

# Unifying theories of human action

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Comprehensive exam paper 2

## Abstract

Sustainability scholars and practitioners have long relied on the natural sciences to understand environmental dynamics. However, to be successful, we must understand why humans – a crucial driver of environmental dynamics – do what they do. Unfortunately, these theories of why humans do what they do – Theories of Human Action – are strewn across multiple social science disciplines. This hinders interdisciplinary diffusion, preventing scholars from gleaning insights from other fields and developing a more unified theory of human action. To address this deficiency, I review and synthesize more than 50 Theories of Human Action from across the social sciences. I elucidate three metatheoretical underpinnings of these theories and reveal common action determinants. I end by adapting these metatheories and determinants into a unified framework. This framework, I hope, will spur a more interdisciplinary study of human action that enables sustainability scholars to finally understand why humans do what they do.

## 1 Sustainability needs social sciences

Social sciences have historically played a small role in sustainability, though their importance has long been explicitly recognized (Leopold, 1949). Every sustainability issue has a human dimension, which social science is best positioned to address. Answering this call, the burgeoning conservation social sciences – i.e., a subset of the classic and applied social science disciplines that focus particularly on conservation or environmental management – are becoming more salient (Bennett et al., 2017; Teel et al., 2018). However, the potential for social science transcends these fields that explicitly focus on the environment. Copious social science research exists that is not pointedly conservation-focused, offering much to conservation. Whether coming from a study of energy use by psychologists (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2018) or diffusion of agricultural innovations by rural sociologists (Rogers, 2010; Mascia & Mills, 2018), social science can provide much insight into sustainability.

## 1.1 Theories of Human Action are key for conservation

What exactly makes these psychological and sociological studies useful? They are useful because they suggest why humans act the way they do – i.e., they provide what I will call Human Action Theories. Conservationists can take these findings about how humans act, and apply them to their own environmental systems of analysis. For example, Schultz et al. (2007) showed how human actions are in part determined by descriptive and injunctive social norms. This social norm theory of human action was then used by the company Openergy to persuade people to decrease their energy consumption. It worked. Over 10 years, utilizing social norm theory led to savings of more than 1 billion dollars(USD) and 13 billion pounds of CO<sub>2</sub>. This is the equivalent of the electricity needed to power 1 million U.S. homes for a year (Schultz et al., 2018).

Beyond actually changing human actions, Human Action Theories can also offer many resources to researchers (Fawcett, 1978). They can **organize**, **summarize**, and **communicate** research; explain what parts of the system should be **focused** on; and how to **observe** the focal aspects. Theories can **clarify** how to interpret these observations. When observations are sufficiently explained, theories can **guide** new research directions. Perhaps the most salient aspect of a theory may be its utility in **predicting** (modified from Bross, 1954; Littlejohn, 1983). In short, Human Action Theories can aid sustainability scholars in identifying what factors are important for understanding, predicting, and affecting human action.

## 1.2 Problem: Human Action Theories are strewn across many disjunct fields

However, there is no one human action theory to use. Numerous human action theories are developed independently, often in isolation, in many different social science fields and sub-fields. This independence makes using, comparing, and improving Human Action Theories difficult. Specifically, it prevents theory 1) **generalizability**, 2) **context internalizability**, 3) **complementarity**, and 4) **assumption explicability**.

### 1.2.1 Generalizability

For example, a social movement theory from Sociology – Polletta’s Narrative Theory – and a theory of fulfilling action from educational psychology – Self-determination Theory – both stress the importance of autonomy: of not being externally directed (Polletta, 1998; Ryan & Deci, 2000a, 2000b). Yet they call these factors different names: “internal perceived locus of causality” (IPLOC) in Self-determination Theory (Ryan & Deci, 2000a, 2000b) and “spontaneity” in Narrative Theory. This prevents cross-fertilization between these theories, and precludes any recognition of a generalized importance of this factor. In short, the isolation of these theories prevents **generalizability**.

### 1.2.2 Context internalizability

Instead of sharing analogous factors, sometimes different theories have unique factors. These differences could be important, in either revealing that one theory is missing something crucial (generalizability) or revealing key differences in theory contexts. For example, the Extended Parallel Process Model (EPPM) does not contain an autonomy factor (Maloney, Lapinski, & Witte, 2011). Is this because, although autonomy is important, EPPM scholars have simply not thought to examine it? Or is there something about the context under which EPPM is applied – fear appeals – that makes autonomy not important? The dearth of interdisciplinarity prevents us from distinguishing between these options. That is, differentiating between theory **generalizability** and **context internalizability** is prevented. Bross (1953, p. 172) underscores the importance of explicit recognition of context-dependence:

The evaluation of a model is therefore dependent on the situation in which it is used; it is not *intrinsic* (i.e., dependent only on the model itself). If this point is understood several apparent paradoxes in science disappear. One such paradox is the simultaneous use of two contradictory models. An example of this paradox occurs in the field of physics in which a *wave* and a *photon model* for light are both accepted. Wave theories are used when *they* provide successful prediction, and in other situations the photon theory is employed.

In other words, if the context and target of a model is not intrinsic to the model, then theory testing, building, and application will be hindered.

### 1.2.3 Complementarity

Theory isolation also obfuscates complementarities between theories. These complementarities can provide synergies that improve each theory. For example, although EPPM does not contain an autonomy component, it does contain an effectiveness component, which is present in Self-determination Theory. Self-determination Theory posits that people feel “competent” about something when they have self-efficacy (Ryan & Deci, 2000a). In contrast, EPPM divides efficacy into two components: self-efficacy and response efficacy (Maloney et al., 2011). Perhaps cross-pollinating EPPM and Self-determination Theory could make both theories stronger. Each theory may give a complementary assessment of the system (Weinberg, 2001). Importantly, from the standpoint of a scientific observer, theories are constructions, representations, of human action. They are not a re-creation of the thing itself (A. Kaplan, 1964; Bourdieu, 1990). Bourdieu (1990, p. 12) writes:

This construct, which the users would no doubt accept, and which makes it possible to account for the quasi-totality of the relevant facts (or those produced by observation or questioning armed with this model), or, rather, to recreate them, (theoretically) without being obliged to undertake an interminable narrative, is not as such the principle of agents’ practice. The generative formula which enables one to reproduce the essential features of the practices treated as an *opus operatum* is not the generative principle, of the process, the *modus operandi*.

In other words, theories are developed from a particular scholarly orientation, and reflect this orientation. They do not reflect the orientation of the human actor. Rather than trying to overcome this actor/observer or practice/abstraction dichotomy, in this text I target the observer 1/observer 2/.../observer n or abstraction 1/abstraction 2/.../abstraction n complexity, and attempt to understand the complementarities between them. In our example, a synergistic combination of these theories could perhaps advance both our understanding of how humans react to fear appeals, and how to intrinsically motivate them.

#### 1.2.4 Assumption explicability

Finally, different theories make different, and often implicit, assumptions about how humans act. Intertheoretical dialog can highlight these different assumptions, enabling us to contend with them directly. For example, EPPM and Self-determination Theory provide different strategies for explaining human action. Self-determination theory “focuses primarily on psychological needs” (Ryan & Deci, 2000a, p. 57), while EPPM is concerned with persuading people to make different choices. This reflects a fundamental and unanalyzed difference. Though both theories include an element of efficacy, EPPM looks to it as a driver of choice, while Self-determination Theory examines it as a necessary condition for any meaningful action. This results in different conclusions. For example, one might say that someone yells at a dog because the person perceived a loud noise, while another might say it is because the person needed quiet. Highlighting these different approaches provides us with a more complete perspective of human action and demonstrates the importance of understanding how to use and compare different theories.

Overcoming these issues of generalizability, context internalizability, complementarity, and assumption explicability will create better theories that can facilitate sustainability. A unified framework of human action theories could be a key first step.

## 2 Unifying Human Action Theories

This paper aims to create just such a unifying framework of Human Action Theories. Other synthesis attempts have been made, but have been either directed at a narrower set of theories (e.g., Kollmuss & Agyeman, 2002), or at practitioners (M. J. Stern, 2018). Kollmuss and Agyeman (2002) explored diverse theories, but limited their analysis to pro-environmental behavior, i.e., behavior that *consciously seeks* to better the environment. This is much narrower than my aim. Kollmuss and Agyeman (2002) also directed their findings only towards environmental educators. Again, I take a broader path, and hope that this will be useful to anyone thinking about the human dimensions of the environment. Other scholars have looked specifically at decision theories in an energy context (Wilson & Dowlatabadi, 2007). Davis, Campbell, Hildon, Hobbs, and Michie (2015) attempted a full-spectrum review, but used search and analysis methods that prejudiced non-psychology theories. One of the elements of their metatheory of theory utility was, “clarity of constructs ‘Has the case been made for the independence of constructs from each other?’” (Davis et al., 2015, p. 332). This statement immediately prejudices theories of practice, where, “in accounting for showering, the social, cultural and physical entities gathered under the labels of materiality,

conventionality and temporality have no independent existence, none, that is, without the forms of ‘know-how’, ‘competence’, and ‘ways of doing’ that represent and comprise what we currently understand showering to be.” (Hand, Shove, & Southerton, 2005, unpaginated). And ultimately, these reviews do not attempt to create a unifying framework (Davis et al., 2015). Finally, others have directed their reviews at practitioners instead of scholars interested in interrogating and building theories: M. J. Stern (2018) details how conservation practitioners can employ diverse theories, and begins to explain when and for what each theory is most appropriate. He provides succinct summaries of the theories, but he does not contend much with the theories themselves.

Rather than repeating any of this work, I will contend directly with human action theories themselves (rather than how to employ them *sensu* Stern (2018)), and will not limit myself to theories directed at conscious environmental behavior. My synthesis requires the following steps: 1) collecting a sufficient diversity of representative Human Action Theories; 2) characterizing each theory’s metatheoretical assumptions and action determinants; and 3) using these characterizations to construct a unifying framework.

## 2.1 Collecting representative Human Action Theories

### 2.1.1 What are Human Action Theories?

To gather theories from within the social sciences that attempt to describe the drivers of human action, a clear definition of Human Action Theory is required. I will use the following: **Human Action Theory** : *A description of a causative, directional relationship between a human action and a set of variables.* This definition differs from other conceptions of theory and human action. First, I conflate models, theories, and frameworks, *sensu* Littlejohn (1983), although there are distinctions (Hawes, 1975; Cox et al., 2016).

Second, theory definitions often require that the causative variables are *independent*. For example, Cox et al. (2016, p. 47) defines theories as describing, “a relationship between an outcome and a set of independent variables...”. However this independence requirement excludes a dominant metatheoretical assumption in sociology and anthropology (see discussion about Davis et al. (2015), above). In the Theory of Practice, action is a result certain variables (habitus and fields), and simultaneously constitutes those same variables.

Third, I intentionally use the term, ‘action’ instead of ‘behavior.’ Behavior is commonly used to refer to individual actions by fully agentic actors, and is centered in psychology (e.g., P. C. Stern, 2000). Indeed, much of the work on the human dimension of environmental issues has focused on individual ‘behavior,’ potentially limiting the body of knowledge accessible to environmental scholars (Shove, 2010). Individual behavior theories form an especially dominant way of seeing the world – environmental topologies – both in research and policy arenas (Shove, 2010). These topologies can exclude many relevant fields and other ways of analyzing problems and enacting solutions (Brosius, 1999). Thus I choose ‘action’ as a term that has fewer disciplinary constraints.

### 2.1.2 Selecting Human Action Theories

I do not seek to include every Human Action Theory, but instead a representative, diverse set. To collect theories, I employed a variety of methods: literature search, cited sources, and scholar consultation, I conducted literature searches in Web of Science, using the following search terms “(Social Science Field)” AND “Theory” OR “Model” OR “Framework” AND “Behavior” OR “Action” OR “Practice” OR “Intention” OR “Movement” OR “Change,” where social science field is the fields listed in Table 2. I also found theories by following cited studies, and consulting with scholars from a diversity of fields, asking them about the dominant Human Action Theories in their respective fields. Of these collected theories, I chose those for inclusion that were highly cited or representative. This left me with 54 theories (see Table 1).

Table 1: Human Action Theories and selected sources

Theory	Source
Action and coping planning	Carraro and Gaudreau, 2013
Attitude-behavior correlations	Kraus, 1995
Attitude, behavior, context	Guagnano, Stern, and Dietz, 1995
Cognitive Dissonance	Festinger, 1957; Festinger and Carlsmith, 1959
Cognitive hierarchy of human behavior	Homer and Kahle, 1988; Vaske and Donnelly, 1999
Collective action theory	Bimber, Flanagin, and Stohl, 2005
Cultural cognition of risk	Kahan, Jenkins-Smith, and Braman, 2011; Kahan, 2012
Deficit model	Popkin and Dimock, 1999; Sturgis and Alum, 2004
Deliberative democracy	Miller, 1992; John, Smith, and Stoker, 2009
Diffusion model	Oberschall, 1989
Diffusion of innovations	Rogers, 2010
Elaboration likelihood model of persuasion	Petty and Cacioppo, 1986
Environment-behavior model	Hungerford and Volk, 1990
Environmental ethics	Reviewed in Dickson, 2000
Environmental mentality	Agrawal, 2005
Environmental stewardship	Bennett et al., 2018
Environmental leaders	Chawla, 2007
Exchange theory	Kotler, 2000
Extended parallel process model	Maloney et al., 2011
Giradian economics	Roe, 1996
Habits	De Bruijn et al., 2007; Gardner, De Bruijn, and Lally, 2011
Health action process approach	Schwarzer, 2008
Health belief and preventative health	Rosenstock, 1974
Identity and agency in cultural worlds	Holland, 1998

Intentional norm change	Raymond, Weldon, Kelly, Arriaga, and Clark, 2014
Model of ecological behavior	Fietkau and Kessel, 1981 (summarized in Kollmuss and Agyeman (2002))
Motivation-hygiene theory	Herzberg, 1968
Motivation crowding-game theory	Gneezy and Rustichini, 2000
Motivation crowding-norms	Gneezy and Rustichini, 2000
Narrative theory	Polletta, 1998
Norm activation model	Schwartz, 1977; De Groot and Steg, 2009
Nudge theory	Wilk, 1999; Thaler and Sunstein, 2008
Psychometric paradigm	Slovic, 1987
Reasonable person model	S. Kaplan and Kaplan, 2009
Relationship marketing	Morgan and Hunt, 1994
Risk perception attitude framework	Rimal, 2001
Self-affirmation theory	Cohen and Steele, 2000
Self-determination theory	Ryan and Deci, 2000a, 2000b
Self-efficacy	Bandura, 1977
Shared decision-making	Weiss, 1995
Social intuitionist model of moral reasoning	Haidt, 2001
Social movement framing	Benford and Snow, 2000
Social norms	Schultz et al., 2007; Farrow, Grolleau, and Ibanez, 2017
Socioecological systems framework	Mcginnis and Ostrom, 2014
Stage model of fear communication	de Hoog, Stroebe, and de Wit, 2007
Strength model of self-control	Hagger, Wood, Stiff, and Chatzisarantis, 2010
Systematic/heuristic processing	Chaiken, 1980
The Arithmetic of compassion	Västfjäll et al., 2016
Theory of planned behavior	Ajzen, 1985
Thinking fast/slow	Kahneman, 2011
Transition management	Reviewed in Shove and Walker, 2007; Shove, 2010
Transtheoretical model of behavior change	Prochaska and Vlincer, 1997
Value-belief-norm theory	P. C. Stern, 1999, 2000

### 3 Theory characterizations

Reaching back to the revolutionary work of Linnaeus, scientists have recognized that categorization is necessarily imperfect and sometimes arbitrary, but also very useful (Dear, 2006). My characterizations of Human Action Theories are surely imperfect; despite this, I hope that they will advance our understanding of human action.

Table 2: Number of theories used from each discipline

<b>Field</b>	<b>Number of theories</b>
environmental psychology	2
health psychology/behavior	4
educational psychology	1
psychology	14
social psychology	9
sociology	9
public health	1
economics	6
environmental ethics	1
marketing	2
anthropology	4
communications	3
political science	3
business	1
environmental education	1
education	1
science & technology studies	1
interdisciplinary	4

### 3.1 Disciplines represented

Human Action Theories are derived from a broad range of fields and subfields (see Table 2). Psychology, social psychology, and sociology provided a majority of the theories. Categorizations are based on where the theory was published, the identification of the authors, and the fields in which the theory was used. Not all theories fit cleanly into a field, preventing discreet categorization. In these cases, a theory was placed in the closest field, or in multiple fields.

### 3.2 Cognitive assumptions: Thinking fast and slow

Dual-processing has become an important way of understanding how humans treat information, especially in psychology and economics (Evans, 2008). Dual-process Theory suggests that there are two ways that humans process information, one is heuristic, unconscious and fast, the other systematic, conscious, and slow (Chaiken, 1980; Evans, 2008; Kahneman, 2011). This processing dichotomy goes back to Aristotle's *Rhetoric*: he divides his persuasive appeals into two types: artistic (about the message itself) and inartistic (having to do with the context or attributes of the speaker) (Aristotle, 1954; Littlejohn, 1983). Chaiken (1980) shows how this content/context distinction is a result of dual-processing: content is salient under heuristic processing, while context dominates under systematic processing.

## Heuristic and systematic processing

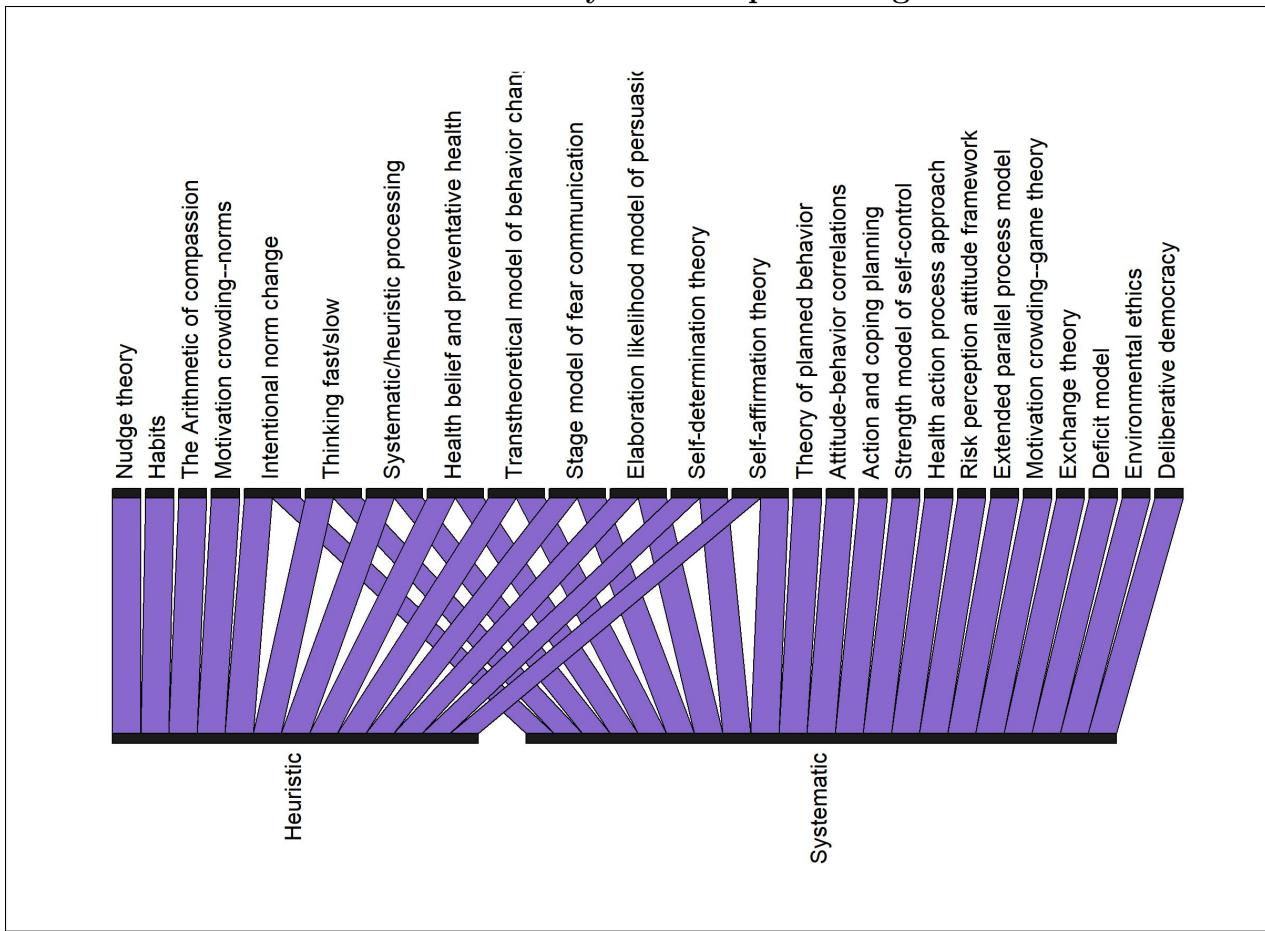


Figure 1: *Nearly half of theories – 26 – clearly treated humans as either operating using Heuristic (i.e., thinking fast) and/or Systematic (i.e., thinking slow) processing (Chaiken, 1980; Kahneman, 2011). It was especially common for theories to employ just systematic processing, thus missing a bulk of the way that humans process the world. For the remaining theories, it was ambiguous which type of processing they were targeting.*

Do most Human Action Theories follow Aristotle's lead? Largely, no. Only a sixth of the theories contended with both cognitive processes. Nearly half were clearly directed at heuristic and/or systematic processing (though often implicitly) (see Figure 1). Of these twenty-six, most were directed solely at the systematic process. For the other theories, it remained ambiguous what sort of processing was required/targeted. This analysis reveals that many theories disregard the dichotomous way that we process information, potentially ignoring a key mediator of human action. I suggest that theorists be more explicit and intentional in their assumptions about how people process information.

### 3.3 Metatheoretical assumptions of human action

Metatheories tell researchers ‘...the sorts of questions one asks and does not ask...’ (Abrams, 2015, p. 98). These metatheories shape theories, though often implicitly (Fiedler, 2008). This implicitness can frustrate efforts to harmonize divergent theories (Deci, 1976). Explicating and relating these implicit metatheoretical assumptions can help to both 1) meaningfully compare different theories and 2) investigate each metatheory’s implication.

Human Action Theories are steeped in metatheory. Metatheory tells human action researchers where to look for an explanation: “If a human does x action, what y could have caused it?” This limits the questions asked, and thus necessarily the answers obtained (Abrams, 2015), and the implications of these answers. Human Action Theories express three broad metatheory categories about why humans act the way they do, which I will call The Three I’s: Interdependent, Independent, and Intrinsic (see Figure 2).

#### 3.3.1 Interdependent

This ‘interdependent’ metatheory sees human action as an emergent property of interdependent interactions between person and context. A person’s values, identities, habits, goals, needs, etc., are all dependent on the, e.g., institutions, cultures, and politics, and these same values, in turn construct these institutions. These variables then come together to constrain agency (Vigotsky, 1978) and lead to human action (Holland, 1998). Action is both an *output* and an *input* in these theories. These factors are unintelligible and nonexistent by themselves, indeed perhaps action is the only objectifiable attribute (Lewin, 1939; Bourdieu, 1977; Heft, 2012). They must be considered in concert. Bourdieu’s Practice Theory is the archetype for much of this metatheory, though I employ a less constrained version, allowing it to be an umbrella metatheory for a diverse set of theories. The key attribute of this metatheory is the co-developed interdependency of the constituent factors and the action. Thus, this metatheory implies that no ‘ways of life’ can be taken for granted (Redclift, 1996). Everything is malleable; it is impacted by and impacts everything else (Shove, 2010).

This metatheory has emerged from ten Human Action Theories (see Figure 2), primarily coming from sociology and anthropology. For example, Dorothy Holland’s theory of agency (1998) and Arun Agrawal’s Environmentality (2005) both fit well within this metatheory. Although they use different terminology, both theories suggest that one’s actions result from a codevelopment of the person, culture, and position. This is not to say that there is no agency, but that agency itself is also more or less constrained or enabled by these codeveloped factors. In her theory of agency, Holland (1998) states: “This is our objective here: to respect humans as social and cultural creatures and therefore bounded, yet to recognize the processes whereby human collectives and individuals often move themselves – led by hope, desperation, or even playfulness, but certainly by no rational plan – from one set of socially and cultural formed subjectivities to another.”

Sufficiently flexible spaces of authoring (Bakhtin, 1981) in combination with either 1) novel situations that create improvisation opportunities or 2) familiar situations and mediation tools (Vigotsky, 1978) enable agentic action (Holland, 1998). This improvisational behavior is not merely the outcome of culture and situation, but also the beginning, an evolution, of

## Metatheoretical assumptions

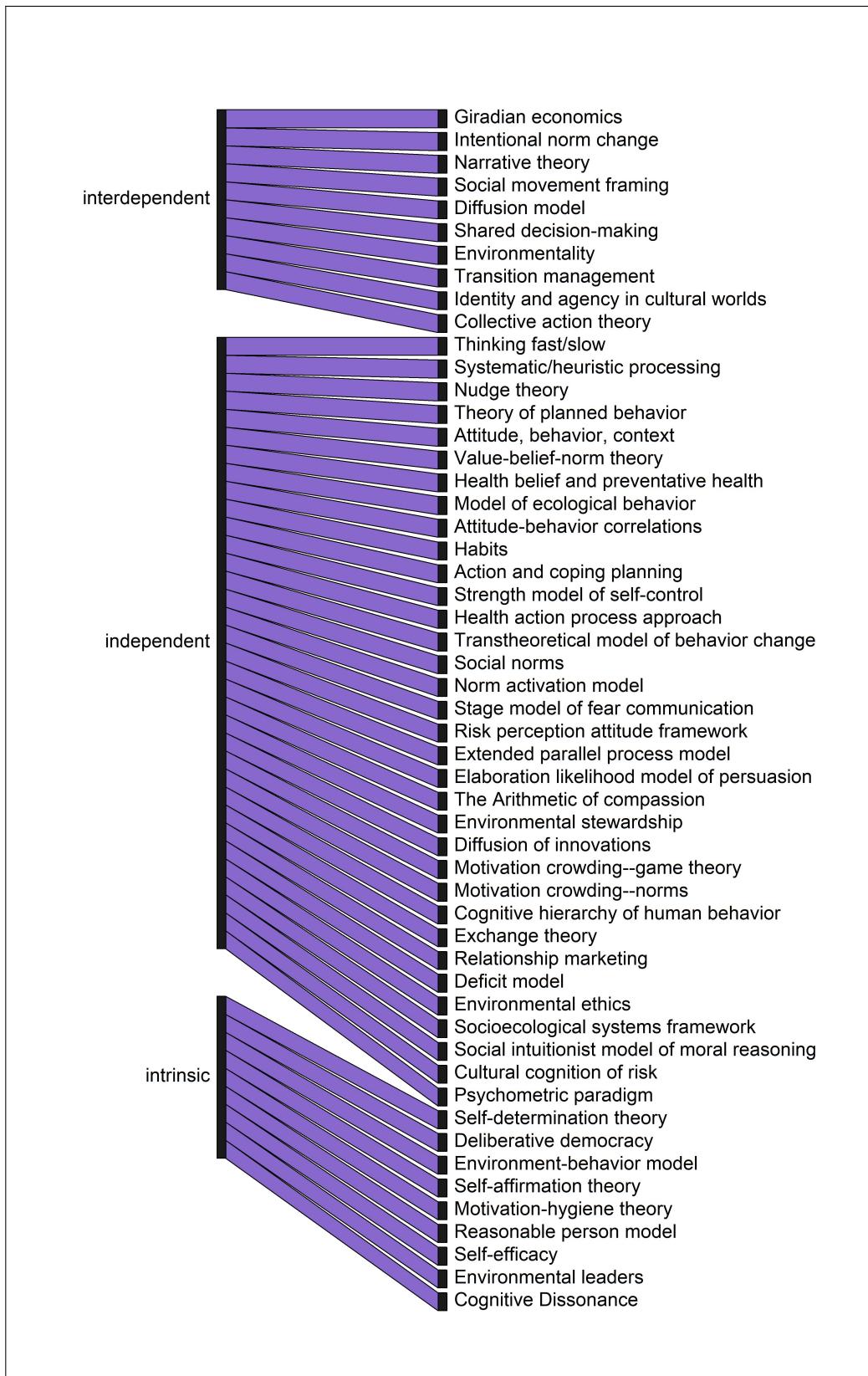


Figure 2: *Classification of the metatheoretical assumptions of each Human Action Theory.*

new cultural forms. Improvisation occurs when past experiences, habitus, are brought to bear on novel situations (Bourdieu, 1977). These improvisations are then in turn used as heuristics to “guide, authorize, legitimate, and encourage” specific human actions (Holland, 1998, p. 18). Thus, in the interdependence metatheory, individual change is seen as an improvisation, not a choice.

Unlike other metatheories which view factors as independent, this metatheory focuses on that interaction. In his Environmentality, Agrawal (2005) writes how the government’s use of statistics to represent forests not only imperialized forests, it **made** forests. The conception of the trees cannot be extricated from the governance of them.

Interdisciplinary theories also purvey this metatheory. For example, Transition Theory: “...it is important to remember that stakeholders’ visions of the future are always and inevitably shaped by the systems and social environments they inhabit today” (Shove & Walker, 2007, p. 765). This demonstrates this interdependence between worldviews and ‘context.’ Rather than viewing worldviews and values as static, this metatheory views these as dependent on everything else. This interdependence has strong implications for how we view change, for example, in using Transition Theory to understand showering practice: “change may occur as a result of disruptions within, and as a consequence of disjunctions between, the dimensions of materiality, conventionality and temporality, all of which are mediated by the practice itself” (Hand et al., 2005, unpaginated). This metatheory posits that nothing can be taken ‘as is.’ That such things as conventionality and materiality are dynamic and worthy of analysis. Real, large-scale change requires that these things not be viewed simply as background context but as the ultimate causes of action.

This metatheory can be summarized as response to the following parable: “it is as if trying to write the history of a marriage, one produces a biography of the wife, and placing it next to the biography of the husband calls it the history of the relationship itself!” (White (1995), as paraphrased by Agrawal (2005, p. 204).

### 3.3.2 Independent

Under the Independent metatheory, action results from a meeting of the essentialized self and various proximate drivers. Each object can be understood in isolation, and context is poorly defined and largely taken ‘as is.’ The self does not affect the drivers or the context – these are not interdependent.

For example, in contrast to theories embracing the Interdependent metatheory, Collective Action Frames theory takes the current world as it is, using ‘the culture out there’ as an input (Benford & Snow, 2000). This theory also includes ‘inherent ideology’ as an important factor of determining a frame’s resonance. As a mark of the metatheory, the self and culture are independent and static. However, theories do not always fit exactly into an idealized metatheory. Often while deploying the independent metatheory, they make claims about their applicability for context-dynamic, interdependent worlds: “The lessons drawn from these studies are that changing cultural resonances and collective action frames reciprocally influence one another and that framing processes typically reflect wider cultural continuities and changes.” (Benford & Snow, 2000, p. 629). But something cannot be both inherent

and mutable. This analysis highlights how implicit metatheories can lead to these internal inconsistencies. Making metatheories explicit will avoid these issues.

Independent metatheory dominates Human Action Theories – shaping 35 of these theories (see Figure 2). This metatheory is similar to Shove's (2010) category of 'ABC' (Attitude, Behavior, Choice) theories. Shove demonstrates the power of this pervasive metatheory in science and policy: when presented with unexplained human action, "the tendency is to commission further studies in the same mold. This results in a self-sustaining paradigm" (2010, p. 1276). This cyclical relationship with policymakers is a self-reinforcing barrier to innovative thinking (like a stagnant Community of Practice (Wenger, 1998)).

How does change happen in the Independent metatheory? Whereas change under the Interdependent metatheory occurs by changing the ultimate, underlying societal factors themselves, Independent metatheory sees change as happening by rearranging proximate stimuli or reshaping values. While Interdependent metatheory takes a large-scale and dynamic view of the world, Independent perspectives are most relevant at the terminus of the co-developed social, cultural, and subjective (Uzzell (2008), as cited by Shove (2010)).

### 3.3.3 Intrinsic

The third and final metatheory views human actions as driven by intrinsic needs. This theory has the smallest representation among my Human Action Theories, with nine theories operating under this metatheory (see Figure 2). For example, Self-determination Theory (Deci, 1976, p. 132-3):

...[A]ssumes that people choose what to do in order to achieve their desired end-states. That is not to say that people have free will nor even that all the decision-making is conscious; it is only to say that behavior is understandable and predictable and that a decision-making framework that views people as working to attain goals having psychological value to them seems to be a productive way of studying behavior.

Unlike the other metatheories, this one starts with the person. It first asks the question, "What are the needs" and then the world is analyzed in the context of these needs. The factors that seem relevant to these needs become the possible drivers of behavior. This metatheory is more human-focused than the preceding two – it only examines external drivers after deciphering the human needs. These theories are agnostic as to whether behavior and the attributional factors are interdependent or not, however, the foundational human needs *are* independent and universal. For example, Cognitive Dissonance theory has been used to show that behavior affects attitudes, but the underlying needs for conquering cognitive dissonance are assumed to remain impervious (Festinger & Carlsmith, 1959). It further assumes that needs are culturally and socially conserved.

This metatheory often has a strong wellbeing motivation: if conditions are created that enable humans to meet their needs, then human wellbeing will improve. For example, Self-determination Theory shows how to meet human needs for autonomy, which in turn cultivates wellbeing (Ryan & Deci, 2000b).

While the Independent and Interdependent theories tell us what assumptions to make about the interactions between different factors, the Intrinsic metatheory tells us to focus on the internal needs, and are often motivated by larger normative goals such as wellbeing, reasonableness or environmental responsibility (Hungerford & Volk, 1990; Ryan & Deci, 2000b; S. Kaplan & Kaplan, 2009).

### 3.3.4 Reconciling The Three I's

The Three I's of Human Action Theory – Interdependent, Independent, and Intrinsic – represent idealized assumptions about how to understand human action. Some argue that these differences make them incommensurable – going so far as to even call the Independent theories ‘useless’ (Shove, 2010, p. 1202) I doubt this is so. While these metatheories reflect significant differences in perspectives about how the world works, I posit that people of all ideologies can see the usefulness of different metatheories in different contexts.

When conservationists are interested in local and limited individual changes, the Independent theories may be most effective. These theories take everything else as given, and are able to focus on what proximal variables can most easily be changed (Hastings & Saren, 2003). On the contrary, if trying to mitigate the global, transsocietal problem of climate change, Interdependent theories may be best suited (Shove, 2010). They can view everything as changeable, which may be necessary to bring about the huge changes that global warming requires. Finally, to make these changes sustainable, human needs may need to be accounted for, making the Intrinsic metatheory appropriate (Herzberg, 1968; Ryan & Deci, 2000b). Each of these metatheories are best suited to tackle different problems. Directly analyzing the metatheory underpinning each theory enables researchers and policymakers to understand and implement the best solutions for every problem.

## 4 Determinants of Human Action

While the metatheories underpinning each theory are often implicit, the factors that each theory uses to determine human action are explicit, and easily gathered. These determinants present what theory elements are important. I collected determinants from all selected theories and categorized them into 24 emergent classes (see Figure 3). As outlined earlier with respect to autonomy, different theories use different names for similar determinants. This can make uniting them difficult, but I attempt to do this with my categorizations. Figure 3 shows the relationships between theories and their determinants, facilitating comparison. Some determinant classes reach across many theories (e.g., response efficacy), while others are confined to a handful of theories (e.g., exploration). Relating each theory’s determinants enables us to easily compare them and identify potential generalities, complementarities, and context-specificities. Below, I outline the role of each determinant class.

### 4.1 Identity

‘Identity’ comes largely from anthropology and sociology. Identity is the subjectivity of Agrawal’s Environmentality (2005) and identity of Holland’s (1998) figured worlds. Unlike

## Determinants used in Human Action Theories

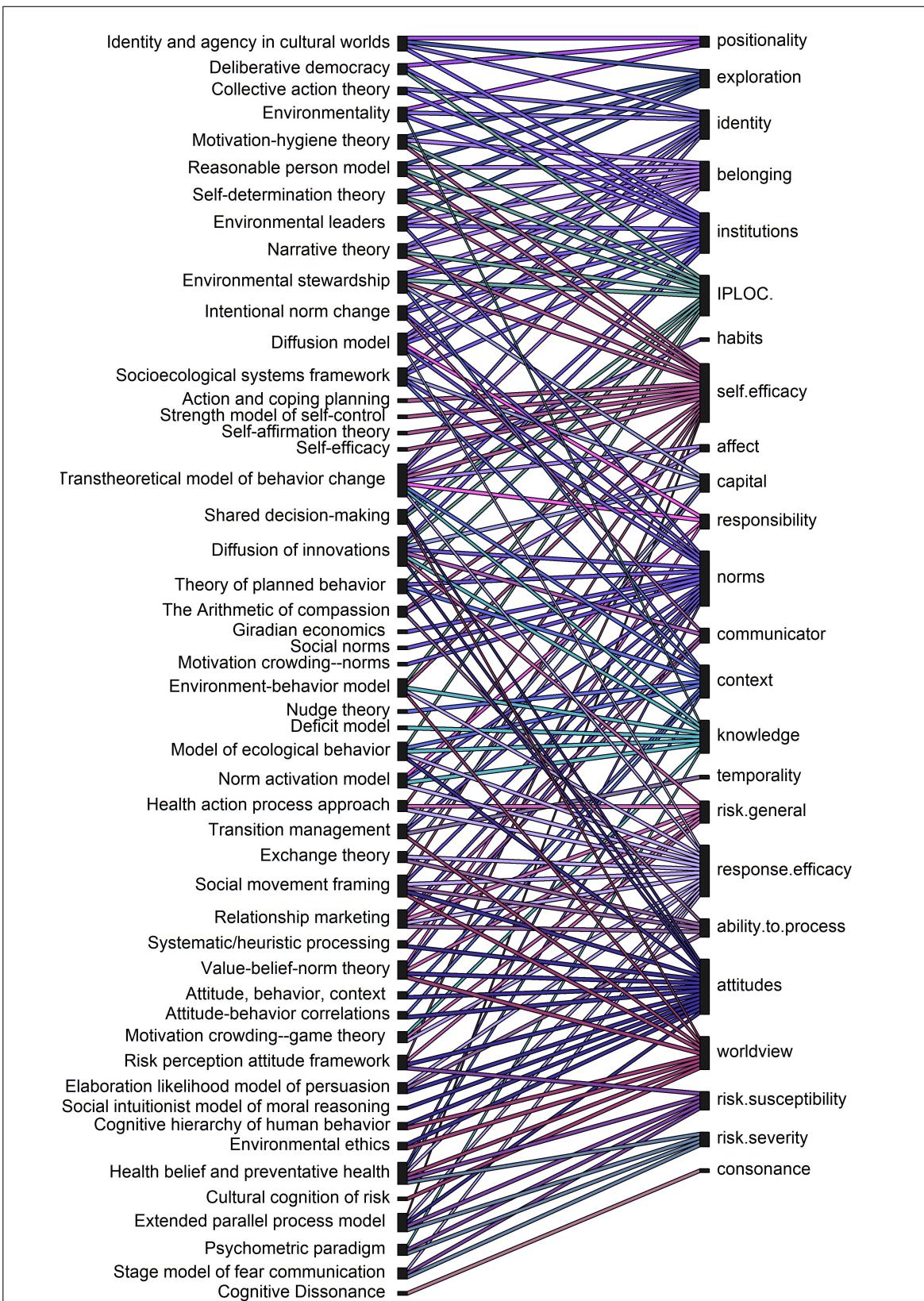


Figure 3: *Each theory is listed on the left, and each of the emergent determinants is on the right. A connection demonstrate that a theory encodes a given determinant. Note that this plot merely shows what determinants each theory encodes – it does not show the relationships between determinants, nor the way in which they affect action (or vice versa)*

culture, which is assumed to be everywhere, figured worlds are socially produced, culturally constructed activities (Holland, 1998). Figured worlds create identities, and turn landscapes into peopled experiences, replete with rich histories and stories.

In line with the Interdependence metatheory, identity is often seen as dynamic and as a process, not a state. According to (Holland, 1998), identity is the sociogenic “imaginings of self in worlds of action” (p. 5). Identities shape what we care about, and how. Anthropological conceptions of identity often focus on ethnicity, gender, race. Holland (1998) instead conceptualizes identity as developing through practices within “socially enacted, culturally constructed” worlds (p. 7) and aims to “build upon and move beyond two central approaches – the culturalist and constructivist – to understand people’s actions and possibilities. “All the perspectives we discuss assume, at least implicitly, that behavior is mediated by senses of self, or what we call identities.” (p. 8). Some identities may be more omnipresent, e.g., gender, but is still differently strong in different contexts, and are not essentialized (Agarwal, 1992).

## 4.2 Worldview

Worldview bears similarities to identity, but often comes from psychology and social psychology. This determinant class combines values, beliefs, etc, and I define it as trans-situational, long-standing beliefs about the world. Kahan et al. (2011) harnesses worldviews about social organization to understand risk perception in his Cultural Cognition of Risk theory. Stern (1999, 2000) uses the New Ecological Paradigm to measure beliefs about the environment, which are then used to predict pro-environmental behavior. Worldviews, unlike identities, are often heavily quantified.

## 4.3 Attitudes

While worldviews are seen as target-transcendent, attitudes are normally directed towards an object (Hitlin & Piliavin, 2004). Attitudes are nearly omnipresent in the psychological theories of human action (see Figure 3). These theories hold attitudes as being all-important in leading to action (Kraus, 1995), though others struggle to find such a clear relationship (Sniehotta, Presseau, & Araújo-Soares, 2014).

## 4.4 Affect

While attitudes are somewhat stable, affect is temporary and can be nebulous. Västfjäll et al. (2016) suggests that there are two types of affect: incidental (exogenous; independent of the signal) and integral (endogenous; derived from the signal) (Loewenstein & Lerner, 2002). In an early experiment, Johnson and Tversky (1983) showed the importance of this incidental affect. These two factors are consistent with Lewin’s field theory – i.e., that the response to a target is a result of the interaction between the target and the person’s experiences (Lewin, 1939). Thus, as Johnson and Tversky (1983) found, the experience of reading a newspaper will affect your response to your future environment. Thus through all of this, we see the importance of 1) the object itself and 2) the incidental affect of the subject (as determined

by previous experiences).

Affect pulls from a number of theories, primarily in psychology. For example (Prochaska & Vliger, 1997) notes the importance of dramatic relief – ‘increased emotional experience’ – for changing addictive health behavior. Prochaska and Vliger (1997) are referring to integral affect. Human action theories typically examine integral affect, not incidental. However, different scholars define affect, emotion, and moods, etc, differently. This makes disentangling them difficult. Incidental emotions (directed at a specific target) may be transferred towards new, unrelated targets (Loewenstein & Lerner, 2002), affecting things like the endowment effect (Lerner et al., 2004). However, because the cause of emotions is more salient, incidental emotions may impact decisions less than incidental moods (Västfjäll et al., 2016). This effect of incidental affect on, e.g., altruistic action can be reduced by pointing out that the mood is caused by extraneous factors (Schwarz & Clore, 1983; Schwarz, 2012).

## 4.5 Habits

Psychology theorists use habits to attempt to account for, and close, the intention behavior gap (De Bruijn et al., 2007; Gardner et al., 2011). Though, as Shove (2010) has noted, using behavior to predict behavior seems a bit circular.

## 4.6 Norms

Norms provide rules that, often unknowingly, govern the ways we act (Raymond et al., 2014). Norms are widely used (see Figure 3). Those within the Interdependent metatheory see norms as changeable and that every human action sustains or upturns these norms (e.g., Raymond et al., 2014). Independent theories, on the other hand, often view norms as a fixed part of the ‘world out there’ that affects behavior and can be harnessed to change behavior in desirable ways (e.g., Ajzen, 1985; Schultz et al., 2007).

## 4.7 Capital

Capital corresponds to the reservoirs that actors can draw upon. It is diverse, including natural resources – physical capital – in Ostrom’s Socioecological Systems Framework (Mcginnis & Ostrom, 2014), or social and other forms of capital in Bennett’s Environmental Stewardship framework (Bennett et al., 2018), or marketable goods and services in Exchange Theory (Kotler, 2000).

## 4.8 Temporality

Temporality speaks to the ordering and sequencing of (often recurring) events (Hand et al., 2005). Temporality is found in Interdependent theories, and is not widely used.

## 4.9 Institutions

This class represents a diverse set of determinants, and is heavily relied upon in Human Action Theories, especially those coming from sociology and anthropology. Institutions

represent the merging of the state and society in Agrawal's (2005) Environmentality, and culture for Holland (1998). Institutions are the social systems that constrain diffusion in Rogers' Diffusion of Innovations theory (2010), and purvey norms in Raymond's Intentional Norma Change (2014).

## 4.10 Positionality

Positionality is the instantaneous social and environmental position that people find themselves in. It draws from constructivism (Holland, 1998), and encodes factors like rank, power, etc. Positionality is identified as 'politics' in Agrawal's Environmentality (2005). Many theories ignore these factors, or dismiss them as 'context' (Shove, 2010).

## 4.11 Context

Theorists (especially those assuming on Independent metatheories) often identify context as an annoyance that clouds their controls (Ajzen, 1985; Shove, 2010), or as a variable to make small, easy, changes in order to affect unconscious behavior (e.g., nudges (Thaler, Sunstein, & Balz, 2013)). Because context is hard to measure, theorists are often loath to include it in an operational way. Many have suggested that people are more sensitive to context when using heuristic processing (i.e., thinking fast) (Chaiken, 1980; Thaler & Sunstein, 2008; Kahneman, 2011).

## 4.12 Communicator

Who is the communicator? Rather than the message, sometimes the context of the communicator – i.e., who they are – is important for determining action (Chaiken, 1980). For example, in Diffusion of Innovations Theory, communicators who are more similar to their audience more successfully diffuse novel practices (Rogers, 2010).

## 4.13 Risk (general)

Risk is the degree of threat from something. Unlike norms, outlined above, risk represents a different philosophical understanding of the world. Norms tell us how to act (deontological), whereas risks tell us something about the results of our behavior (consequentialist). Risk perception is a staple of many theories, especially those coming from health psychology (e.g., Rosenstock, 1974). However, risk is not limited to psychology: it's also a central component of sociological social movement theories. For example, in collective action frame theory, McAdam (1996) notes that successful social movements frames must combine aggrievement and optimism, where we can construe aggrievement as risk and optimism as efficacy. Some theories – e.g., Risk Perception Attitude Framework – hold that there is an interaction between risk and efficacy (Rimal, 2001), while others – e.g., the stage model of fear processing (de Hoog et al., 2007) – assume there is not. Like McAdam, some theorists use a general conception of risk; others break risk into two constituent parts: risk severity and risk susceptibility (Maloney et al., 2011).

## **4.14 Risk severity**

Risk severity is the magnitude of the risk – e.g., will an asteroid wipe out all of humanity, or will one person get a mild fever? Sometimes only one type of risk – risk severity or risk susceptibility – is used (e.g., Rimal, 2001). However, other theories have demonstrated that risk severity and risk susceptibility have different and interdependent effects (de Hoog et al., 2007).

## **4.15 Risk susceptibility**

Risk susceptibility also known as vulnerability, is the likelihood of a risk actually occurring. This is more commonly measured than risk severity (see Figure 3). Beliefs about risk susceptibility also depend on the type of processing being used (heuristic vs. systematic).

## **4.16 Knowledge**

Knowledge is seen by many non-social scientists as the leading cause of inaction or wrong action. This is the Deficit Model of human action. If people only had more knowledge they would act. Although this simple linearity is not supported (Sturgis & Allum, 2004), information is still included in many theories. Environmentality notes how statistical knowledge redefines the way villagers treat nearby forests (Agrawal, 2005), and the Transtheoretic Model of Behavior Change includes knowledge of healthier behaviors as a key attribute.

## **4.17 Response efficacy**

Response efficacy reflects the belief that one's actions will have a desired result. This and self-efficacy are two of the most widely used determinants (see Figure 3). Some theories include both this and self-efficacy (e.g., EPPM – Maloney et al., 2011), while others include only self-efficacy (e.g., Rimal, 2001), while still others only include response efficacy (e.g., de Hoog et al., 2007).

## **4.18 Self-efficacy**

Self-efficacy reflects the belief that one can carry out a desired action. This determinant includes maintenance and recovery of self-efficacy (Schwarzer, 2008), self-control (Hagger et al., 2010), competence (Ryan & Deci, 2000a), and coping (Carraro & Gaudreau, 2013). The dominance of efficacy among these theories make it seem like a generalizable determinant of human action.

## **4.19 Ability to process**

Ability to process encodes the ability to comprehend a problem and understand a message. It is used to understand how someone interprets a social action frame (Benford & Snow, 2000), and messages about unpleasant things (Västfjäll et al., 2016).

## **4.20 IPLOC: Internal perceived locus of causation**

The Internal Perceived Locus of Control (IPLOC) (DeCharms, 1968) reflects how autonomous one's actions are; the degree of ownership over something. This draws from many different literatures and is expressed in all metatheories. It includes the concept of 'fuzzy boundaries' in innovations (Diffusion of Innovations Theory), where the vagueness at the periphery gives adopters the ability to reinvent and own the technology (Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou, 2004). IPLOC includes beliefs that a social movement is not externally managed (Polletta, 1998), and the importance of giving people power over governance (e.g., Deliberative Democracy (Miller, 1992; John et al., 2009) and Shared Decision-making (Weiss, 1995)).

## **4.21 Responsibility**

Responsibility is feeling that an action is required; obligatory. Surprisingly, it is only used in a few theories. For example, the Value-Belief-Norm theory includes a sense of obligation to take pro-environmental actions (P. C. Stern, 2000), and the Norm Activation Model includes responsibility ascription (Schwartz, 1977).

## **4.22 Belonging**

A sense of belongingness, of close relationships and connection, is important in diverse theories. Connections to mentors helps to explain the development of environmental leaders (Chawla, 2007), and a sense of wanting to belong to a 'prized' group inspire people to take part in social movements (Oberschall, 1989; Polletta, 1998).

## **4.23 Exploration**

'Exploration' draws largely from the education and environmental psychology theories. These theories note the human need for cognitive mapping, for exploration from a safe space into an unknown region; the human need to seek out and understand novel arenas. For example, Chawla (2007) notes the importance of nature exploration in developing environmental leadership. It also pulls on theories from business that suggest the importance of cognitive exploration and personal growth for motivating employees (Herzberg, 1968).

## **4.24 Consonance**

Consonance only explicitly occurs in one theory – Cognitive Dissonance (Festinger, 1957). However, it can perhaps explain many of the mechanisms that make other determinants important. For example, we correct our behavior to yield to social norms because of cognitive dissonance between our actions and the actions of our peers. We are always searching for consonance, and avoiding situations that provide dissonance. This concept appears under-represented in Human Action Theories.

## 5 Unified Human Action Framework

These 24 determinants elucidate the relations between different theories. They tell us what determinants may be generalizable (e.g., IPLOC), and which ones may be either only narrowly relevant, or have the potential to be applied much more widely (e.g., temporality). However, my analysis is limited to the determinants contained within these theories; other theories may employ determinants that I have not included. My analysis shows what determinants could be tested in new arenas, and the similarities in determinants across theories and disciplines. However, the specificity of these 24 classes belies many of the similarities between them, frustrating their usefulness in fabricating a unified theory of human action. For example, while the Affect and Attitude determinants are different, they can both be seen as attributes of the self. Thus, a more generalized, unified explanation could combine them into a single dimension. With this unifying goal in mind, I take these 24 determinants and condense them into 8 generalized types. This aggregation ignores nuance, but more clearly displays what features of the world drive human action.

Figure 4 shows this condensation. The eight generalized determinants express the core aspects of the 54 human action theories. **Knowledge** represents the organization and gathering of information; **Positionality** represents the current situation, power dynamic, and context; **Self** contains subjective attributes, including identity, values, affect etc. **Structure** contains culture, norms, physical capital, and societal prescriptions. These four factors encode the state of the world and the humans of interest. The second four determinants dictate how these states of the world are navigated. **Consonance** contains needs for exploration, growth, and conquering incongruities; **Belonging** includes the need for being connected; **IPLOC** (Internal Locus of Causation) includes our need for autonomy, ownership, and responsibility; and finally **Competence** includes efficacy and its inverse, risk. Together, these eight factors constitute a Unified Human Action Framework.

However, as noted earlier, aggregating factors from different metatheories is not always advisable. To overcome this, my Unified Human Action Framework (UHAF) is metatheory-explicit. Figure 5 shows the eight determinants and how they are assumed to interact for each metatheory. In Interdependent metatheory, all factors are co-developed and dependent on all the other factors, and the need factors are simply emergent from the Self. Each factor is mutable, and theorists typically look for more ultimate causes of current expressions. The independent metatheory takes the world as it is, assuming that each factor is more constrained and not co-developed by others. In the intrinsic metatheory, the second group of factors has primacy, are universal, and taken as-is. They explain how people navigate the world. Robust to different metatheories, this framework represents the multidisciplinarity of the human action theories it builds upon.

Applying this new framework back to my aggregated Human Action Theories, Figure 6 shows that these eight determinants are broadly relevant, but many theories only include a few. This suggests that many theories may ignore important determinants. There is much room for generalizing, complementing, and identifying context specificities. For example, the stage model of fear communication does not include Positionality or Belonging. Would people respond differently to fear appeals if they were powerful vs. weak? If they had a close

### Generalizing attributes

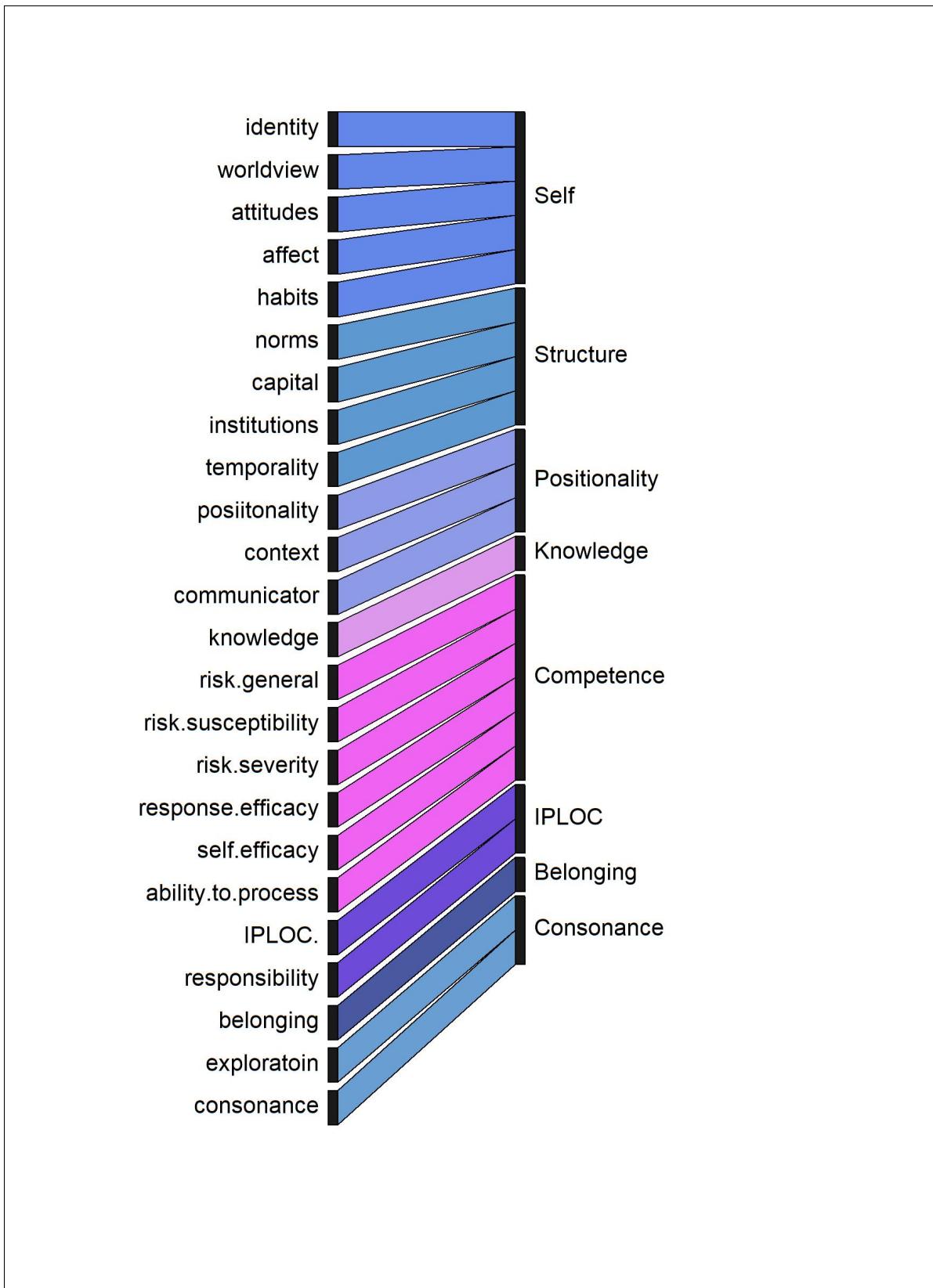


Figure 4: *Categorizing the 24 determinants of human action into 9 generalized factors*

## A unified human action framework

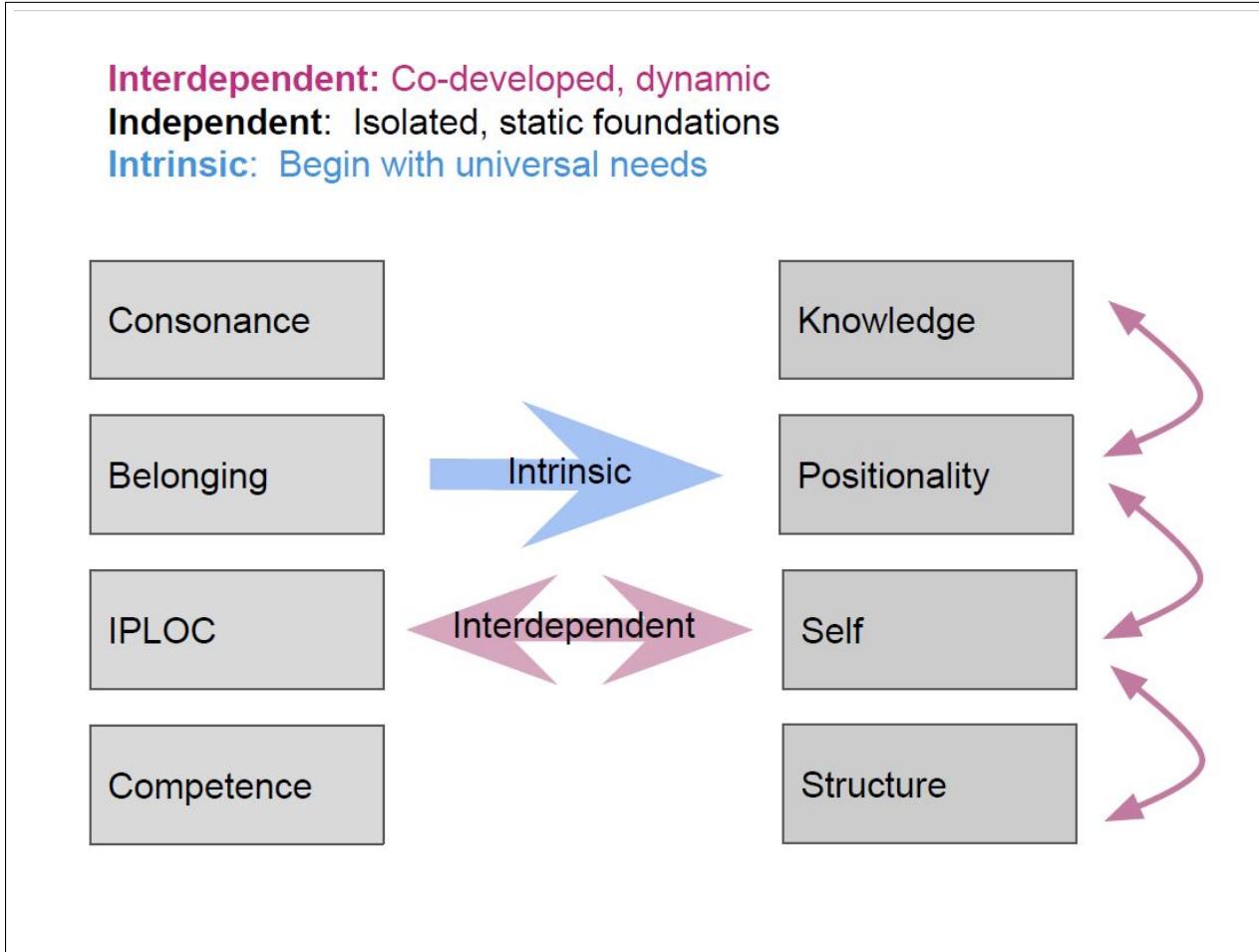


Figure 5: A diagram displaying the unified theory of human action, and the variations under different metatheories. Needs are shown on the left, and others on the right. In the Inter-dependent metatheory, all factors are co-developed and dependent on all the other factors. Each factor is mutable, and theorists typically look for more ultimate causes of current expressions. The independent metatheory takes the world as it is, assuming that each factor is more constrained and not co-developed by others. In the intrinsic metatheory, the factors on the left take primacy, and are universal and taken as-is. They explain how people navigate the world as explained by the factors on the right.

## Theories and their generalized attributes

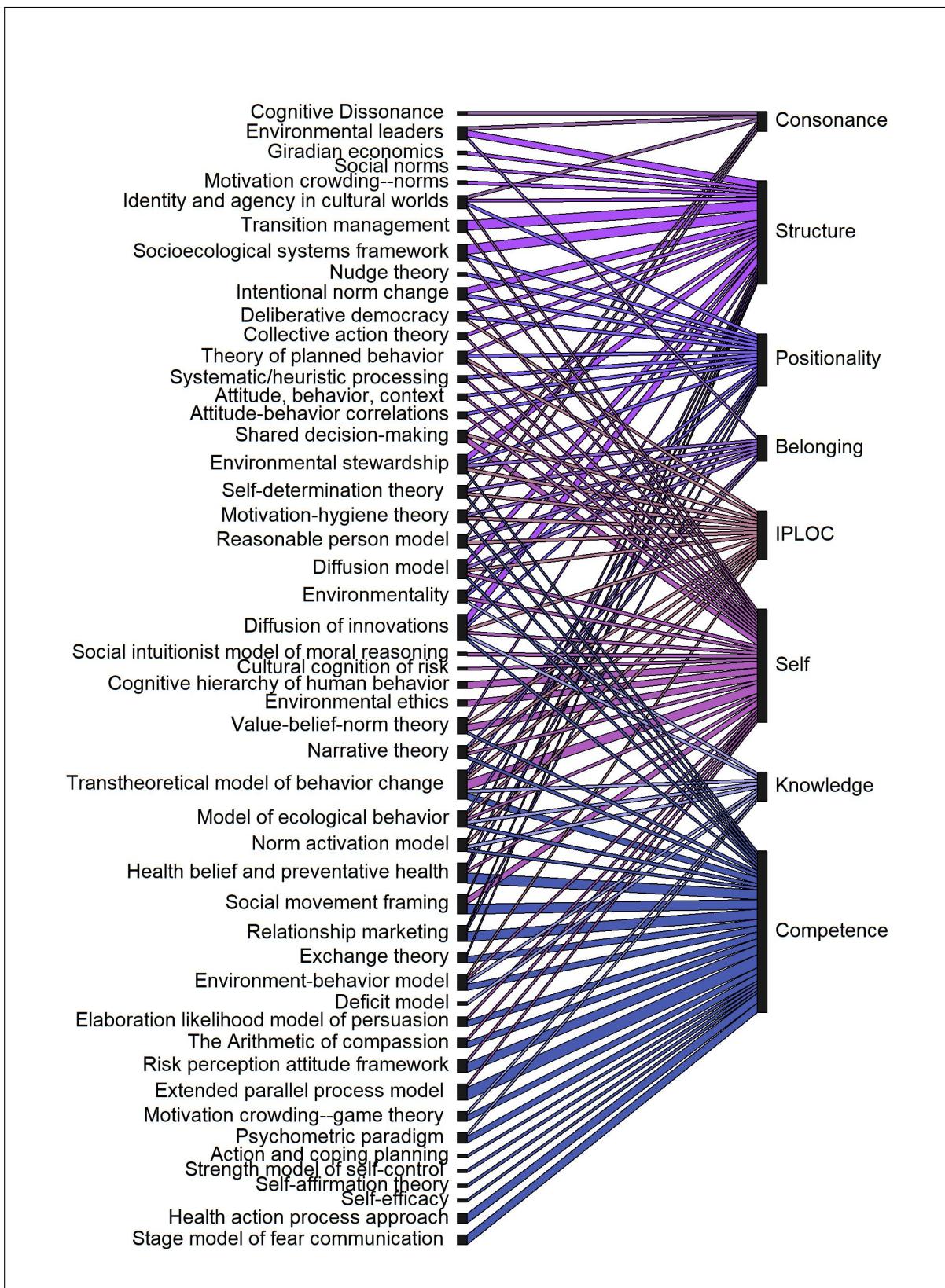


Figure 6: *Different Human Action Theories utilize different sets of the nine generalized determinants*

relationship with their doctor, would they be more likely to feel a sense of belongingness, and thus more likely to be motivated to take bold action to minimize the fear? This association between theories and generalized determinants highlights the narrowness of many theories, and invites many new and exciting questions.

Organizing and unifying social science theories of human action is a seemingly insurmountable task, and one that some recommended against: “what shapes pro-environmental behavior is such a complex one that it cannot be visualized in one single framework or diagram” (Kollmuss & Agyeman, 2002, p. 248). I have attempted to do just that (see Figures 6 and 5). Perhaps these impossible endeavors are those most needing investment. Haslam and McGarty (2001) suggests that scholars have been focusing too much on minimizing certain types of uncertainty, leading to conservative research that answers uninteresting questions very precisely. Instead, it is uncertainty *creating* investigations that lead to scientific revolutions. Research that increases epistemological uncertainty instead of minimizing ontological uncertainty may have the biggest impact (Haslam & McGarty, 2001). Although these investigations are often inexact and hand-wavy, they may put focus on the new and exciting path.

In the field of environmental science, one good example of this type of research is Costanza et al. (1997). This paper asked a question that was impossible to answer with very much statistical certainty: What is the value of Earth’s ecosystem service? Their analysis made many gross assumptions, and their result had huge statistical uncertainty. Yet, in spite of these approximations, the paper jump-started the study of ecosystem services, revolutionizing the way we think about our reliance on natural capital. In a similar, though likely less grandiose vein, I hope that this current paper will refocus the way we think about why people do what they do.

Like Constanza et al. (1997), I make many generalizations and shortcuts, but I hope that like that paper, my synthesis will kindle a new appreciation for the benefits of looking beyond a particular discipline. I hope that it spurs more research into a unified theory of human action to the benefit of scholars, practitioners, and the planet.

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