The Structure of Antagonism: A Hierarchical Model of Self- and Interview-Rated Psychopathology

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Recent initiatives in the empirically based classification of psychopathology, namely, the Hierarchical Taxonomy of Psychopathology (HiTOP), have made significant strides in addressing the limitations of traditional taxonomies (i.e., *Diagnostic and Statistical Manual of Mental Disorders*, *International Classification of Diseases*). The current study aimed to extend this work by helping to clarify the lower order structure of an understudied dimension of psychopathology—antagonism (i.e., HiTOP antagonistic externalizing spectrum)—a core feature of many externalizing disorders and related to important outcomes such as interpersonal problems, childhood conduct problems, and incarceration. We examined the hierarchical structure of several measures of antagonistic externalizing features across both self-report and clinical interview ratings for 2,279 community participants with a diverse range of personality pathology (~75% with a personality disorder) and antagonistic behaviors (~30% with intermittent explosive disorder). Exploratory structural equation modeling was used to account for the shared variance between variables within self-report and interview methods. Results revealed an optimal lower order structure consisting of six factors labeled Antisociality, Anger, Hostility, Narcissism, Mistrust, and Attention Seeking. Factor scores yielded expected relations with self-report and interview ratings of psychopathology, personality, and childhood trauma. Implications for future research in classification and treatment of psychopathology are discussed.

Keywords: antagonism, antagonistic externalizing spectrum, hierarchical taxonomy of psychopathology, research domain criteria, exploratory structural equation modeling

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Traditional taxonomies of psychopathology—namely, the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (*DSM–5*; American Psychiatric Association, 2013)—have provided a long-standing common language for mental illness, vital for the communication and diagnosis of mental disorders. Despite the massive gains afforded by these documents, there are notable limitations in its reliability, validity, and clinical utility (see Kotov et al., 2017, for a review). These limitations have spurred years of research striving for an empirically based organization of psychiatric symptoms into dimensions, as opposed to polythetic categories. This work has given rise to two major initiatives: (a) The Hierarchical Taxonomy of Psychopathology (HiTOP; Kotov et al., 2017) and (b) the National Institute of Mental Health's Research Domain Criteria (RDoC; Cuthbert & Insel, 2013).

Briefly, the HiTOP framework is an empirically based quantitative model of symptoms that reflects decades of work in disorder classification. The primary area of focus of the hierarchy is at the six "spectra" level, which includes internalizing (e.g., depression, anxiety), thought disorder (e.g., psychosis, schizotypy), disinhibited externalizing (e.g., substance abuse), antagonistic externalizing (e.g., antisocial behavior), detachment (e.g., Avoidant and Schizoid Personality Disorder), and somatoform (e.g., illness anxiety). The RDoC framework is similar in that it includes dimensions of functioning that cut across behavior; however, its focus is

on basic biological processes measured at eight levels of analysis (e.g., genes to behavior) that apply across species. Both models have their strengths and weaknesses, with HiTOP having a more comprehensive focus on the phenotype of psychiatric symptoms while also still having implications for basic research (Kotov et al., 2017). For this reason, and because of RDoC's lack of coverage of processes explicitly related to antagonism—an important and understudied construct (Lynam & Miller, 2019), the present study adopts HiTOP's model as a primary framework for investigating the nature of antagonism. Ideally, the results can serve to inform both RDoC and HiTOP models.

History of Disorder Classification

These aforementioned advances in psychopathology assessment have emerged from a rich history of theory and research in disorder classification stemming as far back as Kraepelin (1899), whose proposed "dichotomy" between psychosis and mood disorders has been influential, has yielded even recent empirical support (Kotov et al., 2013), and is currently captured in the separate HiTOP spectra of thought disorder and internalizing, respectively. Much of the work examining the empirical relations among psychiatric symptoms has arrived at a general consensus that psychopathology can be broadly organized within the domains of internalizing and externalizing (Achenbach, 1966; Krueger et al., 1998), with thought disorder explicitly emerging more recently (Keyes et al., 2013).

In parallel, scientists have long been interested in developing a taxonomy of phenotypic personality traits, starting as far back as Galton (1884), whose work resulted in the "lexical hypothesis," inspiring research empirically examining the structure of person descriptors encoded in language (see Goldberg, 1993, for a review). This line of work has resulted in the prominent "big five" or "five factor model" of neuroticism (vs. emotional stability), extraversion (vs. detachment), agreeableness (vs. antagonism), conscientiousness (vs. disinhibition), and intellect or openness to experience. This model has been shown to be consistent across clinical and nonclinical populations (O'Connor & Dyce, 1998), with maladaptive variants of these traits undergirding personality disorders (PDs; Saulsman & Page, 2004), helping to explain their high comorbidity. This work has influenced the *International Classification of Diseases*, 11th *Revision* (*ICD-11*; World Health Organization, 2019) to adopt a similar model as their new system for PD diagnosis, which includes five dimensional trait domains: negative affectivity, detachment, dissociality, disinhibition, and anankastia (compulsivity). This work was partly influenced by the alternative model of PD in *DSM–5* (AMPD; American Psychiatric Association, 2013), which includes 25 traits and five higher order domains of negative affectivity, detachment, antagonism, disinhibition, and psychoticism. Unlike the *ICD* model, the AMPD did not receive final approval and was included in Section III's "Emerging Measures and Models" in need of further study (American Psychiatric Association, 2013, p. 729).

The work of the HiTOP consortium is a compelling synthesis of the traditions in the classification of psychiatric symptoms, personality traits, and PDs, with recent research showing meaningful overlap between symptoms and traits, specifically, (a) internalizing corresponding with neuroticism, (b) detachment with low extraversion, (c) antagonistic externalizing with low agreeableness, (d) disinhibited

externalizing with low conscientiousness, and (e) thought disorder with oddity (Markon, 2010) and psychoticism (Krueger et al., 2011), which has been linked to aspects of openness (Blain et al., 2020). Further, both models have been shown to be hierarchically organized, in nature, and to have a consistent structure across clinical and nonclinical samples. The present study aims to build on this work by examining the hierarchical structure of the antagonistic externalizing spectrum (i.e., antagonism) in a large community sample with a wide range in severity of psychopathology using both self-report and structured clinical interview ratings.

Defining Antagonism

Antagonism first started receiving attention as a broad personality trait as the opposite pole of agreeableness and is thought to encompass aspects of dominance from extraversion and hostility from neuroticism (McCrae & Costa, 1987). McCrae and Costa noted that descriptions of antagonism in its neurotic form had previously been provided by Horney (1945) in her account of "the tendency to move against people." She theorized that variations of this tendency existed and included narcissistic, perfectionistic, and arrogant vindictive types. Already, early theories of antagonism noted distinctions between overtly aggressive versus manipulative presentations of such behavior. Deeper exploration of antagonism, as seen in the NEO Personality Inventory–Revised, remained tied to agreeableness. Here, Agreeableness (vs. Antagonism) was differentiated into more specific facets of Trust (vs. Mistrust), Straightforwardness (vs. Deception or Manipulation), Altruism (vs. Egocentrism or Exploitation), Compliance (vs. Oppositionalism or Aggression), Modesty (vs. Arrogance), and Tendermindedness (vs. Toughmindedness or Callousness; Lynam & Widiger, 2001). Research in this area has urged for the increased study of antagonism, especially given its robust links with trait aggression (Chester & West, 2020), psychopathy (Miller & Lynam, 2015), and crime (DeLisi, 2019), which make it a central societal concern (Lynam & Miller, 2019).

Among recent work in antagonism, Sleep et al. (2021) adopted a "bottom-up" approach to developing a comprehensive lower order structure of antagonism. Following a modified version of Goldberg's "bass-ackward" approach, removing the forced orthogonal rotation, and working at the item level, they examined one- through seven-factor solutions, with the lowest-order containing factors labeled Callousness, Grandiosity, Aggression, Suspiciousness, Manipulation, Domineering, and Risk-Taking. They concluded that these factors largely represented polar opposites of factors identified by Crowe et al. (2018) in a similar study of agreeableness measures, which identified factors of Compassion, Morality, Trust, Affability, and Modesty. They noted that the risk taking and aggression factors represented divergences from this structure. Overall, research in this area would benefit from extending this work further into the antagonism range of the construct in larger, more diverse samples using multiple methods, rather than only self-report assessment.

Current Study

Despite the recent growing interest in antagonism, the bulk of work continues to revolve around the agreeableness end, relying primarily on self-report of individuals with limited psychopathology. The present study aimed to fill this gap in the literature by

exploring the hierarchical structure of antagonism in a large community sample with a diverse range of personality pathology (∼75% with a PD) and antagonistic behaviors (∼30% with intermittent explosive disorder [IED]) and using measures of psychopathology, anger, and trait aggression across both structured clinical interview and self-report methods. We also sought to determine if this structure remained invariant to Sex and Race. Lastly, we analyzed the relationships between the factors from the lowest-order model and measures of psychopathology and functioning to assess the convergent and discriminant validity of this model, with respect to existing data and theory.

We hypothesized that the data would reveal a structure similar to findings from Crowe et al. (2018) and Sleep et al. (2021); however, the present study should be considered exploratory, as we use a different set of measures across both self- ratings and interview ratings and in a sample with more diverse psychopathology. Furthermore, we plan to adopt an alternative analytic strategy, exploratory structural equation modeling (ESEM), which we hypothesize will result in increased "comingling" (Nuzum et al., 2019) among variables across methods compared to exploratory factor analyses (EFAs).

Method

Participants and Procedures

Participant data for this study were collected as part of an ongoing study of the neurobiological and cognitive correlates of personality pathology. Institutional review board approval was obtained for all aspects of this ongoing study. Participants were recruited using community newspaper, radio, and online advertisements—in addition to referrals from outpatient clinics at the Mount Sinai Medical Center, NY. All participants provided written informed consent. Participants were excluded for major medical problems, current psychotropic medications, and current diagnosis of bipolar disorder I, psychosis-related disorder, or substance abuse in the prior 6 months. Structural analyses were estimated using responses from a total of 2,279 participants. Other analyses (e.g., convergent, discriminant, invariance analyses) used subsets of this overall sample, as not all participants had demographic data coded in the database and not all participants completed every measure. These sample ns are specified within the tables for each set of analyses, with ns for various sample characteristics noted in Table 1 and ns for completed responses per scale noted in Table S1 in the online supplemental materials (ns = 979–1752). Participant demographics and diagnoses are presented in Table 1. Participants were 50.1% male. Ages ranged from 18 to 65 years (M = 37.0, SD = 12.0). The sample was diverse with respect to race, education, and psychopathology. As this ongoing study has oversampled for specific disorders, the data have higher-than-average representation with respect to IED (23.3%), borderline PD (32.7%), schizotypal PD (21.6%), and paranoid PD (21.8%), which is well-suited for the present analyses. This is the first study to present analyses with this full data set; however, recent studies have used subsets of these data (Chan et al., 2019; Sher et al., 2019; Velikonja et al., 2019).

Table 1
Sample Demographics and Diagnoses

Demographics and diagnoses	n	Percentage
Sex		
Male	791	50.1
Female	788	49.9
Race		
White or Caucasian	686	44.2
Black or African American	571	36.8
Asian or Pacific Islander	176	11.3
Multicultural	118	7.7
Ethnicity		
Hispanic or Latino	346	22
Unemployed	524	36.6
Age		
18−24	294	18.4
25−44	809	50.6
45−65	494	31.0
Common mental disorders		
Bipolar II Dx	49	2.8
Persistent depressive Dx	178	10
Generalized anxiety Dx	146	8.2
Intermittent explosive Dx	406	23.3
Major depressive episode	68	16.3
Panic Dx	151	8.5
Posttraumatic stress Dx	235	13.3
Social anxiety Dx	332	18.8
Personality disorders		
Antisocial PD	186	10.6
Avoidant PD	436	30
Borderline PD	571	32.7
Dependent PD	66	3.8
Histrionic PD	57	3.3
Narcissistic PD	206	11.8
Obsessive compulsive PD	378	21.6
Paranoid PD	381	21.8
Schizoid PD	66	3.8
Schizotypal PD	377	21.6

Note. Dx = diagnosis; PD = personality disorder. Disorder percentages are out of n = 1,750 clinical interviews.

Measures

Diagnostic assessments were obtained using the Structured Clinical Interview for *DSM-IV–TR* (First et al., 1996), Structured Clinical Interview for *DSM–5*–Clinician Version (SCID-5-CV; First et al., 2016), and the Structured Interview for *DSM–IV* Personality (SIDP-IV; Pfohl et al., 1997). For the SIDP-IV, PD criteria were rated on a 0 to3 scale (0 = *absent*, 1 = *subthreshold*, 2 = *present/prototypical*, 3 = *strongly present*). Overall PD diagnoses were scored as 0 (*absent*), 0.5 (subthreshold), or 1 (present). All clinical assessments were conducted by a clinical psychologist. Our research group has achieved interrater reliabilities (kappa) ranging from 0.73 schizotypal PD) to 0.82 (borderline PD), indicating "substantial agreement" (Landis & Koch, 1977). Consensus meetings were led by a senior member of the diagnostic team and ongoing supervision of diagnostic raters by a licensed clinical psychologist to mitigate rater drift.

Buss-Perry Aggression Questionnaire

The Buss-Perry Aggression Questionnaire (BPAQ) is a frequently used self-report measure of the trait of aggression divided into subscales that reflect the different forms aggression and

hostility may take (Buss & Perry, 1992). There are 29 items rated on a 5-point scale from *extremely uncharacteristic of me; not at all like me* to *extremely characteristic of me; very much like me*. Of the four subscales, Physical and Verbal Aggression represent the instrumental or motor component of behavior. Anger involves the physiological arousal or preparation for aggression and represents the more emotional and affective component. Lastly, Hostility represents the cognitive component of behavior and consists of feelings of ill will or injustice (Buss & Perry, 1992). Internal consistencies for the present study ranged from $\alpha = .80$ (Verbal Aggression) to $\alpha = .88$ (Anger, Hostility, and Physical Aggression).

State Trait Anger Expression Inventory

The State Trait Anger Expression Inventory (STAXI) is a 44-item measure that comprises six scales for assessing the experience, expression, and control of anger (Spielberger, 1988). The subscales that comprise the STAXI are State Anger, Trait Anger Temperament and Reaction, Anger-In, Anger-Out, and Anger-Control. The sixth subscale is an arithmetic combination of Anger-Out, Anger-In, and Anger-Control to provide a general index for the frequency with which anger is expressed. The trait measures were developed to assess individual differences in anger control and expression. State anger (scale evaluates the intensity of angry feelings experienced "right now, at this moment" or a specific time. The Anger-In, Anger-Out and Anger-Control scales assess how often anger is experienced but suppressed (Anger-In), how often it is expressed toward other persons or environmental objects (Anger-Out), and controlled (Anger-Control; Forgays et al., 1997). For the present study, internal consistencies ranged from $\alpha = .81$ (Irritability) to $\alpha = .95$ (State Anger).

Dimensional Assessment of Personality Pathology-Basic Questionnaire

The Dimensional Assessment of Personality Pathology-Basic Questionnaire (DAPP-BQ) is a 290-item measure rated on a 5-point scale. Its scales assess 18 lower order dimensions of personality pathology including Affective Instability, Anxiousness, Callousness, Cognitive Distortions, Compulsivity, Conduct Problems, Identity Problems, Insecure Attachment, Intimacy Problems, Narcissism, Oppositionality, Rejection, Restricted Expression, Self-Harming Behavior, Social Avoidance, Stimulus Seeking, Submissiveness, and Suspiciousness (Kushner et al., 2011). Several studies have examined the pattern of correlations between the DAPP-BQ dimensions and PD symptom counts, the results from which were interpreted to support the validity of the DAPP-BQ (Bagge & Trull, 2003; Kushner et al., 2011). In the present study, nine scales were included in analyses based on their relation with the overall Antagonism factor. Internal consistencies for these scales ranged from $\alpha = .82$ (Callousness) to $\alpha = .94$ (Affective Instability).

NEO-Five Factor Inventory

The NEO-Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992) is a 60-item version of the 240-item NEO PI-R based on a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Items are organized into the five broad domain scales (Neuroticism, Extraversion, Conscientiousness, Agreeableness, and Openness), with 12 items per scale. Items were selected for their largest structure coefficients for each of the five factors.

In the present study, internal consistencies ranged from $\alpha = .68$ (Openness) to $\alpha = .89$ (Neuroticism).

Childhood Trauma Questionnaire

The Childhood Trauma Questionnaire (CTQ) is a 70-item retrospective self-report inventory meant to assess severity and frequency of experiences of abuse and neglect in childhood and adolescence. The items interchange between being worded in subjective terms (i.e., "When I was growing up I believe I was sexually abused") and more often in objective terms (i.e., "When I was growing up, someone tried to touch me in a sexual way or tried to make me touch them"; Bernstein et al., 1994). The items are rated on a 5-point Likert-type scale ranging from *never true* to *very often true*. Internal consistencies ranged from $\alpha = .72$ (Physical Neglect) to $\alpha = .93$ (Sexual Abuse).

Analysis Plan and Preparation

Goldberg's (2006) "bass-ackward" analysis was used to examine relations among scales and criteria across all measures of antagonism at varying levels of factor specificity. Similar to Sleep et al. (2021), an oblique rotation was adopted, as we expected scales and criteria to be correlated in a within-domain analysis. Variables were included based on their conceptual and empirical relations with antagonism. Paranoid, Antisocial, Borderline, Narcissistic, and Histrionic PD criteria were included from the SIDP-IV based on previous research (Kotov et al., 2011). Scales from the BPAQ and STAXI were also included in addition to the five scales loading on the Dissocial Behavior factor of the DAPP (Livesley & Jackson, 2009). To ensure overinclusiveness prior to analysis, four more scales from the DAPP were included based on research (i.e., Bagge & Trull, 2003; Livesley & Jackson, 2009) showing secondary loadings $> |.25|$ with the Dissocial Factor (i.e., Affective Lability, Oppositionality, Self-Harm, Suspiciousness). Similarly, variables that also shared conceptual variance with the Disinhibited Externalizing spectrum were retained in the interest of overinclusiveness, for example, antisocial PD criteria assessing impulsivity and irresponsibility.

To ensure scales and PD criteria were representative of the general Antagonism factor, indicators with factor loadings weaker than .35 (Clark & Watson, 2019) on a one-factor EFA were considered for removal. Based on this criteria, 11 indicators were considered for removal. Five of these criteria were retained due to conceptual relatedness to antagonism (e.g., Antisocial Criterion 2: "deceitfulness, as indicated by repeated lying, use of aliases, or conning others for personal profit or pleasure."). The STAXI Trait Anger was removed due to linear dependence with the subordinate STAXI scales. The remaining 53 indicators all yielded significant loadings $> .30$ on the general Antagonism factor.

To avoid creation of bloated specific factors, variables were considered for removal from structural analyses if they correlated $\geq .65$ with another variable, which is in accordance with previous work in this area (Crowe et al., 2018; Sleep et al., 2021). Intercorrelations revealed three items to be considered for removal, including borderline PD Criterion 6 (Affective Instability), BPAQ Verbal Aggression, and DAPP Affective Instability. There were no significant changes to the model when each variable was eliminated individually; however, when all three items were removed, factor solutions appeared less interpretable and more influenced by method effects. For example, a joint narcissistic

and histrionic PD factor emerged instead of a more interpretable Narcissism factor. Also, borderline PD criteria formed their own factor instead of meaningfully comingling with other variables on the Anger and Hostility factors. Given this, along with the desire to maximize overinclusiveness (Clark & Watson, 2019), we opted to retain the information that these three variables provided in our analyses.

Due to the strong shared method variance among variables within each measure, ESEM was used to account for this shared variance by specifying orthogonal method factors along with the exploratory factors. Four method factors were specified, one factor for each measure, which is consistent with previous research (Wright & Simms, 2014). Structural analyses were conducted in Mplus 8 (Muthén & Muthén, 2017). Missing data were handled using full information maximum likelihood, with data assumed to be missing at random. Under these conditions, full information maximum likelihood has been shown to provide unbiased parameter estimates (Enders, 2010; Graham, 2009). Overall, SIDP data, STAXI, BPAQ, and DAPP scores were estimated for approximately 527, 946, 1,035, and 1,252 participants, respectively. Results from a parallel analysis (Horn, 1965) revealed that eigenvalues from randomly generated data exceeded the eigenvalues from the sample data at the eighth factor (see Figure S1 in the online supplemental materials). However, the seventh factor also appeared poorly defined (i.e., only one loading $> |.30|$ and with $p < .05$); thus, up to six factor solutions were included for the "bass-ackward" (Goldberg, 2006) analyses.

Participant data were screened for validity using the Lie scale of the Chapman Anhedonia Scale (Chapman et al., 1976) and a variable response inconsistency index using eight BPAQ items and one STAXI item that were identical to items on the Buss-Durkee Hostility Inventory (Buss & Durkee, 1957). Data were eliminated if >1 item on the Lie scale was endorsed or >2 identical item pairs were inconsistent in their responses. This resulted in 155 participants eliminated from analyses. Power analyses (G*Power; Faul et al., 2009) with $\alpha = .05$ (two-tailed) and power = .95 indicated that Pearson correlation analyses for $n = 979$ (NEO-FFI), 1058 (CTQ), and 1351 (SCID-5 IED) had the power to detect rs = .11, .11, and .10, respectively. Analyses for this project were not preregistered.

Results

Descriptive Statistics

Means, standard deviations, ranges, and sample sizes for all SIDP-IV criteria and self-report scales included for analyses are presented in Table S1 in the online supplemental materials. Alpha coefficients are presented for all self-report scales as well as scales created for each PD based on the criteria included in analyses. Internal consistencies were in the acceptable range, with the exception of NEO Openness ($\alpha = .68$); however, this scale was not the focus of this project.

Hierarchical Structure of the Antagonistic Externalizing Spectrum

Goldberg's (2006) "bass-ackward" approach was used starting with a one-factor solution all the way to a six-factor solution. Factor scores were saved for each solution and correlated across each level of the hierarchy (Figure 1). As previously described, a series

Figure 1
Hierarchical Structure of Antagonism
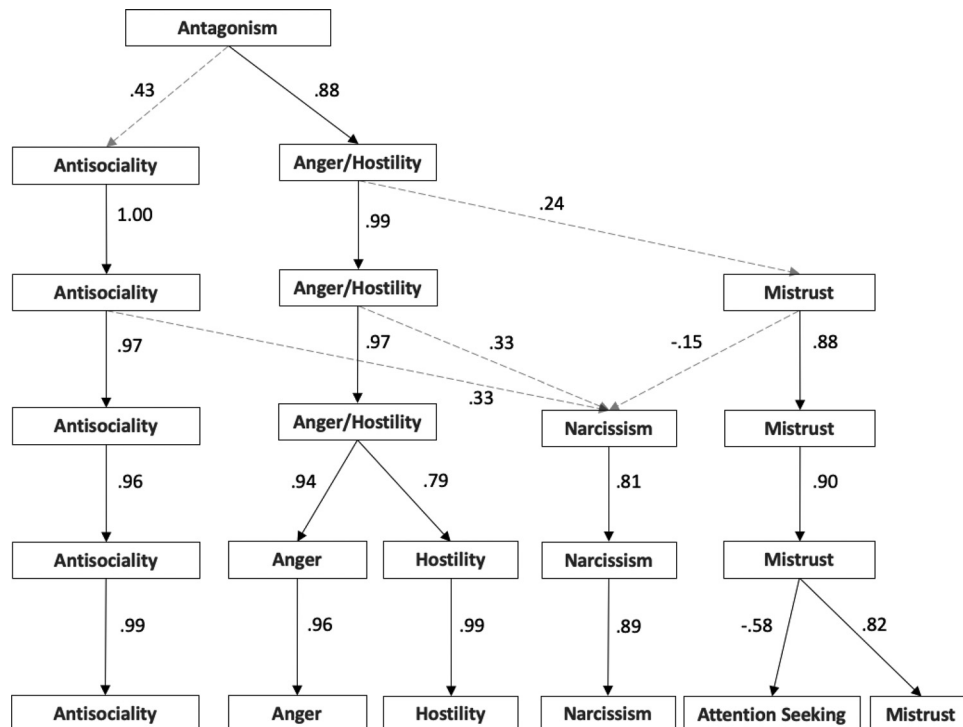
Note. Rs $< |.50|$ are omitted unless no other rs for a factor reached threshold.

of ESEMs were conducted with four method factors specified for each measure (i.e., SIDP, DAPP, BPAQ, and STAXI) to reduce the influence of shared method variance on the pattern of covariation between scales. Factors were interpreted by examining the strongest loading scales as well as the general pattern of loadings. Factor labels should be considered tentative and were derived simply to help the reader contextualize the results with broader literature. The one-factor solution represented a general Antagonism factor, with its strongest loadings coming from the DAPP Affective Instability, BPAQ Anger, and Borderline PD Affective Instability variables. These particular scales became the strongest loading scales on the "Anger/Hostility" factor of the two-factor solution ($r = .88$ with the general factor), along with an "Antisociality" factor, which was most prominently represented by the antisocial PD criteria ($r = .43$ with general factor). This two-factor solution appeared to appeared to delineate the more behavioral (Antisocial factor) and emotional/cognitive (Anger/Hostility factor) components of antagonism. The three-factor solution contained the Antisociality and Anger/Hostility factors, which yielded correlations of 1.00 and .99 with their counterparts at the previous level. The third factor we labeled "Mistrust" with the strongest loadings coming from the paranoid PD Suspiciousness and Mistrust criteria as well as the DAPP Suspiciousness scale. This Mistrust factor formed its strongest correlation with the Anger/Hostility factor at the previous level ($r = .24$).

In the four-factor solution, a "Narcissism" factor emerged, with the strongest loadings coming from the Narcissistic PD Entitlement and Grandiosity criteria and the DAPP Rejection scale. Narcissism formed its strongest correlation with Antisociality and Anger/Hostility at the previous level (rs = .33). In the five-factor solution, Anger and Hostility split off into the second and fourth factors, with the Antisociality, Narcissism, and Mistrust emerging as the first, third and fifth factors. Anger's strongest loadings came from BPAQ Anger, Verbal Aggression, and STAXI Temper scales, whereas Hostility's strongest loadings came from BPAQ Hostility, DAPP Oppositionality, and STAXI Anger Expression-In scales. At the previous level, the Anger/Hostility factor correlated stronger with Anger ($r = .94$) than Hostility ($r = .79$) at the level below. Finally, at the six-factor level (Table 2), "Attention Seeking" emerged as the third factor, along with Antisociality, Anger, Narcissism, Hostility, and Mistrust as the first, second, fourth, fifth, and sixth factors. Attention Seeking's strongest loadings came from the histrionic PD criteria. In the hierarchical model, Attention Seeking correlated −.58 with Mistrust at the previous level. Intercorrelations between the six factors ranged from .01 (Antisociality and Narcissism) to .61 (Anger and Hostility) and are presented in Table S2 in the online supplemental materials. Results of invariance testing revealed that the six-factor solution was invariant to Sex and Race (see Table S3 in the online supplemental materials).

ESEM Versus EFA

The factor structures across ESEM and EFA models were relatively consistent, but only after extracting an extra factor in the EFA. For example, for the six-factor model, Tucker's congruence coefficients between ESEM and EFA solutions were .88 (Antisociality), .92 (Anger), .81 (Hostility), .53 (Attention Seeking), .61 (Narcissism), and .65 (Mistrust). However, when a seventh factor was extracted in the EFA, this solution cohered more closely to

the six-factor ESEM (i.e., .99, .94, .92, .93, .85, .86). This appeared to be due to increased correlations between variables within methods for the EFA compared to the ESEM. The impact of shared method variance in the EFA was particularly salient in the two-factor EFA solution, which yielded two method factors, one for the SIDP variables and the other for the self-report variables. However, when three factors were extracted in the EFA, the first two factors more closely resembled the first two from the ESEM and the third was a method factor comprised of SIDP variables. Overall, the ESEM structures were favorable due to (a) generally enhanced comingling of variables across interview and self-report methods and (b) elimination of method factors from the solutions.

ESEM Including NEO and IED Variables

We originally omitted the three NEO-FFI Agreeableness facets (i.e., Trust, Compliance, and Altruism) and two IED criteria (i.e., verbal and physical aggression) from structural analyses for conceptual and empirical reasons; however, we felt their inclusion in the six-factor model would be valuable for readers to see (see Table S4 in the online supplemental materials). For Agreeableness facets, we felt that they did not conceptually cohere with our set of variables capturing the more pathological range of antagonism. This notion was supported by the one-factor solution where antisocial PD Criteria 1, 2, 5, and 7 no longer loaded on the factor after the Agreeableness facets were included. Nevertheless, we felt the six-factor solution was meaningful, with NEO Trust loading −.49 on the Mistrust factor and −.42 on the Hostility factor. NEO Altruism loaded −.41 on the Anger factor and −.33 on the Mistrust factor, whereas NEO Compliance only loaded −.20 on both the Mistrust and Hostility factors.

Regarding IED, the verbal and physical aggression criteria did not load with the SIDP criteria and required their own method factor, which caused problems with model identification and standard errors of parameter estimates could not be computed. Nevertheless, we included the IED criteria in another version of the six-factor model (see Table S4 in the online supplemental materials) for interested readers. Though not ideal, we included IED criteria on the SIDP method factor for the model to be estimated. Results revealed that both criteria loaded on the Anger factor with verbal aggression at .32 and physical aggression at .25. Overall, we felt that more information was conveyed by including IED criteria as external variables in convergent and discriminant analyses.

Convergent and Discriminant Validity

Correlations between factor scores from the six-factor model and self-report ratings of NEO-FFI and CTQ scales and interview ratings of IED are presented in Table 3. Results revealed a general pattern of Hostility factor scores yielding the strongest correlations with self-report ratings, whereas Anger and Antisociality factor scores had the strongest correlations with interview-rated IED. This pattern of results suggested that the strength of association was likely influenced by shared method variance. Despite the enhanced "comingling" of variables across self-report and interview methods in the ESEM, the Hostility factor largely comprised self-report scales,; whereas the remaining factors mostly comprised SIDP criteria, with the exception of Anger, which was relatively mixed.

Table 2

Six-Factor Exploratory Structural Equation Model for SIDP Criteria and DAPP, BPAQ, and STAXI-2 Scales

Scales/Criteria	F.1	F.2	F.3	F.4	F.5	F.6
SIDP Antisocial PD 1 - Criminal Acts	**.74**	.01	.01	−.01	−.06	−.02
SIDP Antisocial PD 2 - Deceitfulness	**.65**	−.07	.06	.13	.08	.02
SIDP Antisocial PD 7 - Lack of Remorse	**.61**	−.03	−.04	.17	.01	−.01
SIDP Antisocial PD 6 - Irresponsibility	**.60**	.02	.13	.00	−.01	.01
SIDP Antisocial PD 3 - Impulsivity	**.52**	.13	.09	−.06	−.03	−.02
SIDP Antisocial PD 4 - Irritability/Aggressiveness	**.51**	**.38**	−.04	.00	−.19	.04
SIDP Antisocial PD 5 - Recklessness	**.49**	.03	.03	.01	−.02	−.03
SIDP Narcissistic PD 6 - Exploitativeness	**.45**	−.01	.16	**.31**	.10	−.04
SIDP Borderline PD 4 - Impulsivity	**.31**	.29	.13	−.21	.12	−.15
DAPP - Conduct Problems	**.30**	.21	−.01	−.03	.15	.09
BPAQ - Anger	.05	**.87**	−.10	.02	.13	.03
BPAQ - Verbal Aggression	.00	**.75**	.00	.16	−.13	.19
STAXI - Angry Temperament	.10	**.65**	−.08	.04	.02	.01
SIDP Borderline PD 8 - Anger	.08	**.65**	.01	−.20	.02	−.10
BPAQ - Physical Aggression	**.34**	**.61**	−.06	−.04	−.03	.19
SIDP Borderline PD 6 - Affective Instability	−.03	**.53**	.04	−.27	.20	−.16
STAXI - Anger Expression-Out	.00	**.44**	.02	.03	.00	.11
DAPP - Rejection	−.06	**.40**	.08	.21	.07	.19
SIDP Borderline PD 2 - Unstable Relationships	.03	**.37**	.17	−.24	**.30**	−.12
DAPP - Sensation Seeking	.10	.23	.09	.00	.18	−.01
SIDP Borderline PD 9 - Paranoia/Dissociation	−.07	.21	.06	−.21	.20	.04
SIDP Histrionic PD 6 - Exaggerated Emotions	−.02	.03	**.62**	−.02	−.09	.05
SIDP Histrionic PD 4 - Attention Seeking	.09	−.10	**.60**	.11	.05	.05
SIDP Histrionic PD 2 - Provocative Behavior	.09	−.03	**.56**	.07	−.04	.04
SIDP Histrionic PD 3 - Shifting/Shallow Emotions	.06	.09	**.55**	−.03	−.06	.05
SIDP Histrionic PD 1 - Center of Attention	−.06	.04	**.54**	.15	−.03	−.02
SIDP Narcissistic PD 1 - Grandiosity	.03	.05	.12	**.50**	.01	−.11
SIDP Narcissistic PD 5 - Entitlement	−.01	**.31**	.08	**.42**	−.01	−.06
SIDP Narcissistic PD 3 - Uniqueness Belief	.02	−.03	.10	**.41**	.10	−.11
SIDP Narcissistic PD 9 - Arrogance	.11	**.34**	.05	**.37**	−.04	−.08
SIDP Narcissistic PD 7 - Lack of Empathy	.15	.17	−.13	**.36**	−.01	−.03
SIDP Narcissistic PD 8 - Envious/Jealous	.03	.01	.21	**.31**	.15	.05
SIDP Narcissistic PD 4 - Requires Admiration	−.08	.09	.22	.28	.24	−.05
BPAQ - Hostility	.09	.05	−.06	−.01	**.76**	**.30**
DAPP - Oppositionality	−.01	−.02	−.03	.00	**.67**	.01
DAPP - Affective Instability	−.06	**.44**	−.02	−.02	**.63**	.05
DAPP - Suspiciousness	.13	−.04	.01	.02	**.62**	**.44**
STAXI - Anger Expression-In	−.02	−.01	−.06	.02	**.51**	.06
DAPP - Narcissism	−.12	−.01	.13	.15	**.50**	.01
DAPP - Self-Harm	.07	.01	.03	−.16	**.39**	−.04
SIDP Borderline PD 1 - Fear of Abandonment	−.02	.13	.25	−.18	**.38**	−.07
STAXI - Angry Reaction	−.03	.27	−.03	.13	**.36**	.08
SIDP Borderline PD 5 - Suicidality	.09	.05	.20	−.22	**.30**	−.10
DAPP - Callousness	.17	.09	−.03	.11	.23	.19
STAXI - State Anger	.12	.11	.00	.02	.15	.06
SIDP Paranoid PD 2 - Mistrust	−.04	.03	.06	−.07	.04	**.53**
SIDP Paranoid PD 1 - Suspiciousness	.04	.00	.04	−.07	−.04	**.52**
SIDP Paranoid PD 3 - Guardedness	.04	−.02	−.02	−.02	.07	**.41**
SIDP Paranoid PD 4 - Paranoid Interpretations	−.09	.14	.03	−.08	.09	**.38**
SIDP Paranoid PD 6 - Insecurity	−.02	.28	.02	.00	.02	**.34**
SIDP Paranoid PD 5 - Bears Grudges	.02	.20	.06	.08	.08	.26
SIDP Paranoid PD 7 - Mistrustful of Partner	.05	.08	.10	−.09	.13	.18

Note. N = 2,279. Factor loadings > |.30| are in bold. Factor labels: F.1 = Antisociality; F.2 = Anger; F.3 = Attention Seeking; F.4 = Narcissism; F.5 = Hostility; F.6 = Mistrust; BPAQ = Buss-Perry Aggression Questionnaire; DAPP = Dimensional Assessment of Personality Pathology-Basic Questionnaire; IED = intermittent explosive disorder; NEO = NEO-Five Factor Inventory; SCID = Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*–Clinician Version; SIDP = Structured Interview for *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* Personality; STAXI = State Trait Anger Expression Inventory.

For interview-rated IED criteria, Antisociality and Anger factor scores correlated strongest with both verbal and physical IED criteria-ratings. Specifically, Anger factor scores correlated stronger with verbal ($r = 60$) than physical IED ($r = .54$). Whereas Antisociality factor scores correlated stronger with physical ($r = .45$) than verbal ($r = .30$). These findings cohere with the composition of these factors, which shows that Antisociality contains more physical aggression scales and Anger contains more verbal aggression. Regarding the NEO-FFI, Antagonism factor scores yielded their strongest correlations with self-report ratings of Agreeableness, with the exception of Hostility ($r = .79$ with Neuroticism). For the CTQ, Antagonism factor scores mostly correlated with

Table 3
Correlations Between Six-Factor Model and External Variables

Scales	ns	Antisociality	Anger	Attention seeking	Narcissism	Hostility	Mistrust
IED verbal	1,351	**.30**	**.60**	.11	−.06	.29	.17
IED physical	1,351	**.45**	**.54**	.10	.01	.21	.19
NEO Agreeableness	979	**−.39**	**−.63**	−.29	−.25	**−.58**	**−.53**
NEO Conscientiousness	979	−.09	−.24	−.05	.10	**−.50**	−.11
NEO Extroversion	979	−.08	−.19	.17	.14	**−.46**	**−.33**
NEO Neuroticism	979	.08	**.46**	.17	−.10	**.79**	.29
NEO Openness	979	−.19	−.15	.07	.00	−.05	−.21
CTQ Emotional Neglect	1,058	.10	**.26**	.06	−.11	**.41**	.22
CTQ Emotional Abuse	1,058	.12	**.36**	.17	−.12	**.50**	**.30**
CTQ Physical Abuse	1,058	.23	**.33**	.10	−.11	**.30**	**.30**
CTQ Physical Neglect	1,058	.15	.22	.06	−.09	**.30**	.25
CTQ Sexual Abuse	1,058	.13	.20	.10	−.13	.28	.14

Note. Rs > |.06| are significant at *p* < .05. Rs ≥ |.30| are in **bold**. IED = SCID-5 Intermittent Explosive Disorder; NEO = NEO-Five Factor Inventory; CTQ = Childhood Trauma Questionnaire.

CTQ Emotional Abuse ratings, specifically for Hostility (*r* = .50), Anger (*r* = .36), and Mistrust (*r* = .30).

Discussion

The primary aim of this study was to explore the hierarchical structure of antagonism using a range of both self-report and interview-ratings of antagonism in a large sample of individuals with a broad range of psychopathology. Results revealed a theoretically meaningful hierarchy, with six factors at the bottom labeled Antisociality, Anger, Attention Seeking, Narcissism, Hostility, and Mistrust. Given the large data set, the diversity of sample characteristics and psychopathology, as well as the blend of self-report and interview methods, these findings are poised to bolster our understanding of the phenotypic structure of antagonism, which should serve to guide disorder classification, research, and treatment in this area.

Of note, this structure generally corresponded with Crowe et al. (2018) five-factor solution, with some overlap with Sleep et al. (2021) seven-factor solution. Specifically, the Anger factor appeared to correspond with (a) Crowe et al.'s (2018) Affability vs. Combativeness and (b) Sleep et al.'s (2021) Aggression. Narcissism appeared to correspond with (a) Modesty vs. Arrogance and (b) Grandiosity. Hostility appeared to correspond with (a) Compassion vs. Callousness and (b) Callousness. Finally, Mistrust appeared to correspond with (a) Trust vs. Distrust and (b) Suspiciousness. Interestingly, the Antisociality factor closely corresponded with Morality versus Immorality, whereas Sleep et al.'s (2021) solution revealed lower order facets of Manipulation, Risk Taking, and Aggression. Moreover, Sleep et al. (2021) revealed a Domineering factor, which was unique to their study. The present study differed slightly with the addition of Attention Seeking, which was primarily marked by histrionic PD criteria denoting exaggerated emotions and attention seeking. Overall, solutions from all three studies largely cohered, which is noteworthy, given the lack of overlap in measures and disparate samples (e.g., low vs. high pathology) across studies.

In addition, our structure corresponded with existing *DSM* PD diagnoses, with the addition of Anger and Hostility dimensions. Analysis of factor scores also provide a clearer sense for the latent variables that explain the shared variance, beyond simple PD diagnoses. For example, Antisociality is strongly represented by criminal acts and deceitfulness and less by other features, such as impulsivity. For Narcissism, significant negative factor loadings from borderline PD are consistent with research examining more grandiose narcissism measures (Miller et al., 2010, 2013), suggesting the factor may be more in alignment with this construct rather than *DSM–5* defined narcissistic PD. For Mistrust, the strong loadings from the first two paranoid PD criteria and DAPP Suspiciousness suggest the factor is more cognitive in nature and less outwardly aggressive. Attention Seeking, on the other hand, appeared to be more of a pure histrionic PD scale with relatively consistent loadings across all criteria. Future work may benefit from including other scales related to this construct that are relevant to antagonism, such as "Boldness" (Patrick et al., 2009), attention-deficit/hyperactivity disorder, and conduct disorder symptoms.

Advantages of ESEM

This study also advanced research in this area by adopting ESEM methods to examine this structure to account for the shared method variance among variables within the same measure and method. Overall, the ESEM approach to exploring the hierarchical structure of antagonism revealed solutions that appeared to be more aligned with theory and research compared to the EFA solutions, which appeared slightly more aligned with disorders and measures. For example, in the two-factor solution, the ESEM factors seem to resemble proactive and reactive aggression subtypes; whereas the EFA yields interview and self-report factors. Interestingly, the three-factor ESEM, including Antisociality, Anger/Hostility, and Mistrust factors appeared to resemble a version of the triarchic model of psychopathy (i.e., meanness, disinhibition, and the opposite pole of boldness, respectively; Patrick et al., 2009), whereas the three-factor EFA was less interpretable. Overall, the clearest advantage of ESEM over EFA was that EFA solutions often contained clear method factors for self-report and interview variables, which obscured interpretation.

Convergent and Discriminant Validity

Despite the enhanced comingling of self-report and interview-rated variables in the ESEM solution, convergent and discriminant

correlations between Antagonism factor scores external variables largely appeared to be explained by shared method variance. For example, self-reported NEO and CTQ ratings correlated strongest with Hostility and Anger factor scores, which mostly comprise self-report scales. Moreover, Narcissism, Attention Seeking, and Antisociality factor scores—primarily comprising interview-rated criteria—formed mostly weak correlations with self-report ratings. There were notable exceptions to this trend, including correlations between self-reported NEO Agreeableness ratings and the "interview-heavy" factors of Mistrust ($r = -.53$), Antisociality ($r = -.39$), Attention Seeking ($r = -.29$), and Narcissism ($r = -.25$). However, this should not be a surprise, as all factors were specifically designed to assess the opposite pole of Agreeableness. Overall, this is an important point of convergent validity. Another exception was with Mistrust, which formed additional moderate correlations with NEO Extraversion and CTQ Emotional and Physical abuse, despite comprising mostly paranoid PD criteria. This may be due to the contribution of self-report BPAQ Hostility and DAPP Suspiciousness scales to the Mistrust factor, adding additional self-report variance. Another interpretation could be that childhood emotional and physical abuse have important contributions to interpersonal mistrust later in life.

Regarding interview-rated IED criteria, both verbal and physical aggression correlated strongest with Antisociality and Anger factor scores. Antisociality overlapped more with physical than verbal and Anger overlapped more with verbal than physical. These convergent correlations adhere to expectations given that Antisociality contains scales emphasizing physical aggression and Anger contains scales with both types, with an emphasis on verbal aggression. Overall, results appear to converge with the work of Buss and Perry (1992) showing that the constructs of hostility, anger, and aggression (in this case, Antisociality) largely represent the cognitive, emotional, and behavioral aspects of aggression, respectively.

Implications for Disorder Classification

The present study aimed to delineate the hierarchical structure of antagonism, a prominent personality trait that has been included as part of the HiTOP (Kotov et al., 2017) as the "antagonistic externalizing" psychopathology spectrum. Results add to this literature by explicating the lower order structure of antagonism, which closely aligns with findings from Crowe et al. (2018) as well as the existing *DSM* disorders of antisocial, narcissistic, paranoid, and histrionic PD. Findings from this study add further to this literature by recommending the inclusion of separate Anger and Hostility factors. This has implications for the reorganization of the HiTOP structure, as IED was most closely linked with the Anger factor in our data. This finding runs counter to the HiTOP structure, which files IED under the Antisocial Behavior subfactor along with antisocial PD. Instead, we would recommend considering IED as a meaningfully distinct disorder from antisocial PD and would link it more closely to the anger features of BPD.

Regarding the National Institute of Mental Health's RDoC (Cuthbert & Insel, 2013), elements within our structure of antagonism appear to most closely align with the frustrative nonreward and acute threat constructs within the negative valence systems domain and the arousal construct within the arousal and regulatory systems domain. Overall, the RDoC framework does not appear to explicitly allocate constructs that uniquely explain the broader phenotype of antagonism. Previously, the RDoC model had considered "proactive" aggression and "dominance" for inclusion within the Social Processes domain (National Institute of Mental Health,' 2011, 2012), but were ultimately omitted. These constructs would potentially align with the Antisociality and Narcissism factors in our data, which would be meaningful additions to the RDoC framework.

Limitations and Future Directions

Despite the strengths of the size and diversity of the study sample, analyses on previously collected data come with their own limitations. For example, these data were not collected with this research question in mind; thus, the full "universe" of items related to antagonism were not surveyed and selected, a priori. As a result, we cannot conclude that the present structure represents the full content of antagonism. Future research can build off of the findings from the present study and attempt to replicate and expand this structure by building a measure to cover these factors while also including scales from constructs not as fully measured in the current sample, such as scales assessing the dark triad or psychopathy, more broadly. Relatedly, as these data were collected as part of an ongoing study involving neuroimaging methods, participants were excluded for significant medical conditions and recent substance abuse, thus, limiting the generalizability of the present findings to individuals with more severe medical conditions and substance use problems. Future work should more closely examine the intersection between antagonistic versus disinhibited externalizing psychopathology.

Another related limitation was that the current study was exploratory in nature and was not conducted with a very specific set of hypotheses and predictions. Though results aligned closely with the hypothesized structure from Crowe et al. (2018) and to an extent with Sleep et al. (2021), future research will need to test these models using confirmatory methods with overlapping measures. Moreover, in order for this model to result in useful measurement of antagonism, criterion validity needs to be rigorously assessed with an emphasis on making "contact with observations" via "verifiable inferences" (Cronbach & Meehl, 1955, p. 291). Our hope is that the present model—together with Crowe et al. (2018) and Sleep et al. (2021) models—yields multidimensional measures of antagonism that are well-defined enough to make specific predictions that are behavior-relevant. Future work would benefit from assessing how these constructs manifest, together, in daily life. In this direction, Vize et al. (2022) examined how facets of antagonism related to daily affect and interpersonal functioning, revealing high variability, with robust associations among anger, hostility, and daily negative affect. Their results echo the call for research to examine finer-grained processes for how antagonism unfolds, moment-by-moment. This is important given the need to apply nomothetic, structural models, which are often developed from cross-sectional data across individuals, to idiographic situations within individuals over time. These kinds of predictions will have valuable treatment implications. For example, one prediction via the cognitive–behavioral model might be that Hostility (e.g., hostile beliefs and thoughts) leads to Anger (e.g., angry emotional outbursts), which eventually leads to Antisociality (e.g., manipulation, crime). However, this question needs to be tested empirically using measurements over time. A recent study by Woods et al. (2020) offers findings that speak to this question. The authors used group iterative multiple modeling to examine personalized models

of psychopathology in a sample of PD participants over 21 days of event-contingent ecological momentary assessment. Their results revealed that across the entire sample there was dramatic variability in paths between symptoms over time. For example, for individuals with borderline PD, hostility in one moment led to fear and perceptions of others' warmth in another moment, whereas for individuals with other diagnoses, hostility led to sadness. When examining individual paths, there were instances when hostility led to dominant behavior. Taken together, hostility has the potential to lead to both internalizing and externalizing responses. Future work should build from studies of this nature, perhaps by measuring a broader range of antagonistic behavior over time with an aim toward identifying what may explain when hostility leads to an internalizing vs. externalizing response (e.g., biases, situations, severity of hostility).

Overall, we hope that the present model advances the literature in the empirically based quantitative classification of psychopathology. Specifically, this model holds particular relevance to the classification of personality pathology, which is at the "vanguard" of psychopathology research (Krueger, 2013) evidenced in the recent revisions to the *ICD* PD and *DSM–5* Alternative model for PD sections. Advancement toward an empirically based nosology will improve not only the long-standing problems of our current systems but also our ability to uncover biobehavioral links (Perkins et al., 2020). Ideally, a clearer description of psychiatric phenotypes will result in clearer links to related endophenotypes and genotypes, ultimately enhancing the prevention and treatment of psychopathology.

References

American Psychological Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). https://doi.org/10.1176/appi.books.9780890425596

Achenbach, T. M. (1966). The classification of children's psychiatric symptoms: A factor-analytic study. *Psychological Monographs*, *80*(7), 1–37. https://doi.org/10.1037/h0093906

Bagge, C. L., & Trull, T. J. (2003). DAPP-BQ: Factor structure and relations to personality disorder symptoms in a non-clinical sample. *Journal of Personality Disorders*, *17*(1), 19–32. https://doi.org/10.1521/pedi.17.1.19.24055

Bernstein, D. P., Fink, L., Handelsman, L., & Foote, J. (1994). *Childhood Trauma Questionnaire* (CTQ) [Database record]. APA PsycTests. https://doi.org/10.1037/t02080-000

Blain, S. D., Longenecker, J. M., Grazioplene, R. G., Klimes-Dougan, B., & DeYoung, C. G. (2020). Apophenia as the disposition to false positives: A unifying framework for openness and psychoticism. *Journal of Abnormal Psychology*, *129*(3), 279–292. https://doi.org/10.1037/abn0000504

Buss, A. H., & Perry, M. (1992). The aggression questionnaire. *Journal of Personality and Social Psychology*, *63*(3), 452–459. https://doi.org/10.1037/0022-3514.63.3.452

Buss, A. H., & Durkee, A. (1957). An inventory for assessing different kinds of hostility. *Journal of Consulting Psychology*, *21*(4), 343–349. https://doi.org/10.1037/h0046900

Chan, C. C., Bulbena-Cabre, A., Rutter, S., Benavides, C., McClure, M. M., Calabrese, W., Rosell, D. R., Koenigsberg, H. W., Goodman, M., New, A. S., Hazlett, E. A., & Perez-Rodriguez, M. M. (2019). Comparison of self-report and clinician-rated schizotypal traits in schizotypal personality disorder and community controls. *Schizophrenia Research*, *209*, 263–268. https://doi.org/10.1016/j.schres.2018.12.050

Chapman, L. J., Chapman, J. P., & Raulin, M. L. (1976). Scales for physical and social anhedonia. *Journal of Abnormal Psychology*, *85*(4), 374–382. https://doi.org/10.1037/0021-843X.85.4.374

Chester, D. S., & West, S. J. (2020). Trait aggression is primarily a facet of antagonism: Evidence from dominance, latent correlational, and item-level analyses. *Journal of Research in Personality*, *89*, Article 104042. https://doi.org/10.1016/j.jrp.2020.104042

Clark, L. A., & Watson, D. (2019). Constructing validity: New developments in creating objective measuring instruments. *Psychological Assessment*, *31*(12), 1412–1427. https://doi.org/10.1037/pas0000626

Costa, P. T., Jr., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Psychological Assessment Resources.

Crowe, M. L., Lynam, D. R., & Miller, J. D. (2018). Uncovering the structure of agreeableness from self-report measures. *Journal of Personality*, *86*(5), 771–787. https://doi.org/10.1111/jopy.12358

Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin*, *52*(4), 281–302. https://doi.org/10.1037/h0040957

Cuthbert, B. N., & Insel, T. R. (2013). Toward the future of psychiatric diagnosis: The seven pillars of RDoC. *BMC Medicine*, *11*(1), Article 126. https://doi.org/10.1186/1741-7015-11-126

DeLisi, M. (2019). Antagonism and crime. In J. D. Miller & D. R. Lynam (Eds.), *The handbook of antagonism: Conceptualizations, assessment, consequences, and treatment of the low end of agreeableness* (pp. 297–309). Elsevier/Academic Press. https://doi.org/10.1016/B978-0-12-814627-9.00020-7

Enders, C. K. (2010). *Applied missing data analysis*. Guilford Press.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149–1160. https://doi.org/10.3758/BRM.41.4.1149

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (1996). *Structured clinical interview for DSM–IV Axis I disorders, research version, patient/non-patient ed*. Biometrics Research, New York State Psychiatric Institute.

First, M. B., Williams, J. B. W., Karg, R. S., & Spitzer, R. L. (2016). *User's guide for the SCID-5-CV Structured Clinical Interview for DSM-5® disorders: Clinical version*. American Psychiatric Publishing, Inc.

Forgays, D. G., Forgays, D. K., & Spielberger, C. D. (1997). Factor structure of the State-Trait Anger Expression Inventory. *Journal of Personality Assessment*, *69*(3), 497–507. https://doi.org/10.1207/s15327752jpa6903_5

Galton, F. (1884). Measurement of character. *Fortnightly Review*, *36*, 179–185. https://galton.org/essays/1880-1889/galton-1884-fort-rev-measurement-character.pdf

Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist*, *48*(1), 26–34. https://doi.org/10.1037/0003-066X.48.1.26

Goldberg, L. R. (2006). Doing it all bass-ackwards: The development of hierarchical factor structures from the top down. *Journal of Research in Personality*, *40*(4), 347–358. https://doi.org/10.1016/j.jrp.2006.01.001

Graham, J. W. (2009). Missing data analysis: Making it work in the real world. *Annual Review of Psychology*, *60*(1), 549–576. https://doi.org/10.1146/annurev.psych.58.110405.085530

Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika*, *30*(2), 179–185. https://doi.org/10.1007/BF02289447

Horney, K. (1945). *Our inner conflicts; a constructive theory of neurosis*. W Norton & Co.

Keyes, K. M., Eaton, N. R., Krueger, R. F., Skodol, A. E., Wall, M. M., Grant, B., Siever, L. J., & Hasin, D. S. (2013). Thought disorder in the meta-structure of psychopathology. *Psychological Medicine*, *43*(8), 1673–1683. https://doi.org/10.1017/S0033291712002292

Kotov, R., Ruggero, C. J., Krueger, R. F., Watson, D., Yuan, Q., & Zimmerman, M. (2011). New dimensions in the quantitative classification of mental illness. *Archives of General Psychiatry*, *68*(10), 1003–1011. https://doi.org/10.1001/archgenpsychiatry.2011.107

Kotov, R., Leong, S. H., Mojtabai, R., Erlanger, A. C. E., Fochtmann, L. J., Constantino, E., Carlson, G. A., & Bromet, E. J. (2013). Boundaries of schizoaffective disorder: Revisiting Kraepelin. *JAMA Psychiatry*, *70*(12), 1276–1286. https://doi.org/10.1001/jamapsychiatry.2013.2350

Kotov, R., Krueger, R. F., Watson, D., Achenbach, T. M., Althoff, R. R., Bagby, R. M., Brown, T. A., Carpenter, W. T., Caspi, A., Clark, L. A., Eaton, N. R., Forbes, M. K., Forbush, K. T., Goldberg, D., Hasin, D., Hyman, S. E., Ivanova, M. Y., Lynam, D. R., Markon, K., . . . Zimmerman, M. (2017). The Hierarchical Taxonomy of Psychopathology (HiTOP): A dimensional alternative to traditional nosologies. *Journal of Abnormal Psychology*, *126*(4), 454–477. https://doi.org/10.1037/abn0000258

Kraepelin, E. (1899). *Psychiatrie* (6th ed.). Barth.

Krueger, R. F. (2013). Personality disorders are the vanguard of the post-DSM-5.0 era. *Personality Disorders*, *4*(4), 355–362. https://doi.org/10.1037/per0000028

Krueger, R. F., Caspi, A., Moffitt, T. E., & Silva, P. A. (1998). The structure and stability of common mental disorders (*DSM–III–R*): A longitudinal-epidemiological study. *Journal of Abnormal Psychology*, *107*(2), 216–227. https://doi.org/10.1037/0021-843X.107.2.216

Krueger, R. F., Eaton, N. R., Derringer, J., Markon, K. E., Watson, D., & Skodol, A. E. (2011). Personality in DSM-5: Helping delineate personality disorder content and framing the metastructure. *Journal of Personality Assessment*, *93*(4), 325–331. https://doi.org/10.1080/00223891.2011.577478

Kushner, S. C., Quilty, L. C., Tackett, J. L., & Bagby, R. M. (2011). The hierarchical structure of the Dimensional Assessment of Personality Pathology (DAPP-BQ). *Journal of Personality Disorders*, *25*(4), 504–516. https://doi.org/10.1521/pedi.2011.25.4.504

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, *33*(1), 159–174. https://doi.org/10.2307/2529310

Livesley, W. J., & Jackson, D. N. (2009). *Manual for the Dimensional Assessment of Personality Pathology-Basic Questionnaire*. Sigma Press.

Lynam, D. R., & Miller, J. D. (2019). The basic trait of antagonism: An unfortunately underappreciated construct. *Journal of Research in Personality*, *81*, 118–126. https://doi.org/10.1016/j.jrp.2019.05.012

Lynam, D. R., & Widiger, T. A. (2001). Using the five-factor model to represent the *DSM–IV* personality disorders: An expert consensus approach. *Journal of Abnormal Psychology*, *110*(3), 401–412. https://doi.org/10.1037/0021-843X.110.3.401

Markon, K. E. (2010). Modeling psychopathology structure: A symptom-level analysis of Axis I and II disorders. *Psychological Medicine*, *40*(2), 273–288. https://doi.org/10.1017/S0033291709990183

McCrae, R. R., & Costa, P. T., Jr. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology*, *52*(1), 81–90. https://doi.org/10.1037/0022-3514.52.1.81

Miller, J. D., Dir, A., Gentile, B., Wilson, L., Pryor, L. R., & Campbell, W. K. (2010). Searching for a vulnerable dark triad: Comparing Factor 2 psychopathy, vulnerable narcissism, and borderline personality disorder. *Journal of Personality*, *78*(5), 1529–1564. https://doi.org/10.1111/j.1467-6494.2010.00660.x

Miller, J. D., Gentile, B., Wilson, L., & Campbell, W. K. (2013). Grandiose and vulnerable narcissism and the DSM-5 pathological personality trait model. *Journal of Personality Assessment*, *95*(3), 284–290. https://doi.org/10.1080/00223891.2012.685907

Miller, J. D., & Lynam, D. R. (2015). Understanding psychopathy using the basic elements of personality. *Social and Personality Psychology Compass*, *9*(5), 223–237. https://doi.org/10.1111/spc3.12170

Muthén, B., & Muthén, L. (2017). *Mplus*. Chapman and Hall/CRC.

National Institute of Mental Health. (2011). Negative valence systems: Workshop proceedings. https://www.nimh.nih.gov/research/research-funded-by-nimh/rdoc/negative-valence-systems-workshop-proceedings.shtml

National Institute of Mental Health. (2012). Social processes: Workshop proceedings. https://www.nimh.nih.gov/research/research-funded-by-nimh/rdoc/social-processes-workshop-proceedings.shtml

Nuzum, H., Shapiro, J. L., & Clark, L. A. (2019). Affect, behavior, and cognition in personality and functioning: An item-content approach to clarifying empirical overlap. *Psychological Assessment*, *31*(7), 905–912. https://doi.org/10.1037/pas0000712

O'Connor, B. P., & Dyce, J. A. (1998). A test of models of personality disorder configuration. *Journal of Abnormal Psychology*, *107*(1), 3–16. https://doi.org/10.1037/0021-843X.107.1.3

Patrick, C. J., Fowles, D. C., & Krueger, R. F. (2009). Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. *Development and Psychopathology*, *21*(3), 913–938. https://doi.org/10.1017/S0954579409000492

Perkins, E. R., Latzman, R. D., & Patrick, C. J. (2020). Interfacing neural constructs with the Hierarchical Taxonomy of Psychopathology: 'Why' and 'how'. *Personality and Mental Health*, *14*(1), 106–122. https://doi.org/10.1002/pmh.1460

Pfohl, B., Blum, N., & Zimmerman, M. (1997). *Structured interview for DSM–IV personality: SIDP-IV*. American Psychiatric Pub.

Sher, L., Rutter, S. B., New, A. S., Siever, L. J., & Hazlett, E. A. (2019). Gender differences and similarities in aggression, suicidal behaviour, and psychiatric comorbidity in borderline personality disorder. *Acta Psychiatrica Scandinavica*, *139*(2), 145–153. https://doi.org/10.1111/acps.12981

Sleep, C. E., Crowe, M. L., Carter, N. T., Lynam, D. R., & Miller, J. D. (2021). Uncovering the structure of antagonism. *Personality Disorders*, *12*(4), 300–311. https://doi.org/10.1037/per0000416

Saulsman, L. M., & Page, A. C. (2004). The five-factor model and personality disorder empirical literature: A meta-analytic review. *Clinical Psychology Review*, *23*(8), 1055–1085. https://doi.org/10.1016/j.cpr.2002.09.001

Spielberger, C. D. (1988). *Manual for the State-Trait Anger Expression Inventory*. Psychological Assessment Resources.

Velikonja, T., Velthorst, E., McClure, M. M., Rutter, S., Calabrese, W. R., Rosell, D., Koenigsberg, H. W., Goodman, M., New, A. S., Hazlett, E. A., & Perez-Rodriguez, M. M. (2019). Severe childhood trauma and clinical and neurocognitive features in schizotypal personality disorder. *Acta Psychiatrica Scandinavica*, *140*(1), 50–64. https://doi.org/10.1111/acps.13032

Vize, C. E., Ringwald, W. R., Edershile, E. A., & Wright, A. G. C. (2022). Antagonism in daily life: An exploratory ecological momentary assessment study. *Clinical Psychological Science*, *10*(1), 90–108. https://doi.org/10.1177/21677026211013507

World Health Organization. (2019). *International statistical classification of diseases and related health problems* (11th ed.). https://icd.who.int/

Woods, W. C., Arizmendi, C., Gates, K. M., Stepp, S. D., Pilkonis, P. A., & Wright, A. G. C. (2020). Personalized models of psychopathology as contextualized dynamic processes: An example from individuals with borderline personality disorder. *Journal of Consulting and Clinical Psychology*, *88*(3), 240–254. https://doi.org/10.1037/ccp0000472

Wright, A. G. C., & Simms, L. J. (2014). On the structure of personality disorder traits: Conjoint analyses of the CAT-PD, PID-5, and NEO-PI-3 trait models. *Personality Disorders*, *5*(1), 43–54. https://doi.org/10.1037/per0000037