to guide conversations using a perpetual frame with multiple levels and dynamics to explore. As a strengths-based frame oriented toward a positive future premised on belief in the client, this frame maintains the therapeutic alliance proactively. A sense of being understood in a strengths-based way counters social threats and removes judgment, while leveraging resources and problem-solving.
- f. Framing trade-offs. Functional analysis can be used in a variety of ways, and the concept of trade-offs can be applied here as well. For instance, framing tradeoffs at the heart of unsustainable decisions can validate one’s motivations for making the

decision, while creating motivation to change (“yeah, us novelty-seekers sometimes use cannabis to be stimulated and feel free after a day of the grind, but the downside is that it can lead to anxiety and inertia in other areas of our life if we use it too frequently”). Tradeoffs can also be used to frame communication challenges in a relationship, helping to align people in a win-win instead of a win-lose or lose-lose (“you have negative feelings that you don’t want to burden your partner with, but avoiding talking about them is preoccupying you and preventing you from connecting. Sounds like a lose-lose. Can you frame a conversation around the tension itself? Something like ‘I’m feeling crappy and I don’t want to bring you down, but I also don’t want to be unavailable to you all weekend?’”). Functional analysis can also be a tool of reflection, meaning-making and active listening. A therapist might enumerate the various resources and threats one hears in a conversation, and the tensions inherent in their circumstance, framed by sustainability (“you like your friends at work and the money is good, but the culture is toxic; if you try to switch jobs, you may face defeat, rejection and disappointment from multiple interview rejections, and even then, there is no certainty that the new job is less toxic because you don’t have enough information to judge. The new situation may be more sustainable, but it is a bigger risk at a time when you don’t have the resources to deal with it - do I have that right?”).

- g. Social trauma. This model can expand clinical trauma to include non-Criterion A experiences of *social trauma*, with its robust relationship to acute stress disorders, complex traumatic stress or racial trauma. This is particularly useful in marginalized

groups, such as with neurodiversity, who may also be sensitive to social traumas and face more of them. Trauma treatment can address and frame the social stressors that are likely to be triggers, while building up resources to gradually deescalate activating events (“each time you are activated it is easier to get activated again, and that makes you feel less safe, makes it harder to connect to others, and makes you less socially motivated. Yet, paradoxically, you need to be around your safest relationships right now to restore safety and trust in order to deescalate - who are those people for you?”).

- h. Integrative framing. A biosocial niche model helps organize new clinical concepts, and older therapeutic modalities, under a common scientific rubric. For instance, *moral injury* makes sense in interdependent social animals like humans, who evolved a motivation to help others in their community as a source of meaning and moral purpose; to instead feel complicit in hurting those people is unsustainably painful and guilt-inducing. Existential dread should be expanded to include social threats that attack “social survival,” as losing status or being ostracized are common mental projections of primal human fears as social conditions become precarious.
- Attachment work can be subsumed under social baseline theory as a general understanding of all social resources in relationship to others. Adlerian inferiority is relevant to status, respect and competitive injuries. Cognitive therapies can be reoriented to understanding the evolutionary logic of biosocial niches. Mindfulness therapies can more intentionally harness intuitive data in niche-construction.
- Psychosocial determinants of mental health address the social justice wave of

therapy.

### ***Neurodiversity Tools***

Let us add some potential neurodiversity tools.

- a. Talking about neurodiversity trade-offs. Trade-offs are heritable and embodied, and functionally point toward specific roles, environments and niche strategies. “Normal neurodiversity” includes the sub-clinical traits of neurodiversity that are shared by those with clinical neurodiversity, are normally distributed in the population, and have clear strengths. The obvious archetypes in the neurodiverse temperaments are *thinker* and *creative*, though a variety of subdivisions within each of those “types” include sub-archetypes that strain such neat connotations. Still, given that the traits shared by clinical and non-clinical neurodiversity is so obviously the connective tissue of the “disorder,” rather than, say, clinical “symptoms,” clinical neurodiversity can’t be said to be a disability, strictly speaking. Neurodiversity can certainly be disabling the further one gets from their niche, or the more one has had their self-narrative oppressed as being defined by deficits. That said, there are evolutionarily accurate ways of framing neurodiversity that seem realistic and cathartic. Accurately tying strengths to challenges as a base-layer frame for what neurodiversity *is*, can remove stigma to help evaluate costs and opportunities with more clarity (“you aren’t an “overthinker,” you are someone who is perceptive, intelligent and analytical, which is obviously a strength that benefits you in life and work; the downside of those things is a neurotic potential to put you ‘in your head,’ ruminating and spiraling while trying to game out every scenario. We have to parse out how to optimize the

- balance to get the utility and avoid the costs.”)
- b. Addressing genes. The genetic component of mental health can be accounted for by life history strategies, as certain diagnoses are more prevalent to certain neurotype profiles (Del Giudice, 2018). The strong implication is that these strategies are not inherent predispositions to disorder. Rather, genes for life strategies are designed to exploit certain social niches, including unique profiles of risk and reward. By extension, the genetic disposition is to encounter unique patterns of resources, injuries, strategies and environments, and it is the embodied trade-offs that create unique downside risks as a byproduct of these strategies. For instance, some temperaments are sensitive to social information to heighten their general responsiveness to the environment, but high sensitivity to the environment can backfire when it heightens the dysphoria of social injuries, a particular risk in toxic environments with a high distribution of stressors. This account is consistent with the evidence on schizophrenia, including both the heritable components, and the social defeat hypothesis, which shows that environments that promote excessive defeats in a critical developmental window are implicated. Examples of multilevel evolutionary psychological mechanisms like this are important because they challenge the very foundation of mental health stigma and the assumption that mental health may reflect a natural social order to justify poor social positions as an innate quality. This is the promise of a “purpose, not pathology” lens, and it offers tools about how to face and frame social injuries, social pain and social positions constructively.

- c. Neurodiversity and niches. Neurodiversity and niches intersect to provide different “recipes” for an ideal niche of fit. This means identifying the most likely paths to sustainable meaning and social success, building a life that meets a client’s unique needs, and creating a lifestyle that can buffer their biggest risks for social pain. Niche frames help deal with the challenges of things like ADHD or ASD in a future-oriented, strengths-based way. For instance, the goal is not to accommodate a disability, but to create an environment to align with one’s strengths and strategize around one’s challenges. In relationships, culture change is needed to understand and respect normal differences across cognitive diversity, and to empower and support an equal with different needs. This positions the therapist as not having a power imbalance of being healthy and normal relative to the unhealthy, abnormal client; both equally face unsustainability factors in their lives, and have individual differences in how they show up.
- d. Evolutionary strengths. Evolutionary frames can matter-of-factly boost strengths-based resources. For instance, ADHD “impulsivity” is more accurately reframed as “responsivity,” and it is commonly a strength found in dynamic work environments like hospital ERs, crisis response units, restaurant kitchens, and socially-facing fields like consulting, counseling, journalism or teaching. With ASD, social frictions are a trade off of values in ethics and truth that lead to rational ethical maximization, which can generate conflict in social settings when truth is prioritized over social connection. Orienting individuals to their strengths as a way to frame trade-offs to gauge new ways of optimizing the benefits versus the costs, creates more

constructive strategies and motivations for doing so. It also helps people self-advocate from a place of confidence against unfair relational or political dynamics that prevent equity and empowerment.

- e. Niche structuring. The “recipe” for neurodiverse people will often be similar to those who share sub-clinical traits in their family or community. That involves mental, behavioral and social ways to structure neurodiverse trade-offs to support sustainable, values-aligned meaning with fewer threats. The clinically neurodiverse may seek more tools to scaffold the bigger challenges. Ways of organizing themselves against decision-fatigue, unstructured time, lack of efficacy, task prioritization, and so on, all of which can reduce the resources of meaning and amplify the threats of friction. Addressing niche factors at this finer grain of cognitive costs and resources can help build healthy niches for all clients on the neurodiversity spectrum, however, and may generally be useful to offsetting the costs of cognitive trade-offs such as the exploitation-exploration trade-off which can compromise efficiency in thinkers and creatives.

- f. Neurodiversity and evolutionary psychology. Framing unique therapeutic challenges for different neurodiverse strategies, regardless of where they fall relative to their clinical status, can help frame problems for the purpose of goals and alliance. For instance, mood volatility (high emotional reactivity/responsivity) is common in creatives, as is social friction and annoyance-sensitivity for thinkers; justice sensitivity affects both. These have a variety of mechanistic ways of being explained depending on the audience. Different neurocognitive strategies also have a range of

different social, cognitive, behavioral and meaning needs, and can face threats in their social world. For instance, neurodiverse strategies are often “explorer” strategies and are built for “complexity, not speed,” which can create painful challenges in personal efficacy in areas like decision-making, task-organization, prioritization, life direction, and so forth. Help does not have to be framed in terms of deficits, but leveraging strengths tied to challenges. Creatives (and those with ADHD) commonly have a social processing style (the need to “talk things out”) that leads to struggle when it isn’t well-supported. Thinkers (and ASD clients) may be slower and more deliberative and well-researched, but need to build up tools to build on previous work. Creatives may build and learn complex models but struggle to communicate their complexity and depth; thinkers may suffer moral injury when they “feel like the asshole” by sticking to what is right, not what is kind. Trade-offs are more constructive for finding ways to balance one’s needs, motivations and goals, with exposure to threats, punishers and injuries. Practical tools should be mentally-optimized to the underlying evolutionary psychological mechanisms, such as reducing ratio-strain and boosting reward motivation.

### **Purpose Tools**

Finally, here are some tools to address the third level of the model.

- a. Therapeutic microcultures and hedonic acculturation. Orienting people to microcultures that are more nurturing than can be typically found in the rest of society, allows modeling the norms, values and practices of sustainable social living as a kind of acculturation to hedonic ways of being. For many clients, that means

reframing therapy away from hypermasculine notions of “complaining,” and instead seeing it as a vehicle to explore the sustainability of different aspects of their life; for instance, the reality of social buffering as a de-stressor, or the need to energize mental resources against one’s problems in a natural relational context. Hedonic acculturation is seeing how one can move from a judgment and pessimistic frame to one of being clear-eyed and strategic in working toward something positive in one’s life and social world. As a laboratory of sorts, this milieu may help people to grapple with the unsustainability of coercive, conflict-ridden, and threat-driven ways of life and their costs, while feeling the benefits of a win-win, mutually respectful, positive relationships and social dynamics. As a worldview and practice, the goal is to facilitate the power of holistic understanding, smart intentionality, and integrative problem-solving strategy.

- b. Taking on social problems. This frame may bring a lens to a variety of social issues that manifest in the client setting. For instance, the growing radicalization of young men, and the “incel” community, may be sympathetically framed as an agonic (competitive) mindset being activated in the chapter of life when young men “compete” for life partners, which becomes exacerbated in hypercompetitive societies with poor dating markets and toxic cultures. Additionally, many young men fail to access hedonic mentalities that are increasingly gated off as a luxury of stable partnerships, societies with “altruistic opportunity,” and child rearing in communal settings, all of which require good social positioning that is exponentially inaccessible in unregulated capitalist economies. Generally speaking, this model may

contextualize individual problems with diverse social problems with lots of room for nuance, which helps externalize, normalize, validate and universalize mental distress. Consequently, this model seeks to *ally with individuals against toxic influences in the social world* over which they may have little control, and represents a political goal of framing the historical problem of humanity's "agonic" or "toxic" nature as an impediment to the more hedonic social conditions that allows cultures to evolve sustainably as part of a multilevel direction to life.

c. Social commitments and allying against toxicity. *Alignment*, the tool for harmonizing sub-niches to support one another, can also be used to identify the alignment of elements within social environments to assess the probabilities of fit, mismatch, altruistic opportunities, conflict stress, sustainability, and more. Identifying when to change unsustainable commitments and make more sustainable ones requires a) making attributions to social etiologies of mental distress, b) tools for identifying the variables of more sustainable environments, and c) building up patterns of data to create risk-tolerance and motivation for change. In this work, it is important not to dismiss "irrational" thoughts and fears, as social and experiential "data" is rich with signifiers of sustainability, and can be an important source of patterns of feedback. There is data in mental health struggles, which also makes them meaningful. At the societal level, this sometimes implicates the need to purposefully foster change in unhealthy social systems, including attributing problems to social unsustainability, and allying with clients against toxic influences. Win-win vs win-lose and toxic vs nurturing frames may be helpful. This implicates the need for political goals to

challenge unsustainable power dynamics that lead to powerlessness, coercion and entrapment, and bolstering systems that support altruistic opportunity as a source of sustainable meaning.

- d. Addressing real problems. A challenge of this model is that *problems are not in people's heads*, and *distress captures real factors in social ecologies*. If someone is demotivated, alienated or defeated, *we assume these to be dynamics of a client's relationship to their social world*, even when they cannot articulate the problem cogently. Relevant variables may be, among others, the frequency and magnitude of injuries across time and environments; an inadequate ratio of buffers to injuries; and factors predicting the loss of self-regulatory resilience, among others. These root causes lay in evolutionary psychology, evolved social dynamics, and the barriers to sustainable meaning and purpose. Mental pain should not be implicated as "irrational," "in one's head," or "mental illness," as this punishes victims of niche oppression with the reputational injury of being an unreliable narrator (see: epistemic injustice). Instead, we optimize for the evolutionary root causes threatening meaning and purpose, and externalize attributions to the predictable triggers of "threat mode" or the delusions of "motivated fantasies." This approach allows new tools to control cognitive faculties more fruitfully and with less stigma at a deeper level. A clinical trade-off may be that the stakes are higher and more daunting for therapists. Clinicians must ally with the client against poor positioning in a social world over which the therapist has little control. However, therapeutic alliance only increases by engaging the client in this space, where the client has felt

alone for some time. Said another way, this approach empowers social buffering, and seeks real tools to make tangible progress on a more realistic time scale, by helping people change their circumstances as often as it helps to accept them.

- e. Prosocial purpose. An implication of the neurodiversity literature is that there is an evolutionary basis for evolved neurotypes not just as adaptive strategies, but as “purposive” roles contributing unique goods to the moral commons. These diverse sets of ideals - to conserve different aspects of what works and make progress against the many things that do not - evolved as key foundations for different ways of being in the world. Theories like “complimentary cognition” and “moral foundations theory” hold that only together can these diverse strategies effectively coregulate the moral commons and maintain the sustainability of our collective fitness. Mental health struggles are a canary in the coal mine, telling us when we are denied these recipes for a meaningful life, and forcing us to change - if we listen to it. Each neurotype has a potential to align to a different evolved role in “something bigger than ourselves,” where we can experience this win-win alignment as a sense of meaning and purpose in tandem with other empowered people. Multilevel selection theory is increasingly seeing this as a direction in life, to create the sustainable hedonic conditions that allows humans to flexibly experiment with growth toward new “levels” of evolution, and the science tells us that we each have a part to play to align to this direction as a kind of cosmic purpose.

This model ascribes to the notion that important and constructive messages about mental health should be “baked” into the very assumptions, values and tools of a modality. A model built on sustainable meaning is prosocial, altruistic, long-term oriented, and values diverse stakeholders. The model doesn’t believe we should manage the worst in people, but seeks to align people to: a) their best potential futures, b) to each other, and c) to the best potential environments for human flourishing. Framing clinical conversations accordingly should theoretically have tangible returns: in facilitating mental resources for clients, building strong alliances, and orienting people to the important aspects of individual and collective sustainability in our time. This requires the mental health field to be able to attribute unsustainable mental costs to unhealthy social systems, and ideally, to help people embrace their conscious agency to restore the balance. Therapy can be an important vehicle for important conversations. It is important that people begin to grapple with the toxic social influences that cyclically seek to corrode society if we do not find a way to frame this problem constructively. It is important we begin to align neurotypes in a multiniche world where they can harmonize their strengths and offset their respective blinders. It is important that we see the crisis of meaning and purpose in the modern world, and help people solve it to build a sustainable future for themselves and those around them. It is important we listen to psychological distress as a call to arms to create a saner world.

### **Future Directions**

From this workshop, there have been a few things to learn and evolve the

direction of the research. First, this workshop was a qualitative exploration, and therefore has limited transferability (the equivalent of generalizability in quantitative research). It is possible to extrapolate out some of the precepts of this model both quantitatively and empirically, including testing assumptions of the model itself, of which there are many; this could include anything from exploring the clinical benefits of using these ideas and practices in session on training, to the received benefit of affirming ideas and practices on client outcomes as a form of empowerment and de-stigmatization. Second, because of information offered on barriers outlined in question 6, this clinician has already benefited tremendously from the feedback presented, and can imagine multiple ways of significantly reducing the size and complexity of the material in line with the notes offered by respondents. This includes lessons about delivering workshops such as to expect significant attrition based on the low cost of expressing interest in a workshop, and the benefits of getting feedback on those who drop out to improve participant retention up front. Third, as a basis for evolving the current neurodiversity discourse, it would be useful to see if consilience research can find some practical purchase in the research landscape. From harmonizing stakeholders to creating dynamic and rich models that take value-based stances that are pro-justice and diversity, to creating room for exploring how different approaches and perspectives can mutually-validate one another to create complex, contextual, biopsychosocial, functional paradigms. The result is a rich integrative framework that is useful and empowering, accurate and rich, prosocial and just. This may stand as a different approach to solving more narrow, proscribed problems that result in incompatible,

fragmented, narrow and reductive views that arguably carry unintended externalities of a second-order cybernetic nature (i.e., stigma or power-imbalances) when they turn people into problems.

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## List of Tables

**Table 1**

*Personality traits and their cybernetic functions.*

Trait	Cybernetic function
<i>Metatraits</i>	
Stability	Protection of goals, interpretations, and strategies from disruption from impulses
Plasticity	Exploration: creation of new goals, interpretations, and strategies
<i>Big Five</i>	
Extraversion	Behavioral exploration; engagement with specific rewards (i.e. goals to approach)
Neuroticism	Defensive responses to uncertainty, threat, and punishment.
Openness	Cognitive exploration and engagement with information.
Conscientiousness	Protection of non-immediate or abstract goals and strategies from disruption.
Agreeableness	Altruism and cooperation; coordinates goals, interpretations, and strategies

*Note.* Adapted from "Cybernetic Big Five Theory" by C.G. DeYoung, 2015, Journal of Research in Personality, 56, 33–58. Copyright 2014 by Elsevier

**Table 2***Psychological routes to conservatism and liberalism*

Negativity bias → security motivation → opposition to social change → social conservatism
Low empathic concern → power motivation → comfort w/ inequality → economic conservatism
Weak negativity bias → weak security motivation → comfort w/ social change → social liberalism
Empathic concern → weak power motivation → opposition to inequality → economic liberalism

*Note.* Adapted from "Explaining ideology: Two factors are better than one" by P. Robbins, & K. Shields, 2014, Behavioral and Brain Sciences, 37(03), 326–328. Copyright 2014 by Academia.edu

**Table 3**

*ADHD & ASD as functionally opposing poles in the cognitive niches*

ADHD	ASD
<ul style="list-style-type: none"> <li>• Aberrant salience (Hilder et al., 2020)</li> <li>• Big-picture, past-future (Carrol, 2020)</li> <li>• Optimism bias (Dimitriu, 2020)</li> <li>• Mentalizing (Del Giudice, 2018)</li> <li>• Empathizers (Baron-Cohen, 2003)</li> <li>• Holistic thought (Carrol, 2016)</li> <li>• Hyperactive DMN (Silberstein, 2016)</li> <li>• Psychopathy risk (Del Giudice, 2018)</li> <li>• Front-brained (narrative, self &amp; other)</li> <li>• Generalism (multi-interest)</li> <li>• Change frames, ideas</li> </ul>	<ul style="list-style-type: none"> <li>• Aberrant precision (Del Giudice, 2018)</li> <li>• Present (low hyperpriors; Del Giudice, 2018)</li> <li>• Negativity bias (Del Giudice, 2018)</li> <li>• Mechanistic thinking (Del Giudice, 2018)</li> <li>• Systematizers (Baron-Cohen, 2013)</li> <li>• Analytical reductionism (Del Giudice, 2018)</li> <li>• Hypoactive DMN (de Lacy et al., 2017)</li> <li>• Autism risk (Del Giudice, 2018)</li> <li>• Back-brained (perceptual; Armstrong, 2010)</li> <li>• Specialism (restricted interests)</li> <li>• Change perception, data</li> </ul>

*Note.* Evidence (and speculations) of frames that suggest ADHD and ASD as complimentary poles across the cognitive niches characterized broadly by differences in DMN activation, affect, scope and function of thought

**Table 4**

*Age, Gender, Ethnicity & Neurodiversity status: pre- and post-workshop respondents*

ID	Age	Sex	Gender	Race	Ethnicity	Neurodiverse
A	33	Female	Woman	White	Don't identify w/ ethnicities	ADHD
B	49	Non-binary / trans (AFAB)	Non-binary / trans	White	Irish/Scottish /Dutch	ADHD
C	38	Female	woman	White	Polish-American	No
D	79	Heterosexual	Male	Caucasian	Jewish	No
E	32	Male	Male	White	Jewish	Yes

*Note.* Results for all respondents, i.e. those who completed both the pre- and post-workshop questionnaire

**Table 5**

*Age, Gender, Ethnicity & Neurodiversity status: pre-workshop respondents*

ID	Age	Sex	Gender	Race	Ethnicity	Neurodiverse
Z1	34	Female	She/her	White	Hispanic	No
Z2	54	Female	White	White	Non-Hispanic	No
Z3	46	Female	White	White	Macedonian, Irish	Autistic, ADHD
Z4	25	Female	White	White	Caucasian	ADHD

*Note.* Results for the respondents who completed the pre-workshop questionnaire only

**Table 6**

*Degree, Profession, Years of Experience and Theoretical Orientation: pre- and post-workshop questionnaire*

ID	Degree	Profession	Certifications	Years Licensed	Theory
A	Master's	LCSW	No	4 years	Relational, Psychodynamic, Trauma- Informed
B	Master's	LCSW	Sensorimotor Psychotherapy - Level 1, Emotionally Focused Therapy for Couples (completed externship and 2nd level)	8 years licensed, 19 years with an MSW (didn't get fully licensed because I didn't need it to run housing programs for homeless youth)	Sensorimotor Psychotherapy, Anti- Oppression, Feminist/Queer Theory
C	Master's	LCSW	CYT	2017	Trauma- Informed, ACT, DBT
D	PhD (ABD)	LCPC	NBCC, CCMHC	27 years	Attachment, EFT, CBT
E	Master's	LCSW	No	Fully licensed 1.5 years, 5 total	Relational, Attachment- Based

*Note.* Results for all respondents, i.e. those who completed both the pre- and post-workshop questionnaire

**Table 7**

*Degree, Profession, Years of Experience and Theoretical Orientation: pre-workshop questionnaire*

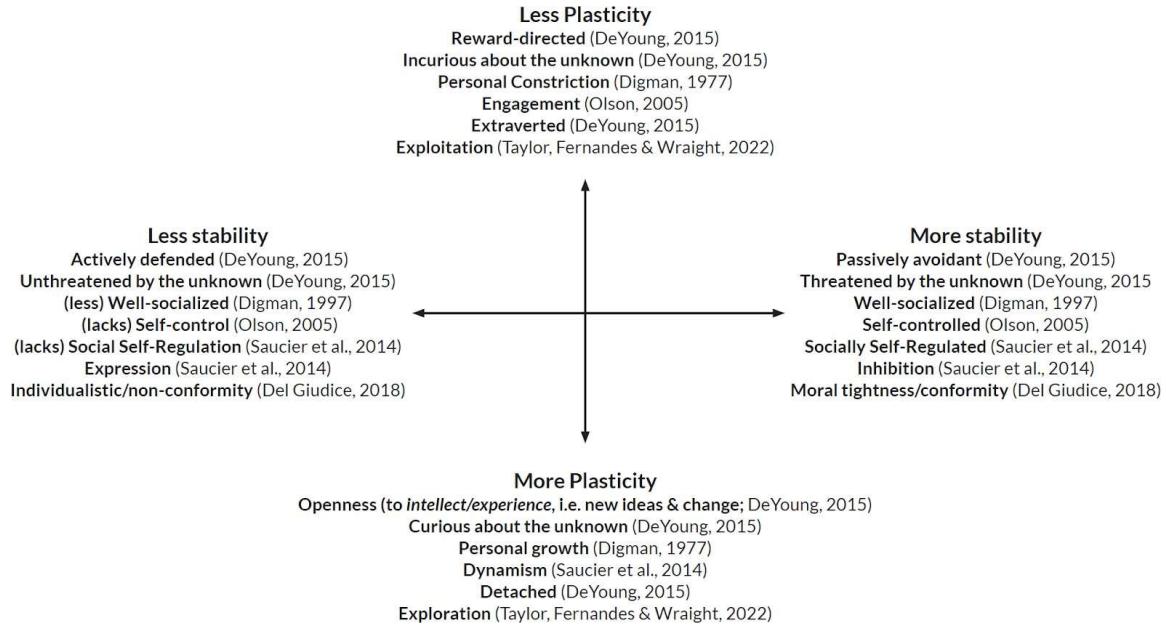
ID	Degree	Profession	Certifications	Years Licensed	Theory
Z1	Doctorate	PsyD, LPC	Health Service Psychologist, NCC	LPC (7 years), PsyD (<1 year)	Humanistic, Relational
Z2	MS Psychology	PsyD, LPC	AADC	30 years	CBT
Z3	Master's	LCSW	NA	4 years	Sensorimotor, Psychodynamic
Z4	Master's	LPC	CTP	8 months	Relational-Cultural, Trauma-Informed, Feminist

*Note.* Results for the respondents who completed the pre-workshop questionnaire only

## List of Figures

**Figure 1**

*Plotting meta-trait as opposing poles*

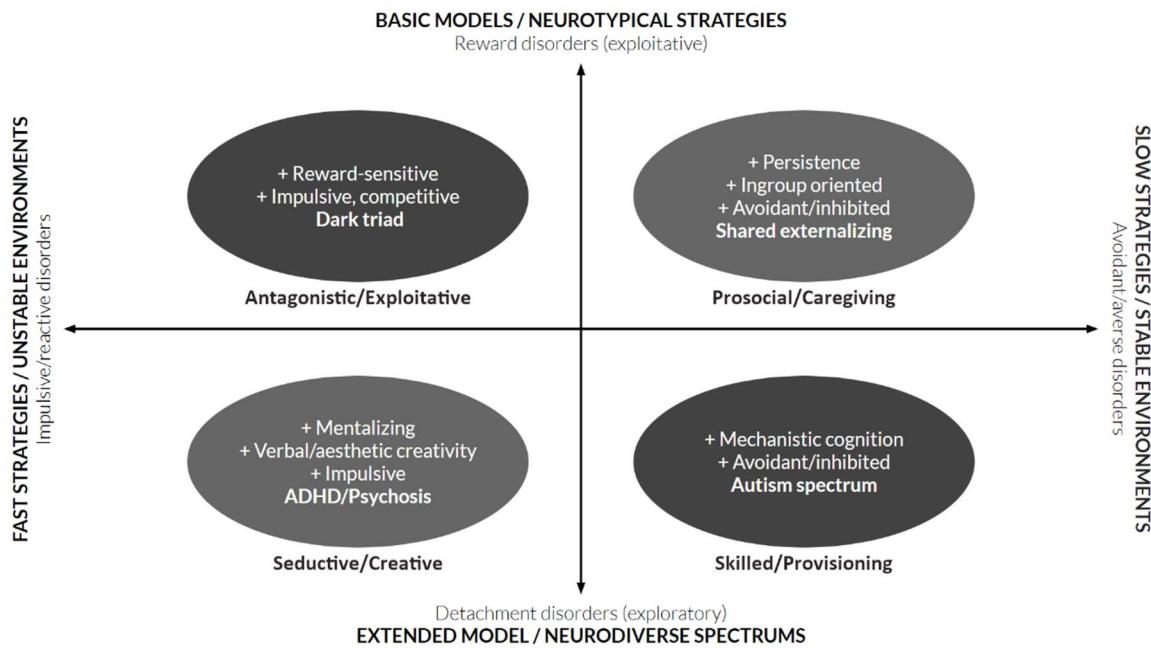


*Note.* Adapted with modifications from "Cybernetic Big Five Theory" by C.G. DeYoung, 2015, Journal of

Research in Personality, 56, 33–58. Copyright 2014 by Elsevier

**Figure 2**

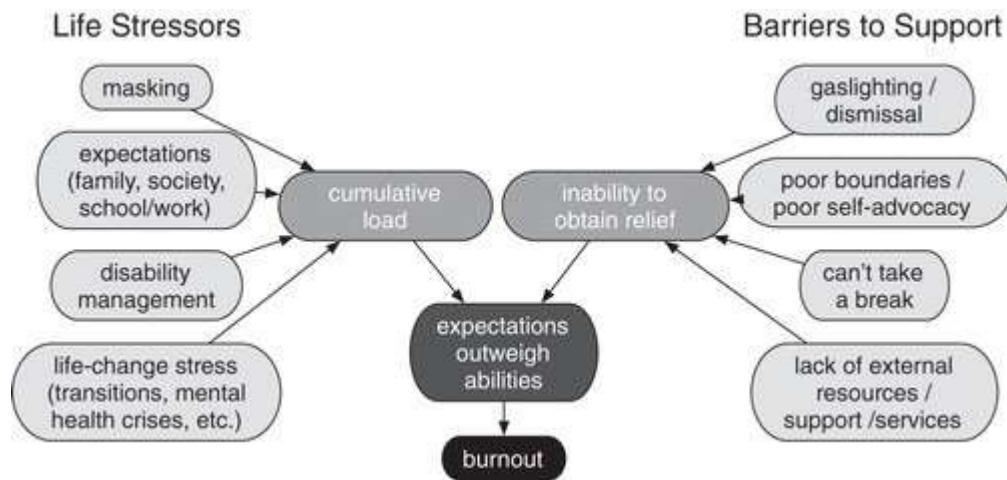
*Plotting life history strategies as a quadrant model*



*Note.* Adapted with modifications from “Evolutionary Psychopathology: A Unified Approach” by M. Del Giudice, 2018, Oxford University Press.

**Figure 3**

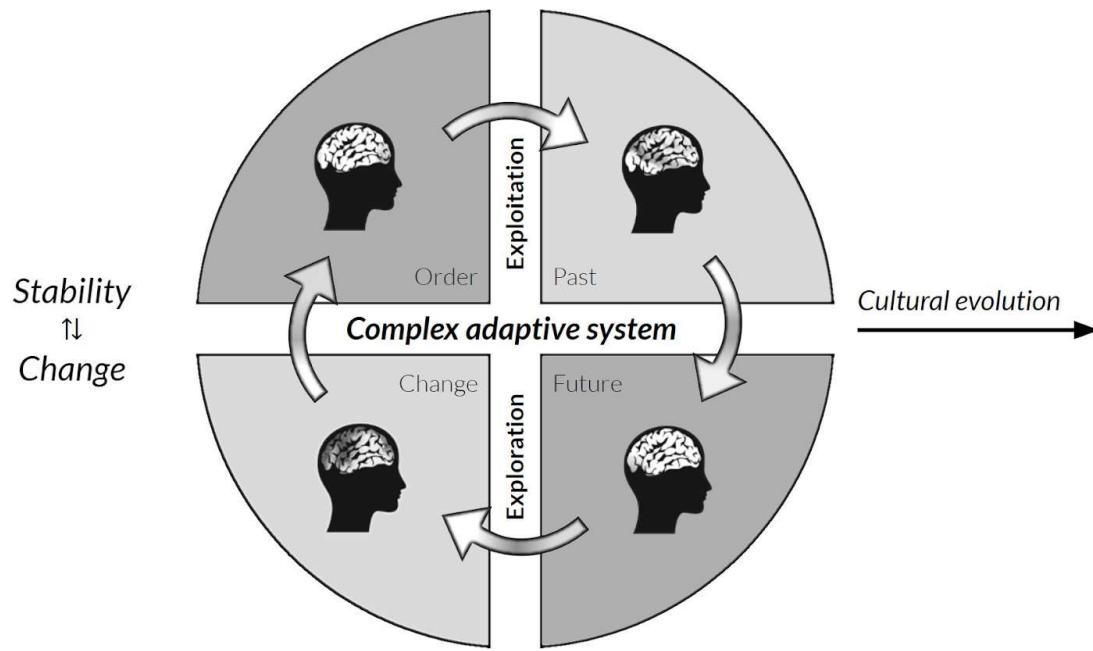
*Autistic burnout conceptual model*



*Note.* From ““Having All of Your Internal Resources Exhausted Beyond Measure and Being Left with No Clean-Up Crew”: Defining Autistic Burnout,” by D.M. Raymaker, A.R. Teo, N.A. Steckler, B. Lentz, M. Scharer, A. Delos Santos, S.K. Kapp, M. Hunter, A. Joyce, & C. Nicolaidis, 2020, *Autism in Adulthood*, 2(2), 132–143. CC-BY-NC-4.0 (<http://creativecommons.org/licenses/by-nc/4.0/>)

**Figure 4**

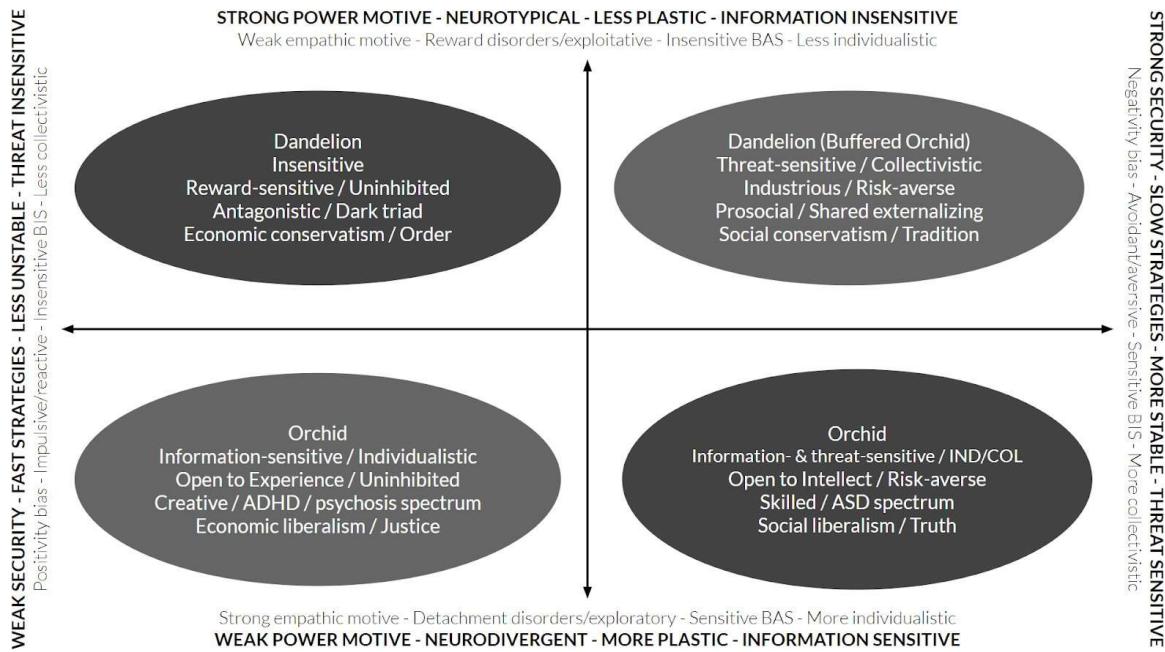
*Visualizing complimentary cognition as a social change process*



*Note.* Adapted with modifications from “The Evolution of Complementary Cognition: Humans Cooperatively Adapt and Evolve through a System of Collective Cognitive Search.” By H. Taylor, B. Fernandes, & S. Wright, 2022, Cambridge Archaeological Journal, 32(1), 61-77. Copyright 2021 by Cambridge University Press.

**Figure 5**

*Plotting the neurodiversity consilience as a quadrant model*



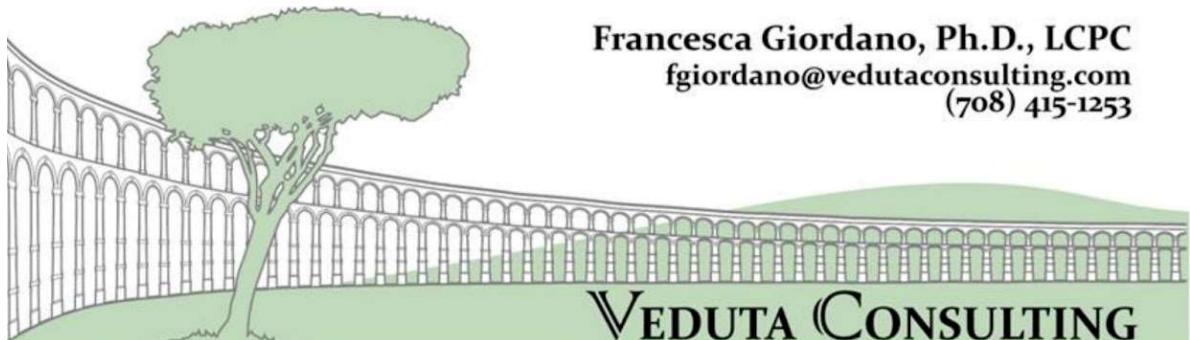
**Figure 6**

*Revising the role of genes based on mediating variables: life strategies and biosocial niches*



## Appendix A

### Letter of agreement/permission



06/22/22

Dear Adler University IRB,

Based on my review of the proposed research by Morgan Kinney, Veduta Consulting agrees to collaborate with him to facilitate his study entitled Neurodiversity & Epistemic Justice: A Therapeutic Consilience. As part of this study, I authorize the researcher(s) to post recruitment flyers on the [ChicagoTherapists@groups.io](mailto:ChicagoTherapists@groups.io) listserv and Chicago Area Mental Health Professionals Facebook group, register participants for the workshop, send pre/post surveys, and send out workshop certificates. Individuals' participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include: consultation on workshop development, marketing, and execution; infrastructure, software, rooms, and resources. We reserve the right to withdraw from the study at any time if our circumstances change.

We understand that the research will include recruitment of human participants, pre-tests, and post-tests, and facilitating educational credits and certificates.

This authorization covers the time period of June 2022 to December 2022.

I confirm that I am authorized to approve research in this setting.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the research team without permission from the Adler University IRB.

Sincerely,

**Francesca Giordano, Ph.D., LCPC**  
 Principal Partner, Veduta Consulting, LLC  
 Clinical Counselor, Consultant, and Supervisor  
 8S Michigan Ave, Ste. 2800 Chicago, IL 60603  
[fgiordano@vedutaconsulting.com](mailto:fgiordano@vedutaconsulting.com)  
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**Appendix B1****Call for Participants (email)**

Dear Prospective Participant,

My name is Morgan Kinney. I am a Doctoral Candidate at Adler University in Chicago. I have developed a workshop to explore novel frames for de-stigmatizing and understanding neurodiverse individuals and their treatment by mental health practitioners, and I seek to study the impact of this model on mental health professionals. This study aims to assess the success of models that A) identify potential sources of stigma in how neurodiversity is currently framed, B) explore the roots of "normal" neurodiversity to ground a new vision of non-pathological understanding, and C) offer holistic treatments catering to strengths, challenges and niches for neurotypes facing social challenges in sometimes hostile social environments. The purpose of this study is to shift our lens on neurodiversity as a treatment in itself, as by helping to know communities in empowering, authentic ways, we help de-stigmatize mental health challenges that arise natural differences in ways of interacting with the world. Your participation in this project will help in these matters. In exchange for your participation in completing a brief questionnaire to provide feedback about the workshop, we can offer the workshop at no cost, including the continuing education units (CEUs) provided by Veduta Consulting (workshop host) necessary for professional development and licensure requirements.

If you agree to assist in this project you will need to read and sign the consent form provided in your packet and fill out the two instruments included. Upon completion, forms will be collected and secured to protect confidentiality. If you have any further questions about this project you may contact me by mail, phone, or e-mail. The necessary contact information is provided below.

Thanks for your consideration,

Morgan Kinney, LCPC  
PhD Student  
Adler University  
(207)409-0183  
[mkinney@adler.edu](mailto:mkinney@adler.edu)

## Appendix B2

### Recruitment Flyer

# Participants Needed

**Free workshop on neurodiversity and mental health  
with provided continuing education units (CEUs)**

You may be eligible if you: are a mental health professional licensed in the field

What you should expect:

- Workshop developed by neurodiverse participant-researcher doctoral student on novel destigmatizing frames for understanding neurodiversity and treating neurodiverse individuals
- A 7-question questionnaire about mental health and neurodiversity to be done before and after the completion of a workshop; CEUs contingent on receipt of questions.
- Participation is completely voluntary and you may end participation at any time.
- Your participation and information will be kept confidential.

**INTERESTED? INDIVIDUALS SHOULD CONTACT:**

Morgan Kinney ([mkinney@adler.edu](mailto:mkinney@adler.edu)); Veduta Consulting  
([fgiordano@vedutaconsulting.com](mailto:fgiordano@vedutaconsulting.com))

**QUESTIONS? PLEASE CONTACT:**

Morgan Kinney ([mkinney@adler.edu](mailto:mkinney@adler.edu)); Tsui-Yee Chow ([tchow@adler.edu](mailto:tchow@adler.edu)); or the Adler Institutional Review Board ([IRB@adler.edu](mailto:IRB@adler.edu))

### Appendix B3

#### Permission to Recruit

Dear Prospective Participant,

My name is Morgan Kinney. I am a Doctoral Candidate at Adler University in Chicago. I have developed a workshop to explore novel frames for de-stigmatizing and understanding neurodiverse individuals and their treatment by mental health practitioners, and I seek to study the impact of this model on mental health professionals. This study aims to assess the success of models that A) identify potential sources of stigma in how neurodiversity is currently framed, B) explore the roots of "normal" neurodiversity to ground a new vision of non-pathological understanding, and C) offer holistic treatments catering to strengths, challenges and niches for neurotypes facing social challenges in sometimes hostile social environments. The purpose of this study is to shift our lens on neurodiversity as a treatment in itself, as by helping to know communities in empowering, authentic ways, we help de-stigmatize mental health challenges that arise natural differences in ways of interacting with the world. More information can be facilitated by contacting the PI (information below).

Your participation in this recruitment for this project will help in these matters. Participants will complete a questionnaire (7 questions) before and after the workshop to gauge attitudes, beliefs and reactions. We will be offering the workshop at no cost, and providing continuing education units (CEUs) necessary for professional development and licensure requirements.

If you have any questions or would like more information, please see the contact information below or you may contact the Adler Institutional Review Board at [IRB@adler.edu](mailto:IRB@adler.edu).

Please send an email confirmation that provides permission to post the recruitment post.

Please feel free to pass this study information to other people who might be willing to participate!

Thank you in advance for your time and consideration.

Morgan Kinney, LCPC  
PhD Student  
Adler University  
(207)409-0183  
[mkinney@adler.edu](mailto:mkinney@adler.edu)

## Appendix C

### Consent Form

#### Purpose of the Study

This form is to provide consent for participation in a research project designed to explore novel perspectives to destigmatize neurodiversity and better understand relevant mental health issues and treatment. We would like to invite you to participate in this research project; participation is voluntary, and can be revoked at any time. Your participation will aid in clarifying the utility of destigmatizing models of neurodiversity and mental health treatment, as well as assess the practicality of potential tools.

#### What to expect

You must be over the age of 18 to participate in this study. If you choose to participate in the study you will be asked to fill out a short demographic form and fill out a pre-workshop questionnaire of seven open-ended questions prior to taking a workshop, and you will take the questionnaire again after the workshop. Your responses to these questionnaires will be submitted via an anonymous document sent to your email that will be forwarded to the primary investigator devoid of identifying information. Afterward, there may be a limited number of clarifying questions sent by email. At the end of the study, any select excerpts used in the dissertation will be sent back to the participant to ensure their agreement with the interpretation offered, a process called *member checking* to ensure accuracy and trustworthiness in the analysis process.

Please see the workshop flier for information on the workshop. As part of taking the workshop, there will be some activities including answering questions, discussions, and self-inventories typical of most workshops. The workshop is developed by Morgan Kinney, a staff member at Veduta Consulting and the primary investigator in the study. Veduta Consulting is partnering in the delivery of the workshop as part of its delivery of continuing education materials. It is important to note that no one but the primary investigator, including anyone at Veduta Consulting, will be privy to any data collected in this study at any time, including an assistant who will aid directly in the workshop and study only by helping to keep data secure and anonymous. All data will be transmitted through secure email and will be kept on a secure PC in the primary investigator's home. No answers or participation in the study will affect the ability of workshop participants to receive continuing education units, nor will they impact any services one might receive from Veduta Consulting.

#### Confidentiality and withdrawal from participation

Questionnaire responses will be stored on a password-protected computer at the private investigator's home and kept confidential until the conclusion of the study, approximately 1 year, and then destroyed. You have the option of matching these security precautions, or else accepting whatever degree of security you would like to maintain as sufficient to your standards. Portions of your answers may be excerpted as

quotes in the dissertation itself to illustrate themes and findings, and as such, you have the option of not answering questions or redacting answers as you feel compelled. All quotes will be separated from identifying information and mixed with other de-identified quotes to avoid attribution. We will engage in “member checking” after each section to reaffirm your comfort with the process, agreement with consent and willingness to proceed.

### **Benefits**

The study seeks to contribute to our understanding of neurodiversity, de-stigmatizing mental health practices, and integrative research practices.

### **Risk**

There is minimal risk involved for participation in this study, however, some participants may find some of the questions uncomfortable to answer (e.g. questions about your beliefs or experiences with neurodiversity and mental health).

If you are willing to participate in this research project, please indicate your willingness to do so by signing this consent form in the space provided below. If you have further questions about the study you may contact Morgan Kinney as the primary investigator ([mkinney@adler.edu](mailto:mkinney@adler.edu)), my dissertation chair Tsui-Yee Chow at ([tchow@adler.edu](mailto:tchow@adler.edu)), or the Adler IRB ([irb@adler.edu](mailto:irb@adler.edu)).

Thank You,

Morgan Kinney, LCPC  
PhD Student  
Adler University

By signing this form, I indicate my willingness to participate in this research project. I understand that I may withdraw my participation at any time without consequence.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Appendix E1****Demographics questionnaire**

Morgan Kinney  
Adler University

1. Name:
2. Age:
3. Identified sex:
4. Ethnicity/race:
5. Neurodiverse identification:
6. Highest degree:
7. Licensure:
8. Certifications:
9. Provisional or full license?
10. How long have you been licensed:
11. Primary theoretical orientation:

## Appendix E2

### Questionnaire

Morgan Kinney  
Adler University

#### Medical Model

1) The neurodiversity movement is partially defined in resistance to the medical model of diagnosis and treatment - what is your relationship to the medical model as a frame for understanding people's mental health troubles and their treatment?

2) In relation to the medical model, what is the risk of stigma, and how does it impact our understanding of mental health troubles and treatment?

#### Neurodiversity

3) What is neurodiversity in your view, and how have these views evolved?

4) What are your beliefs about the origin and nature of ADHD/ASD? I.e. what IS ADHD/ASD?

#### Expectations/Reactions

5) What do you hope to gain/did you gain from a neurodiversity workshop?

6) What would be/was a barrier or constraint to understanding or using neurodiversity workshop information?

7) How do you hope/see this knowledge impacts/ing how you move forward in your work/care of neurodiverse clients?

## Appendix F

### Member checking email

Dear colleague,

Thank you again for your participation in the workshop Neurodiversity and Epistemic Injustice and the related study. Your answers were thoughtful, impactful and helped to shape useful directions for further study.

Attached is a transcript of your answers to both the pre- and post-workshop questionnaires for you to confirm your answers. This is part of a process called “member checking” where we hope to ensure the trustworthiness and credibility of the research by allowing you to confirm the clarity of the information provided. **You are not required to do anything further with this transcript.** The point is to give you the opportunity to ensure the fidelity of your responses, and give you a chance to amend them if you see fit (please note: you do not need to be concerned about spelling, as it will be corrected in the report; grammar will likely be preserved, however, and can be changed if it improves the clarity of your meaning).

For each of the 14 answers in your transcripts, below are three questions to guide how and why you might alter your responses:

1. Do the transcribed responses match your intended sentiment?
2. Do you want to change anything?
3. Do you want to add anything?

If you would like the opportunity to add or change something, please respond inline or below the original answer. Feel free to elaborate on why you thought the change is necessary.

In select cases, one or two lines in your responses have been highlighted to invite any clarification of your intended meaning and a researcher note provides further information. This would be to remove some minor ambiguity or ensure accuracy of an interpretation; **there are no wrong answers, and no answers need to be changed.**

Please keep in mind the point is to clarify the original intention, not to revise your perspective in hindsight. The goal is to ensure accuracy in the original messaging as conveyed, and less to update your views. This is to avoid giving some respondents the opportunity to add a second data collection point that not all respondents might take advantage of, which might complicate the interpretation of results. It will be up to the researcher’s discretion to make choices where this boundary might lay.

If you make any changes, simply attach them to an email response and they will be returned to the researcher in their de-identified forms. You will have two weeks to

complete any changes; if we do not hear from you by Friday, August 25th, 2023 we will assume you have decided not to alter your responses for the final report.

**Please refer back to the informed consent for any further questions about the study including subject protections, ethical considerations, points of contact and more.**

## Appendix G

### IRB Approval Form



October 24, 2022

Dear Morgan Kinney

The Institutional Review Board has evaluated your submission.

Researcher Name: Morgan Kinney

Protocol Title: Neurodiversity and Epistemic Justice: A Therapeutic Consilience

Protocol Number: 22-121

Chair: Dr. Marina Bluvshtein

**Submission is a [ ] First time submission, [ x ] Revision to a protocol, [ ] First time submission of an amendment, [ ] Revision to an amendment, [ ] Use of archival dataset**

Your protocol has now been reviewed and received **Approval**. This decision means that you may proceed with your plan of research as it is proposed in your protocol.

Please note that if you wish to make changes to your protocol, you must provide written notification to the IRB in advance of the changes. **You may not implement those changes until you have received an Approval letter from the IRB.** Please note that once you as a student graduate from Adler University, or you as a staff member, core faculty member, or adjunct faculty member are no longer employed by Adler University, that the IRB approval for your research will be considered expired. Should you decide to continue your research, you will need approval from the IRB review board at your respective place of employment or institution. Please feel free to contact myself or other IRB committee members should you have any questions.

Sincerely,

Catherine McNeilly, PsyD, CADC  
Chair, Institutional Review Board

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