

Dimensions over categories: A meta-analysis of taxometric research

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Abstract

Taxometric procedures have been used extensively to investigate whether individual differences in personality and psychopathology are latently dimensional or categorical (“taxonic”). We report the first meta-analysis of taxometric research, examining 317 findings drawn from 183 articles that employed an index of the comparative fit of observed data to dimensional and taxonic data simulations. Findings supporting dimensional models outnumbered those supporting taxonic models five to one. There were systematic differences among 17 construct domains in support for the two models, but psychopathology was no more likely to generate taxonic findings than normal variation (i.e., individual differences in personality, response styles, gender, and sexuality). No content domain showed aggregate support for the taxonic model. Six variables – alcohol use disorder, intermittent explosive disorder, problem gambling, autism, suicide risk, and pedophilia – emerged as the most plausible taxon candidates based on a preponderance of independently replicated findings. We also compared the 317 meta-analysed findings to 185 additional taxometric findings from 96 articles that did not employ the comparative fit index. Studies that used the index were 4.88 times more likely to generate dimensional findings than those that did not after controlling for construct domain, implying that many taxonic findings obtained before the popularization of simulation-based techniques are spurious. The meta-analytic findings support the conclusion that the great majority of psychological differences between people is latently continuous, and that psychopathology is no exception.

Whether human variations should be understood as differences of degree or of kind is a fundamental question in psychology and psychiatry. Advocates of the former view argue that differences between people are best seen as quantitative variations along a continuum. Advocates of the latter view propose that some differences between people are qualitative, discrete, or typological. This distinction between dimensional and categorical models of variation arises in many fields. Personality researchers debate the existence of personality types, mental health researchers dispute the merits of categorical versus dimensional diagnosis, and social theorists question whether categories involving sexuality, race, and gender are truly discrete.

The distinction between dimensional and categorical accounts of human diversity has substantial implications for research, theory, and practice. In the psychiatric domain, whether mental disorders are viewed as discrete categories or as arbitrarily defined regions on an underlying continuum has a bearing on classification (categorical *versus* dimensional taxonomy), assessment (dichotomous diagnosis *versus* quantitative measurement), research (statistical searches for latent classes *versus* factors), clinical prediction (differential validity of dichotomous *versus* continuous measures [Markon, Chmielewski, & Miller, 2011]), causal explanation (specific etiologies *versus* multifactorial causation), and public stigma (Schomerus, Matschinger, & Angermeyer, 2013). Challenges to categorical models have intensified in recent years with the incorporation of dimensional features in DSM-5 (APA, 2013; Helzer, Kraemer, & Krueger, 2008) and the development of explicitly dimensional alternative frameworks such as RDoC (Insel et al., 2010) and HiTOP (Kotov et al., 2017).

Taxometric methods were developed as a means of adjudicating between categorical and dimensional models of latent variables by Paul Meehl and colleagues (e.g., Meehl, 1995). Initially they were used to test Meehl's conjecture that a discrete latent variable or

“taxon” (plural “taxa”) underlay vulnerability to schizophrenia (Golden & Meehl, 1979). A distinctive feature of taxometric methodology is the use of multiple mathematically independent procedures (e.g., MAMBAC, MAXCOV, MAXEIG, L-Mode), often examining patterns of covariation among indicators of a putative latent variable. Structural conclusions are based on convergence among procedures, usually judged by visual inspection of plots rather than statistical tests. Since the 1990s, taxometric studies have become increasingly popular and have explored a great diversity of psychological and other variables (Ruscio, Haslam, & Ruscio, 2006). They have often yielded taxonic findings for variables that had previously been assumed dimensional (e.g., Gangestad & Snyder, 1985).

A new, systematized approach to taxometric inference was introduced by Ruscio, Ruscio, and Meron (2007), who developed a procedure whereby taxometric plots based on observed data were compared to plots from parallel analyses of matched simulated comparison data sets generated from taxonic or dimensional latent structures. Their Comparison Curve Fit Index (CCFI) quantified the relative fit of the observed plot to plots based on the respective simulated data. A value of 0.5 indicated equally good fit to the taxonic and dimensional simulations, a value $>.55$ represented better fit to the taxonic simulations, and a value $<.45$ represented a better fit to the dimensional simulations (values $.45-.55$ are judged ambiguous). Extensive Monte Carlo research (Ruscio & Kacetow, 2009; Ruscio et al., 2007; Ruscio, Walters, Marcus, & Kacetow, 2010) establishes that the CCFI is very accurate in detecting taxonic and dimensional data under parameters prevailing in behavioral science, and that it has no significant bias in favor of taxonic or dimensional conclusions. For example, Ruscio et al. (2010) showed that when CCFI values generated by multiple taxometric procedures were averaged, their mean value correctly identified taxonic

and dimensional data 99.4% of the time. Since then the simulated comparison data method has become almost universally adopted by taxometric researchers.

Taxometric research was last comprehensively examined by Haslam, Holland, and Kuppens (2012), who reviewed 177 articles that used ≥ 1 taxometric procedures to evaluate the latent structure of an observed, unmanipulated variable. They extracted 311 distinct findings, each representing a binary judgment about the latent structure of one variable in one sample. Articles and findings were coded on several methodological attributes and their variables were classified into 10 construct domains: seven related to psychopathology (mood disorders, anxiety disorders, eating disorders, substance use disorders, other externalizing disorders, schizotypy, and other personality disorders), two related to other individual differences (normal personality, and “other”), and one miscellaneous domain included all variables that did not involve psychological or psychiatric variation). Multilevel logistic regression analyses identified several methodological choices—including low overall study quality—associated with a higher likelihood of taxonic findings. Taxonic findings were significantly less likely to be obtained in the domains of anxiety, eating, and personality disorders, and in normal personality. No domain of psychopathology was associated with a significantly heightened likelihood of taxonic findings relative to a “miscellaneous” domain of non-psychological variables. Strikingly, studies employing the CCFI were much less likely to generate taxonic findings than those that did not. Although the authors of the original research had concluded that 38.9% of all findings were taxonic, Haslam et al.’s (2012) analysis estimated that the true rate would be 14.0%.

The present review built on Haslam et al. (2012) but represents an advance in three respects. First, the taxometric literature has grown substantially in the eight years since the previous literature search. Second, the CCFI has become standard practice in taxometric

research since the previous review and the number of findings employing it has steeply risen since. Third, the greater availability of CCFI-based findings allows meta-analytic procedures to be applied for the first time, affording a quantitative effect size metric rather than a crude binary taxonic/dimensional distinction. These procedures permit a more refined analysis of construct domain and methodological factors associated with taxonicity.

The current study applied multi-level meta-analytic procedures (findings nested within studies nested within articles) to determine the prevalence and distribution of taxa in the taxometric literature. The meta-analysis was restricted to studies providing CCFIs but a further analysis compared the findings of these studies with those that did not employ the CCFI. We predicted that evidence for taxa would be scarce, and that CCFI-based findings would be taxonic much less than others, thereby casting doubt on some taxonic findings in the pre-CCFI literature. We also examined whether 17 construct domains—eleven representing forms of psychopathology and five representing forms of normal psychological variation—were consistently taxonic or nontaxonic, and whether there were systematic differences in support for taxa across domains. For example, we compared the evidence for taxa between normal and psychopathological constructs and between subsets of psychopathological constructs. As a final, more fine-grained step in the analysis, we aimed to locate any constructs that might be taxonic on the strength of replicated taxometric findings.

Method

Literature search

An exhaustive literature search was conducted using the same parameters as Haslam et al. (2012), who obtained 177 articles in a search concluded in April 2011. Using multiple publication databases (Google Scholar, PsycINFO, and Web of Science, as in the earlier

review, and adding Scopus), the present search was conducted iteratively from 2014 until January 1 2020. Search terms were “taxometric*”, “taxon*”, “MAXCOV”, “MAMBAC”, “MAXEIG”, and “L-Mode”. All articles had to 1) be published or “in press” in a peer-reviewed journal (for consistency with the earlier review and for quality control), 2) employ one or more established taxometric procedure (i.e., L-Mode, MAMBAC, MAXCOV, MAXEIG, MAXSLOPE), and 3) examine observed variables rather than simulated or experimentally manipulated data. By this means, 102 new taxometric articles were added to the previous 177, yielding a total of 279 (i.e., a 57.6% increase). As in Haslam et al. (2012), findings from the articles were defined as conclusions drawn about the latent structure of a single construct based on ≥ 1 taxometric procedures in one sample. An article could contain multiple findings if it investigated ≥ 1 construct and/or examined ≥ 1 sample (i.e., “study”). By this definition, the 279 articles reported 502 findings (mean=1.80), a 61.4% increase over Haslam et al. (2012). In the multi-level data analyses that follow, findings are treated as nested within studies, which are nested in articles.

Coding process

The 102 new articles were coded in an almost identical fashion to the 177 articles from Haslam et al. (2012) and merged into a single dataset. The first author coded all articles. Codes recorded sample properties (N , and whether it was drawn from undergraduate, clinical/forensic, community, or child/adolescent populations); characteristics of the indicator variables (self-report, interviews, observer ratings, number of indicators employed in the analysis, use of single-item indicators, use of dichotomous indicators, presence or absence of reported evidence of indicator validity); and aspects of the data analysis (use/non-use of MAXCOV, MAMBAC, MAXEIG, MAXSLOPE, L-Mode, and

other, and use/non-use of the CCFI-generating simulated comparison data method). For findings where no CCFIs were generated, each finding was recorded as taxonic or nontaxonic based on the authors' conclusion. For findings where CCFIs were generated they were recorded for each taxometric procedure and an average CCFI was calculated.

One change to the previous coding protocol was the addition of two new codes intended to capture possible sources of invalid taxonic conclusions caused by the use of compound samples. By admixing two or more distinct subsamples, compound sampling may generate "institutional pseudotaxa" (Cole, 2004), in effect building categorical structure into the sample. The new codes distinguished additive and subtractive forms of compound sampling. In the former (type A), two distinct samples were admixed, whereas in the latter (type B), two subgroups were extracted from a single sample and combined, removing the remainder. These codes were applied to all 502 findings.

To evaluate coding reliability, 20 articles reporting 29 findings were blind coded by the second author on 26 features. Overall agreement between coders was 95.6%. The lowest agreement (82.1%) was found for average CCFI, which accumulates minor errors of recording and calculation across multiple CCFI values, and in no case changed the taxonic or nontaxonic conclusion (mean discrepancy = $|.036|$). All disagreements were resolved by discussion. Table 1 presents a summary of coded properties of the 502 findings.

Construct domain definition

The 502 findings were classified into 17 construct domains to enable systematic comparison. Eight of the 10 domains employed in Haslam et al. (2012) were retained for the present analysis but two domains were subdivided to enable more differentiated explorations of psychopathological and normal variation, mindful of the growth of

taxometric literature in particular domains. The previous broad “other individual differences” was divided into separate domains of childhood disorders, psychotic disorders, somatoform disorders, other psychopathology, sexuality, response biases, and a narrower residual “other individual differences” domain. The previous “normal personality” domain was divided into normal personality and gender domains. The new set of 17 construct domains therefore included 11 domains of psychopathology, five domains of normal psychological variation, and one miscellaneous. The psychopathology domains, which included recognized mental disorders as well as subtypes, associated symptoms, and vulnerability factors, are detailed below. Domains 1-3 were conceptualized as internalizing disorders, domains 4-5 as externalizing disorders, and domain 6-7 as personality disorders.

1. Mood disorders (e.g., depression, dysthymia, mania, depression subtypes, depression-proneness, prolonged grief)
2. Anxiety disorders (e.g., GAD, PTSD, social anxiety disorder, worry, OCD subtypes, agoraphobia, anxiety sensitivity, fear of pain, hypochondriasis, health anxiety, distress intolerance)
3. Eating disorders (e.g., anorexia nervosa, bulimia nervosa, binge eating disorder, body dissatisfaction, dietary restraint, subtypes of anorexia & bulimia nervosa)
4. Substance use disorders (e.g., alcohol, nicotine, cannabis & hallucinogen abuse or dependence)
5. Other externalizing disorders (e.g., intermittent explosive disorder, oppositional defiant disorder, criminal lifestyle, bullying perpetration, problem gambling)
6. Schizotypy (e.g., magical ideation, perceptual aberration, social anhedonia, schizotypal personality disorder). This domain was defined separately from other

personality disorders because it has been the specific focus of a large taxometric literature.

7. Other personality disorders (e.g., avoidant, borderline, dependent, antisocial, obsessive-compulsive, paranoid, schizoid & narcissistic PDs, psychopathy)
8. Childhood disorders (e.g., ADHD & autism and their subtypes, childhood sleep problems, dyslexia subtypes, specific language impairment)
9. Psychotic disorders (e.g., psychotic symptoms, paranoid delusions, negative schizophrenia)
10. Somatoform disorders (e.g., somatic complaints, somatization)
11. Other psychopathology (e.g., dissociation, suicide risk, self-injury, dementia)

The five “normal” domains included psychological constructs not usually conceptualized as forms of psychopathology.

12. Personality (e.g., traits and attachment styles)
13. Sexuality-related constructs (e.g., hypersexuality, sexual orientations, sociosexuality, sexual attitudes, mate selectivity, sexual sadism, pedophilia)
14. Gender-related constructs (e.g., femininity, sex-stereotyped activities)
15. Response styles and biases (e.g., impression management, malingering, symptom over-reporting, health complaint exaggeration, feigned neurocognitive deficit)
16. Other individual differences (e.g., religious fundamentalism, interest in science, racist attitudes, vocational calling)

A residual category included constructs that are not psychological variations between people.

17. Miscellaneous (e.g., biological sex, handedness, prostate cancer risk, marital discord, flashbulb memories, metabolic syndrome, functional dyspepsia, relationship types and quality, envy and jealousy, diabetes, tardive dyskinesia)

Results

Descriptive findings

The mean sample size for the 502 findings was 2,848.9 (median 964.5). Table 2 presents a breakdown of taxonicity-related findings for the 17 construct domains, stratified by use/non-use of the CCFI. Taxonic findings are much rarer among findings in which the CCFI was used (16.7%) than when it was not used (57.8%). The overall mean CCFI (.392) is consistent with dimensionality and only two non-miscellaneous construct domains have mean CCFI's above the CCFI midpoint. The overall proportion of taxonic findings is lower than in Haslam et al. (2012) (31.9% vs 38.9%), probably reflecting the increased recent adoption of the CCFI (i.e., 93.6% of taxometric articles published since 2010). Figure 2 presents the distribution of average CCFI values for the 317 relevant findings and shows evidence of bimodality: 75.71% of findings are unambiguously non-taxonic, 16.72% are unambiguously taxonic, and 7.57% are ambiguous.

Meta-analysis

Meta-analyses were performed to determine the overall support for dimensional versus taxonic findings, differences in support across the 17 construct domains, and the impact of potential moderators. The meta-analysis was restricted to the 317 findings, drawn from 243 studies reported in 183 articles, in which the CCFI was employed (a 133% increase over the comparable findings from Haslam et al., 2012), based on the desirability of a

continuous metric and the index's demonstrated validity. The average CCFI calculated across multiple taxometric procedures ($M=2.74$) used to generate each finding served as our effect size metric, as this has been shown to enhance the validity of the CCFI (Ruscio et al., 2007). We estimated multilevel meta-analytic regression models where findings are considered to be nested in studies, which are nested in articles. We treated the CCFI values as proportions because they can be considered to reflect the proportion of distances between the observed data and data generated under a taxonic model versus distances between the observed data and data generated under a dimensional model. Consequently, we logit-transformed the CCFI values and used these as criterion variable for the analyses. As for proportions, the sampling variance of the CCFI values was estimated as

$\frac{1}{n(\text{logit}(\text{CCFI})(1-\text{logit}(\text{CCFI})))}$ with n being a constant to be estimated by the model to allow the true sampling variance of CCFI values to deviate with some order of magnitude from the sampling variance of ordinary proportions.

For ease of interpretation, when presenting our meta-analytic findings, we report back-transformed CCFI values with associated confidence intervals rather than the model coefficients, which cannot easily be interpreted by themselves. We first estimated an empty, unconditional model on all data. The estimated intercept was -0.418 ($SE=.056$), which corresponds to an overall estimated CCFI of $.40$ ($95\% \text{ CI}=[.37;.42]$). This finding indicates that there is substantially stronger evidence for dimensions than taxa in the taxometric literature. The model intercept showed heterogeneity across articles ($SD=0.652$), across findings in studies in articles ($SD=0.379$), but not across studies in articles ($SD=0.000$), as well as residual variation ($SD=2.878$). This means that the systematic heterogeneity in all findings can be decomposed into 75% variation in CCFI values between articles, 0% of the variance between studies within articles, and 25% variation in findings within studies within articles.

We next analysed the CCFI values as a function of the 17 construct domains. The estimated model indicated overall strong moderation by domain ($\chi^2(df=16)=58.879, p<.001$). Figure 2 presents a forest plot with the estimated CCFI values and associated 95% confidence interval by domain. There is strong evidence for the dimensionality of response styles, personality disorder, anxiety disorder, normal personality, mood disorder, other individual differences, and sexuality-related variables. The domains of somatoform disorder, schizotypy, psychotic disorder, other externalizing disorder, and gender-related variables have average CCFI values below .5, favoring dimensionality, but without excluding .5 in their confidence interval (CI). The eating disorder, childhood disorder, other psychopathology, substance use, and miscellaneous domains show average values just above .5 but including it in their CI. No domain has a CCFI value clearly supporting taxonicity.

We next contrasted CCFI estimates between significant domain groupings. First, we contrasted all psychopathology domains (domains 1-11) with all domains reflecting normal variation (domains 12-16). The corresponding CCFI values were .42 (95% CI=[.39;.46]) and .36 (95% CI=[.31;.42]), with the difference nonsignificant ($\chi^2(df=1)=3.285, p=.070$). Thus, evidence for taxonicity in psychopathology is not significantly stronger than in the domain of normal psychological variation. Second, we contrasted internalizing (domains 1-3; CCFI=.41 (95% CI=[.35;.46])) and externalizing disorders (domains 4-5; CCFI=.49 (95% CI=[.42;.55])), yielding no significant difference ($\chi^2(df=1)=3.124, p=.077$). Third, we contrasted abnormal personality (domains 6-7; CCFI=.35 (95% CI=[.28;.42])) to all other forms of psychopathology (domains 1-5 & 8-11; CCFI=.44 (95% CI=[.40;.48])). Here the difference was significant ($\chi^2(df=1)=4.879, p=.027$), indicating that personality disorders show even stronger evidence of dimensionality than other forms of psychopathology. Finally, given the longstanding interest in schizotypy in taxometric research, we contrasted it (domain 6; CCFI=.40 (95%

CI=[.27;.54])) to other forms of abnormal personality (domain 7; CCFI=.30 (95% CI=[.25;.36])), yielding no significant difference ($\chi^2(df=1)=1.681, p=.195$).

We next examined possible moderators. We first estimated a series of models with groups of associated moderator variables as predictors in separate models. In each analysis we controlled for construct domain as certain moderators may occur more in some domains than other. The results of this series of models are presented in Table 3. There was minimal evidence for significant moderation by sample or other methodological factors. CCFI was unrelated to publication year, sample size, or use of a compound sample (although use of the subtractive type B form was marginally associated with higher CCFI values). CCFI values did not significantly vary depending on sample type ($\chi^2(df=4)=9.204, p=.056$), although they were marginally lower when the sample consisted of children or adolescents compared to not. CCFI values were also unrelated to use of self-ratings or other types of data, $\chi^2(df=3)=2.310, p=.511$). The number of procedures used did moderate the obtained CCFI values, with those using more than one procedure, as recommended, obtaining lower CCFI values than the six effects based on a single procedure ($\chi^2(df=3)=23.598, p<.001$).

Comparison with non-CCFI studies

We examined to what extent the conclusions from taxometric studies based on simulation procedures and yielding CCFI values diverge from conclusions of other studies. We ran a binomial linear mixed model on a binary outcome variable indicating a dimensional (0) or taxonic (1) conclusion. The dimensional findings included 240 where CCFI < .45 and 53 from non-CCFI studies, and the taxonic findings included 53 where CCFI > 0.55 and 107 from non-CCFI studies. Ambiguous CCFI values between .45 and .55 ($n = 24$) were considered missing. The binary outcome variable was predicted by a binary variable indicating whether

the conclusion was based on simulations (1) or not (0), controlling for construct domain. The results indicated that taxonic versus dimensional conclusions differ based on whether or not findings were based on simulation procedures ($B=-1.763$, $SE=0.387$, $p<.001$). This result indicates that the probability of a dimensional conclusion is 4.88 times higher when using the CCFI than when not, controlling for construct domain.

Identifying potential taxa

As a final step in the analysis, we attempted to identify variables that may be taxonic based on the best available taxometric evidence. In view of the apparent pro-taxonic bias in findings that do not employ the CCFI we restricted our search to the CCFI-based findings. We sought variables whose taxonic status had been independently and preponderantly replicated, applying three search criteria: 1) a taxonic result (CCFI $>.55$) had been replicated at least once for the variable of interest; 2) the taxonic result had been replicated by different research groups; and 3) the majority of findings for the variable supported taxonicity. Applying these criteria, the 53 taxonic CCFI-based findings contained replications of 13 variables. For two of these (depression, autism subtypes), taxonic findings were outnumbered by nontaxonic findings. Of the remaining 11 candidate taxonic variables, four (alcohol dependence, nicotine addiction, sexual orientation, religious fundamentalism) had not been replicated by different research groups (replications for the last three had all occurred across studies reported in a single article). Consequently, seven variables were identified as plausibly taxonic based on the current taxometric literature.

Our analysis suggests that alcohol dependence, intermittent explosive disorder, problem gambling, autism, suicide risk, pedophilia, and biological sex are plausibly taxonic based on current taxometric evidence. It should be noted that the plausibility hurdle was not

high. Apart from pedophilia (three replications) and biological sex (two replications) the plausible taxonic findings have only been replicated a single time, the four taxonic findings for pedophilia narrowly outnumber nontaxonic findings four to three, and the suicide risk finding would be ruled out if a nontaxonic finding for suicidal ideation rather than risk were counted. Nevertheless, the seven variables demonstrate independently replicated, preponderantly taxonic findings generated by well-validated taxometric procedures.

Discussion

This study, the first meta-analysis of the substantial taxometric literature, allows us to draw several broad conclusions about the latent structure of psychological variation. First, it suggests that most individual difference variables implicate latent dimensions rather than categories. Dimensional findings overwhelmingly outnumbered taxonic findings, and no construct domain was reliably taxonic. Second, although evidence of taxa differs across construct domains, latent categories are no more prevalent in the realm of psychopathology than in the realm of normal psychological variation. By implication, categories are no more appropriate for diagnosing mental disorders than they are for describing personalities. Third, the study does not rule out the possibility that some taxa exist and indicates where some might be found. Finally, it confirms the prior conclusion (Haslam et al., 2012) that studies which did not use the simulated comparison data method, mostly published some time ago, deliver taxonic results at an elevated rate. As extensive Monte Carlo evidence shows that the CCFI has no significant bias for or against taxonic inferences, studies which did not use it appear to have a large pro-taxonic bias. That bias calls into question the disproportionately taxonic findings of much early taxometric research.

The preponderance of dimensional findings demonstrated in our analysis might raise the opposite concern that there is an anti-taxonic bias in the recent taxometric literature. For example, it could be argued that some studies may lack the power to detect low base-rate taxa, such as mental disorders with low population prevalence, and thus draw dimensional conclusions because almost all research participants fall in the complement class. There are four reasons to doubt this possibility. First, the sample size requirements for detecting low base-rate taxa are well known among taxometric researchers. Second, average sample sizes have increased in recent studies relative to those reviewed in Haslam et al. (2012), while findings have increasingly supported dimensional conclusions. Third, in the current analysis larger samples were associated with nonsignificantly lower (i.e., more dimensional) CCFI values, contrary to what would be expected if under-powered samples were biasing findings against finding taxa. Fourth, a follow-up analysis restricted to findings for psychopathological variables found no difference between the mean CCFI of findings obtained in community samples (0.410) and those in clinical samples (0.401), where base-rates of mental disorders would be substantially higher, $t(153)=0.30$, $p=.77$. We believe it is therefore unlikely that the predominance of dimensional findings reflects a failure to detect low base-rate taxa.

Many of the conclusions of the present review must remain qualified, as taxometric procedures are not the only methods for deciding between categorical and dimensional models (Borsboom et al., 2016). However, they reinforce the disenchantment with categorical diagnosis that has taken place in recent decades. Growing recognition of the importance of quantitative variation in expressions of particular disorders, the spectrum relationships among ostensibly different disorders, the compatibility of known genetic influences with latent continuity (Smoller et al., 2019), and the utility of dimensional systems

for capturing variation in psychopathology has led to many proposals for change. Some have been revisionist, such as the move to include dimensional diagnosis in the personality disorder domain in DSM-5 (Lilienfeld & Treadway, 2014). Others have been revolutionary, such as the dimensional HiTOP classification (Kotov et al., 2017). Considerations of latent structure should not be the sole bases for choosing between categorical and dimensional classifications, but the findings of this meta-analysis strongly support the basic assumptions of dimensional diagnosis.

Although the meta-analytic findings indicate that most psychological variation is dimensional, it also tentatively supports the existence of a few taxa. No construct domain was particularly taxon-heavy, and the domains of normal and abnormal personality were particularly taxon-light, but seven potential taxa were identified. Six of these—alcohol use disorder, intermittent explosive disorder, problem gambling, autism, suicide risk, and pedophilia—fell in the broad psychological realm. Four additional variables—alcohol dependence, nicotine addiction, sexual orientation, and religious fundamentalism—also yielded a preponderance of taxonic findings but have not been independently replicated. It is noteworthy that these candidate taxa do not include any of the most widely researched mental disorders, autism notwithstanding. It is also noteworthy that many involve addiction or an addiction-like dynamic (i.e., problem gambling) and sexuality. Indeed, with the exception of autism, all are closely linked to specific behaviors (alcohol and nicotine consumption, gambling, suicidal self-harm, anger outbursts), preferences (attractions to same-sex or other-sex adults or children), or beliefs (fundamentalist religion). It might be speculated that psychiatric taxa tend to involve distinct learning trajectories or dynamic category formation processes, shaped by specific motivational attractors. Meehl (1992) speculated on the existence of such “environment-mold taxa” and in the psychiatric realm

they may be more common than taxa of the “natural kind” sort, which spring from specific biological etiologies (Haslam, 2014).

Any such speculations must be made cautiously, because current evidence for the candidate taxa is slender. Although 279 taxometric articles have been published, they have explored such diverse phenomena that their coverage of many variables has been too thin to generate reliable structural conclusions (e.g., robust meta-analytic effect estimates). It is for this reason that the bulk of our analysis focused on 17 broad construct domains rather than the more than 100 specific constructs. Future taxometric research should deepen that evidence base by focusing on the candidate taxa to determine whether they replicate consistently. Conversely, this meta-analysis strongly suggests that there is little value in conducting future taxometric studies of normal and abnormal personality, response styles, mood disorders, and anxiety disorders. Findings in these domains have been extensive and overwhelmingly dimensional. Schizotypy presents a possible exception as there remains substantial disagreement in the literature. There have been 44 taxometric findings for schizotypy-related variables: of the 33 findings not based on the CCFI 29 drew a taxonic conclusion, and of the 11 employing it only one finding did so (mean CCFI = .392). With non-CCFI findings shown to have a strong pro-taxonic bias and this meta-analysis finding that CCFIs for schizotypy are comparable to those for other abnormal personality characteristics, it seems prudent to infer that the evidence favors schizotypy being dimensional.

Conclusions

After initially generating great enthusiasm for the existence of latent categories, the taxometric literature has veered off in a very different direction in the past decade. Since the advent of data simulation-based procedures, taxonic findings have become scarce. It has

grown increasingly clear that taxa are rare in the field of psychopathology and perhaps mythical in the field of personality (Haslam, 2019). This meta-analysis supports the findings of previous, non-meta-analytic reviews of the taxometric literature by establishing that taxonic findings are infrequent when appropriate methodological controls are applied, and by quantifying the powerful bias toward taxonic inferences that exists when they are not. On the evidence of this analysis, 84.5% of simulation-based taxometric research findings about psychological variation do not support the presence of a taxon and dimensional findings are almost five times more likely when the simulation method is used than when it is not.

The analysis extends previous reviews in several respects. First, its use of meta-analytic methods adds robustness to its conclusions. In particular, it demonstrates that almost half of the 16 psychological construct domains examined—normal personality, response styles, other normal-range individual differences, non-schizotypy-related personality disorders, anxiety disorder, mood disorder, and sexuality-related variables—are consistently dimensional. Second, the planned contrasts between domains revealed that there was no significant difference in support for taxa in the broad field of psychopathology than in normal psychological variation, as well as several other systematic comparisons that had not been possible before. The former conclusion is important because it challenges the common assumption that although normal variations may fall on a continuum, mental disorder should be understood categorically. The meta-analysis effectively erases the distinction between normal and abnormal at the level of latent structure, consistent with the emerging evidence that a common factorial structure underpins normal and abnormal personality and psychiatric disorders (Rosenström et al., 2019). However, it does not erase the possibility that some taxa exist, and its third new contribution is to point to where promising candidate taxa may be found, pending further replication.

Our synthesis of four decades of taxometric research shows that it has made significant steps toward clarifying the structure of psychological variation. Taxometrics was initially presented as a tool for discovering where taxa are present in personality and psychopathology, but its legacy may be to have shown that their absence is a reasonable default assumption in these domains.

References (* used in review)

- *Ahmed, A. O., Buckley, P. F., & Mabe, P. A. (2012). Latent structure of psychotic experiences in the general population. *Acta Psychiatrica Scandinavica*, *125*, 54-65.
- *Ahmed, A. O., Green, B. A., Buckley, P. F., & McFarland, M. E. (2012). Taxometric analyses of paranoid and schizoid personality disorders. *Psychiatry Research*, *196*, 123-132.
- *Ahmed, A. O., Green, B. A., Clark, C. B., Stahl, K. C., & McFarland, M. E. (2011). Latent structure of unipolar and bipolar mood symptoms. *Bipolar Disorders*, *13*, 522-36.
- *Ahmed, A. O., Green, B. A., Goodrum, N. M., Doane, N. J., Birgenheir, D., & Buckley, P. F. (2013). Does a latent class underlie schizotypal personality disorder? Implications for schizophrenia. *Journal of Abnormal Psychology*, *122*, 475-491.
- *Ahmed, A. O., Green, B. A., McCloskey, M. S., & Berman, M. E. (2010). Latent structure of intermittent explosive disorder in an epidemiological sample. *Journal of Psychiatric Research*, *44*, 663–672.
- *Ahmed, A. O., Strauss, G. P., Buchanan, R. W., Kirkpatrick, B., & Carpenter, W. T. (2015). Are negative symptoms dimensional or categorical? Detection and validation of deficit schizophrenia with taxometric and latent variable mixture models. *Schizophrenia Bulletin*, *41*, 879-891.
- *Ambrosini, P. J., Bennett, D. S., Cleland, C. M., & Haslam, N. (2003). Taxonicity of adolescent melancholia: A categorical or dimensional construct ? *Journal of Psychiatric Research*, *36*, 247–256.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.
- *Arnau, R. C., Green, B. A., Rosen, D. H., Gleaves, D. H., & Melancon, J. G. (2003). Are Jungian preferences really categorical ? An empirical investigation using taxometric analysis. *Personality and Individual Differences*, *34*, 233–251.
- *Arntz, A., Bernstein, D., Gielen, D., van Nieuwenhuijzen, M., Penders, K., Haslam, N., & Ruscio, J. (2009). Taxometric evidence for the dimensional structure of cluster-C, paranoid and borderline personality disorders. *Journal of Personality Disorders*, *23*, 606–628.
- *Asmundson, G. J. G., Collimore, K. C., Bernstein, A., Zvolensky, M. J., & Hadjistavropoulos, H. D. (2007). Is the latent structure of fear of pain continuous or discontinuous among

- pain patients? Taxometric analysis of the pain anxiety symptoms scale. *Journal of Pain*, 8, 387–395.
- *Asmundson, G. J. G., Hadjistavropoulos, H. D., Bernstein, A., & Zvolensky, M. J. (2009). Latent structure of fear of pain: an empirical test among a sample of community dwelling older adults. *European Journal of Pain*, 13, 419–425.
- *Asmundson, G. J. G., Weeks, J. W., Carleton, R. N., Thibodeau, M. A., & Fetzner, M. G. (2011). Revisiting the latent structure of the anxiety sensitivity construct: more evidence of dimensionality. *Journal of Anxiety Disorders*, 25, 138–147.
- *Balbuena, L., Baetz, M., & Bowen, R. C. (2015). The dimensional structure of cycling mood disorders. *Psychiatry Research*, 228, 289-294.
- *Baldwin, G., & Shean, G. D. (2006). A taxometric study of the Center for Epidemiological Studies depression scale. *Genetic, Social and General Psychology Monographs*, 132, 101–128.
- *Baptista, M. N., Cunha, F., & Hauck, N. (2019). The latent structure of depression symptoms and suicidal thoughts in Brazilian youths. *Journal of Affective Disorders*, 254, 90-97.
- *Barry, T. D., Marcus, D. K., Barry, C. T., & Coccaro, E. F. (2013). The latent structure of oppositional defiant disorder in children and adults. *Journal of Psychiatric Research*, 47, 1932-1939.
- *Beach, S. R. H., & Amir, N. (2003). Is depression taxonic, dimensional, or both? *Journal of Abnormal Psychology*, 112, 228–236.
- *Beach, S. R. H., Fincham, F. D., Amir, N., & Leonard, K. E. (2005b). The taxometrics of marriage: is marital discord categorical? *Journal of Family Psychology*, 19, 276–285.
- *Beller, J., & Bosse, S. (2017). Machiavellianism has a dimensional latent structure: Results from taxometric analyses. *Personality and Individual Differences*, 113, 57-62.
- *Beller, J., & Kröger, C. (2017). Is religious fundamentalism a dimensional or a categorical phenomenon? A taxometric analysis in two samples of youth from Egypt and Saudi Arabia. *Psychology of Religion and Spirituality*, 9, 158-164.
- *Bernstein, A., Zvolensky, M. J., Feldner, M. T., Lewis, S. F., & Leen-Feldner, E. W. (2005). Anxiety sensitivity taxonicity: a concurrent test of cognitive vulnerability for post-traumatic stress symptomatology among young adults. *Cognitive Behaviour Therapy*, 34, 229–241.

- *Bernstein, A., Zvolensky, M. J., Kotov, R., Arrindell, W. A., Taylor, S., Sandin, B., Cox, B. J., Stewart, S. H., Bouvard, M., Cardenas, S. J., Eifert, G. H., & Schmidt, N. B. (2006). Taxonomicity of anxiety sensitivity: a multi-national analysis. *Journal of Anxiety Disorders*, *20*, 1–22.
- *Bernstein, A., Zvolensky, M. J., Norton, P. J., Schmidt, N. B., Taylor, S., Forsyth, J. P., Lewis, S. F., Feldner, M. T., Leen-Feldner, E. W., Stewart, S. H., & Cox, B. (2007). Taxometric and factor analytic models of anxiety sensitivity: integrating approaches to latent structural research. *Psychological Assessment*, *19*, 74–87.
- *Bernstein, A., Zvolensky, M. J., Stewart, S., & Comeau, N. (2007). Taxometric and factor analytic models of anxiety sensitivity among youth: exploring the latent structure of anxiety psychopathology vulnerability. *Behavior Therapy*, *38*, 269–283.
- *Bernstein, A., Zvolensky, M. J., Stewart, S. H., Comeau, M. N., & Leen-Feldner, E. W. (2006). Anxiety sensitivity taxonomicity across gender among youth. *Behaviour Research and Therapy*, *44*, 679–698.
- *Bernstein, A., Zvolensky, M. J., Weems, C., Stickle, T., & Leen-Feldner, E. W. (2005). Taxonomicity of anxiety sensitivity: an empirical test among youth. *Behaviour Research and Therapy*, *43*, 1131–1155.
- *Blanchard, J. J., Gangestad, S. W., Brown, S. A., & Horan, W. P. (2000). Hedonic capacity and schizotypy revisited: a taxometric analysis of social anhedonia. *Journal of Abnormal Psychology*, *109*, 87–95.
- *Blanchard, J. J., Horan, W. P., & Collins, L. M. (2005). Examining the latent structure of negative symptoms: is there a distinct subtype of negative symptom schizophrenia? *Schizophrenia Research*, *77*, 151–165.
- Borsboom, D., Rhemtulla, M., Cramer, A. O. J., van der Maas, H. L., Scheffer, M., & Dolan, C. V. (2016). Kinds versus continua: a review of psychometric approaches to uncover the structure of psychiatric constructs. *Psychological Medicine*, *46*, 1567–1579.
- *Bove, E. A., & Epifani, A. (2012). From schizotypal personality to schizotypal dimensions: A two-step taxometric study. *Clinical Neuropsychiatry*, *9*, 111–122.
- *Boyers, G. B., Broman-Fulks, J. J., Valentiner, D. P., McCraw, K., Curtin, L., & Michael, K. D. (2017). The latent structure of social anxiety disorder and the performance only specifier: a taxometric analysis. *Cognitive Behaviour Therapy*, *46*, 507–521.

- *Braverman, J., LaBrie, R. A., & Shaffer, H. J. (2011). A taxometric analysis of actual internet sports gambling behavior. *Psychological Assessment, 23*, 234–244.
- *Broman-Fulks, J. J., Deacon, B. J., Olatunji, B. O., Bondy, C. L., Abramowitz, J. S., & Tolin D. F. (2010). Categorical or dimensional: a reanalysis of the anxiety sensitivity. *Behavior Therapy, 41*, 154–171.
- *Broman-Fulks, J. J., Green, B. A., Berman, M. E., Olatunji, B. O., Arnau, R. C., Deacon, B. J., & Sawchuk, C. N. (2008). The latent structure of anxiety sensitivity – revisited. *Assessment, 15*, 188–203.
- *Broman-Fulks, J. J., Hill, R. W., & Green, B. A. (2008). Is perfectionism categorical or dimensional? A taxometric analysis. *Journal of Personality Assessment, 90*, 481–490.
- *Broman-Fulks, J. J., Ruggiero, K. J., Green, B. A., Kilpatrick, D. G., Danielson, K. M., Resnick, H. S., & Saunders, B. E. (2006). Taxometric investigation of PTSD: data from two nationally representative samples. *Behavior Therapy, 37*, 364–380.
- *Broman-Fulks, J. J., Ruggiero, K. J., Green, B. A., Smith, D. W., Hanson, R. F., Kilpatrick, D. G., & Saunders, B. E. (2009). The latent structure of posttraumatic stress disorder among adolescents. *Journal of Traumatic Stress, 22*, 146–152.
- *Carleton, R. N., Weeks, J. W., Howell, A. N., Asmundson, G. J., Antony, M. M., & McCabe, R. E. (2012). Assessing the latent structure of the intolerance of uncertainty construct: An initial taxometric analysis. *Journal of Anxiety Disorders, 26*, 150-157.
- *Carothers, B. J., & Reis, H. T. (2013). Men and women are from Earth: Examining the latent structure of gender. *Journal of Personality and Social Psychology, 104*, 385-407.
- *Carvalho, L. D., Hauck Filho, N., Pianowski, G., & Muner, L. C. (2019). Latent structure of antisocial and borderline personality disorders: a taxometric research. *Paidéia (Ribeirão Preto), 29*, e2902.
- Cole, D. A. (2004). Taxometrics in psychopathology research: An introduction to some of the procedures and related methodological issues. *Journal of Abnormal Psychology, 113*(1), 3–9.
- *Crome, E., Baillie, A., Slade, T., & Ruscio, A. M. (2010). Social phobia: Further evidence of dimensional structure. *Australian and New Zealand Journal of Psychiatry, 44*, 1012–1020.
- *Cuesta, M. J., Ugarte, M. D., Goicoa, T., Eraso, S., & Peralta, V. (2007). A taxometric analysis of schizophrenia symptoms. *Psychiatry Research, 150*, 245–253.

- *Daneluzzo, E., Stratta, P., Di Tommaso, S., Pacifico, R., Riccardi, I., & Rossi, A. (2009). Dimensional, non-taxonic latent structure of psychotic symptoms in a student sample. *Social Psychiatry and Psychiatric Epidemiology*, *44*, 911–916.
- *Denson, T. F., & Earleywine, M. (2006). Pothead or pot smoker? A taxometric investigation of cannabis dependence. *Substance Abuse Treatment, Prevention, and Policy*, *1*, 22.
- *Denson, T. F., Iyer, R., & Lickel, B. (2010). Racist or racism ? Taxometric support for a dimensional latent structure of explicit prejudice. *Group Processes and Intergroup Relations*, *13*, 113–128.
- *Dollaghan, C. A. (2004). Taxometric analyses of specific language impairment in 3- and 4-year-old children. *Journal of Speech, Language and Hearing*, *47*, 464–475.
- *Dollaghan, C. A. (2011). Taxometric analyses of specific language impairment in 6-year-old children. *Journal of Speech, Language, and Hearing Research*, *54*, 1361-1371.
- *Dragovic, M., Milenkovic, S., & Hammond, G. (2008). The distribution of hand preference is discrete: a taxometric examination. *British Journal of Psychology*, *99*, 445–459.
- *Edens, J. F., Marcus, D. K., Lilienfeld, S. O., & Poythress, N. J. (2006). Psychopathic, not psychopath: taxometric evidence for the dimensional structure of psychopathy. *Journal of Abnormal Psychology*, *115*, 131–144.
- *Edens, J. F., Marcus, D. K., & Morey, L. C. (2009). Paranoid personality has a dimensional latent structure: taxometric analyses of community and clinical samples. *Journal of Abnormal Psychology*, *118*, 545–553.
- *Edens, J. F., Marcus, D. K., & Ruiz, M. A. (2008). Taxometric analyses of borderline personality features in a large-scale male and female offender sample. *Journal of Abnormal Psychology*, *117*, 705–711.
- *Edens, J. F., Marcus, D. K., & Vaughn, M. G. (2011). Exploring the taxometric status of psychopathy among youthful offenders: is there a juvenile psychopath taxon? *Law and Human Behavior*, *35*, 13–24.
- *Eichner, K. V., Kwon, P., & Marcus, D. K. (2014). Optimists or optimistic? A taxometric study of optimism. *Psychological Assessment*, *26*, 1056-1061.
- *Elahi, A., Algorta, G. P., Varese, F., McIntyre, J. C., & Bentall, R. P. (2017). Do paranoid delusions exist on a continuum with subclinical paranoia? A multi-method taxometric study. *Schizophrenia Research*, *190*, 77-81.

- *Erlenmeyer-Kimling, L., Golden, R. R., & Cornblatt, B. A. (1989). A taxometric analysis of cognitive and neuromotor variables in children at risk for schizophrenia. *Journal of Abnormal Psychology, 98*, 203–208.
- *Eulálio, M. D., Andrade, T. F., Melo, R.L. , & Neri, A. L. (2015). Latent structure of depression in the elderly: a taxometric analysis. *Cadernos de Saude Publica, 31*, 555-564.
- *Everett, K. V., & Linscott, R. J. (2015). Dimensionality vs taxonicity of schizotypy: some new data and challenges ahead. *Schizophrenia Bulletin, 41*, S465-S474.
- *Falcon, R. G. (2015). Is envy categorical or dimensional? An empirical investigation using taxometric analysis. *Emotion, 15*, 694-698.
- *Falcon, R. G. (2016). Stay, stray or something in-between? A comment on Wlodarski et al. *Biology Letters, 12*, 20151069.
- *Fanning, J. R., Marcus, D. K., Preszler, J. R., & Coccaro, E. F. (in press). Evidence for the taxonic latent structure for DSM-5 intermittent explosive disorder in adults. *Psychological Medicine*.
- *Ferguson, E. (2009). A taxometric analysis of health anxiety. *Psychological Medicine, 39*, 277–285.
- *Ferguson, E., Williams, L., O'Connor, R., Howard, S., Hughes, B., Johnston, D. W., Allan, J. L., O'Connor, D. B., Lewis, C. A., Greal, M. A., & O'Carroll, R. E. (2009). A taxometric analysis of type-D personality. *Psychosomatic Medicine, 71*, 981–986.
- *Forbes, D., Haslam, N., Williams, B., & Creamer, M. (2005). Testing the latent structure of PTSD: a taxometric study of combat veterans. *Journal of Traumatic Stress, 18*, 647–656.
- *Fossati, A., Beauchaine, T. P., Grazioli, F., Carretta, I., Cortinovis, F., & Maffei C. (2005). A latent structure analysis of Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Narcissistic Personality Disorder criteria. *Comprehensive Psychiatry, 46*, 361–367.
- *Fossati, A., Raine, A., Borroni, S., & Maffei C. (2007). Taxonic structure of schizotypal personality in nonclinical subjects: issues of replicability and age consistency. *Psychiatry Research, 152*, 103–112.
- *Foster, J. D., & Campbell, W. K. (2007). Are there such things as 'narcissists' in social psychology? A taxometric analysis of the Narcissistic Personality Inventory. *Personality and Individual Differences, 43*, 1321–1332.

- *Fraley, R. C., Hudson, N. W., Heffernan, M. E., & Segal, N. (2015). Are adult attachment styles categorical or dimensional? A taxometric analysis of general and relationship-specific attachment orientations. *Journal of Personality and Social Psychology, 109*, 354-368.
- *Fraley, R. C., & Roisman, G. I. (2014). Categories or dimensions? A taxometric analysis of the Adult Attachment Interview. *Monographs of the Society for Research in Child Development, 79*, 36-50.
- *Fraley, R. C., & Spieker, S. J. (2003). Are infant attachment patterns continuously or categorically distributed? A taxometric analysis of strange situation behavior. *Developmental Psychology, 39*, 387-404.
- *Franklin, C. L., Strong, D. R., & Greene, R. L. (2002). A taxometric analysis of the MMPI-2 depression scales. *Journal of Personality Assessment, 79*, 110-121.
- *Frazier, T. W., Youngstrom, E. A., & Naugle, R. I. (2007). The latent structure of attention-deficit/hyperactivity disorder in a clinic-referred sample. *Neuropsychology, 21*, 45-64.
- *Frazier, T. W., Youngstrom, E. A., Naugle, R. I., Haggerty, K. A., & Busch, R. M. (2007). The latent structure of cognitive symptom exaggeration on the Victoria Symptom Validity Test. *Archives of Clinical Neuropsychology, 22*, 197-211.
- *Frazier, T. W., Youngstrom, E. A., Sinclair, L., Kubu, C. S., Law, P., Rezai, A., & Constantino, J. N., & Eng, C. (2010). Autism spectrum disorders as a qualitatively distinct category from typical behavior in a large, clinically ascertained sample. *Assessment, 17*, 308-320.
- *Gangestad, S. W., Bailey, J. M., & Martin, N. G. (2000). Taxometric analyses of sexual orientation and gender identity. *Journal of Personality and Social Psychology, 78*, 1109-1121.
- *Gangestad, S. W., & Snyder, M. (1985). 'To carve nature at its joints': on the existence of discrete classes in personality. *Psychological Review, 92*, 317-349.
- *Gavett, B. E., & Stern, R. A. (2012). Dementia has a categorical, not dimensional, latent structure. *Psychology and Aging, 27*, 791-797.
- *Gibb, B. E., Alloy, L. B., Abramson, L. Y., Beevers, C. G., Miller, I. W. (2004). Cognitive vulnerability to depression: a taxometric analysis. *Journal of Abnormal Psychology, 113*, 81-89.

- *Ginestet, C. E., Mitchell, K., & Wellman, N. (2008). Taxometric investigation of the latent structure of nicotine dependence: an epidemiological sample. *Nicotine and Tobacco Research, 10*, 833–841.
- *Gleaves, D. H., Lowe, M. R., Green, B. A., Cororve, M. B., & Williams, T. L. (2000). Do anorexia and bulimia nervosa occur on a continuum? A taxometric analysis. *Behavior Therapy, 31*, 195–219.
- *Gleaves, D. H., Lowe, M. R., Snow, A. C., Green, B. A., & Murphy-Eberenz, K.P. (2000). Continuity and discontinuity models of bulimia nervosa: a taxometric investigation. *Journal of Abnormal Psychology, 109*, 56–68.
- *Goedeker, K. C., & Tiffany, S. T. (2008). On the nature of nicotine addiction: a taxometric analysis. *Journal of Abnormal Psychology, 117*, 896–909.
- *Golden, R. R. (1982). A taxometric model for the detection of a conjectured latent taxon. *Multivariate Behavioral Research, 17*, 389–416.
- *Golden, R. R., Campbell, M., & Perry, R. (1987). A taxometric method for diagnosis of tardive dyskinesia. *Journal of Psychiatric Research, 21*, 233–241.
- *Golden, R. R., & Meehl, P. E. (1979). Detection of the schizoid taxon with MMPI indicators. *Journal of Abnormal Psychology, 88*, 217–233.
- *Graham, F. J., Walters, G. D., Harris, D. A., & Knight, R. A. (2016). Is hypersexuality dimensional or categorical? Evidence from male and female college samples. *The Journal of Sex Research, 53*, 224-238.
- *Green, B. A., Ahmed, A. O., Marcus, D. K., & Walters, G. D. (2011). The latent structure of alcohol use pathology in an epidemiological sample. *Journal of Psychiatric Research, 45*, 225–233.
- *Grotkowski, K., & Miller, S. A. (2019). Optimists or optimistic: Replication of a taxometric study on optimism. *Journal of Research in Personality, 82*, 103854.
- *Grove, W. M., Andreasen, N. C., Young, M., Endicott, J., Keller, M. B., Hirschfeld, R. M. A., & Reich, T. (1987). Isolation and characterization of a nuclear depressive syndrome. *Psychological Medicine, 17*, 471–484.
- *Guay, J. P., Knight, R. A., Ruscio, J., & Hare, R. D. (2018). A taxometric investigation of psychopathy in women. *Psychiatry Research, 261*, 565-573.

- *Guay, J., Ruscio, J., Hare, R., & Knight, R. A. (2007). A taxometric study of the latent structure of psychopathy: evidence for dimensionality. *Journal of Abnormal Psychology, 116*, 701–716.
- *Guo, F., Chen, Z., & Ren, F. (2014). The latent structure of depression among Chinese: A taxometric analysis in a nationwide urban sample. *PsyCh Journal, 3*, 234-244.
- *Hankin, B. L., Fraley, R. C., Lahey, B. B., & Waldman, I. D. (2005). Is depression best viewed as a continuum or discrete category? A taxometric analysis of childhood and adolescent depression in a population-based sample. *Journal of Abnormal Psychology, 114*, 96–110.
- *Harris, G. T., Rice, M. E., Hilton, N. Z., Lalumiere, M. L., & Quinsey, V. L. (2007). Coercive and precocious sexuality as a fundamental aspect of psychopathy. *Journal of Personality Disorders, 21*, 1–27.
- *Harris, G. T., Rice, M. E., & Quinsey, V. L. (1994). Psychopathy as a taxon: evidence that psychopaths are a discrete class. *Journal of Consulting and Clinical Psychology, 62*, 387–397.
- *Haslam, N. (1994). Categories of social relationship. *Cognition, 53*, 59–90.
- *Haslam, N. (1997). Evidence that male sexual orientation is a matter of degree. *Journal of Personality and Social Psychology, 73*, 862–870.
- *Haslam, N. (1999). Taxometric and related methods in relationships research. *Personal Relationships, 6*, 519–534.
- Haslam, N. (2014). Natural kinds in psychiatry: Conceptually implausible, empirically questionable, and stigmatizing. In H. Kincaid & J. Sullivan (Eds.), *Classifying psychopathology: Mental kinds and natural kinds* (pp.11-28). Cambridge: MIT Press.
- Haslam, N. (2019). Unicorns, snarks, and personality types: A review of the first 102 taxometric studies of personality. *Australian Journal of Psychology, 71*, 39-49.
- *Haslam, N., & Beck, A. T. (1994). Subtyping major depression: a taxometric analysis. *Journal of Abnormal Psychology, 103*, 686–692.
- *Haslam, N., & Bornstein B. H. (1996). Envy and jealousy as discrete emotions: a taxometric analysis. *Motivation and Emotion, 20*, 255–272.
- Haslam, N., Holland, E., & Kuppens, P. (2012). Categories versus dimensions in personality and psychopathology: A quantitative review of taxometric research. *Psychological Medicine, 42*, 903-920.

- *Haslam, N., Williams, B., Prior, M., Haslam, R., Graetz, B., & Sawyer, M. (2006). Testing the latent structure of ADHD: a taxometric analysis. *Australian and New Zealand Journal of Psychiatry, 40*, 639–647.
- *Haslam, N., Williams, B. J., Kyrios, M., McKay, D., & Taylor, S. (2005). Subtyping obsessive-compulsive disorder: a taxometric analysis. *Behavior Therapy, 36*, 381–391.
- Helzer, J. E., Kraemer, H. C., & Krueger, R. F. (eds) (2008). *Dimensional approaches in diagnostic classification: Refining the research agenda for DSM-V*. American Psychiatric Association: Washington, DC.
- *Herpers, P. C., Klip, H., Rommelse, N. N., Taylor, M. J., Greven, C. U., & Buitelaar, J. K. (2017). Taxometric analyses and predictive accuracy of callous-unemotional traits regarding quality of life and behavior problems in non-conduct disorder diagnoses. *Psychiatry Research, 253*, 351-359.
- *Hilbert, A., Pike, K. M., Wilfley, D. E., Fairburn, C. G., Dohm, F., & Striegel-Moore, R. H. (2011). Clarifying boundaries of binge eating disorder and psychiatric comorbidity: a latent structure analysis. *Behaviour Research and Therapy, 49*, 202–211.
- *Holland, J. M., Neimeyer, R. A., Boelen, P. A., & Prigerson, H. G. (2009). The underlying structure of grief: a taxometric investigation of prolonged and normal reactions to loss. *Journal of Psychopathology and Behavioral Assessment, 31*, 190–201.
- *Holland, J. M., Schutte, K. K., Brennan, P. L., & Moos, R. H. (2010). The structure of late-life depressive symptoms across a 20-year span: a taxometric investigation. *Psychology and Aging, 25*, 142–156.
- *Holm-Denoma, J. M., Richey, J. A., & Joiner T. A. (2010). The latent structure of dietary restraint, body dissatisfaction, and drive for thinness: a series of taxometric analyses. *Psychological Assessment, 22*, 788–797.
- *Horan, W. P., Blanchard, J. J., Gangestad, S. W., & Kwapil, T. R. (2004). The psychometric detection of schizotypy: do putative schizotypy indicators identify the same latent class? *Journal of Abnormal Psychology, 113*, 339–357.
- *Ingram, D. G. (2009). Is the metabolic syndrome a discrete diagnostic category or the end of a continuum? Taxometric evidence for dimensionality in the National Health and Nutrition Examination Survey 1999–2004. *Annals of Epidemiology, 19*, 143–147.
- *Ingram, D. G., & Bachrach, B. E. (2012). Validation of HbA1c of 6.5% for diagnosing diabetes mellitus via the use of taxometric analysis. *Annals of Epidemiology 22*, 66-69.

- *Ingram D. G., & Kattan, M. W. (2010). Risk grouping versus risk continuum in patients with clinically localized prostate cancer: A taxometric test. *Journal of Urology*, *184*, 1937–1941.
- *Ingram, D. G., Takahashi, T. N., & Miles, J. H. (2008). Defining autism subgroups: a taxometric solution. *Journal of Autism and Developmental Disorders*, *38*, 950–960.
- Insel, T., Cuthbert, B., Garvey, M., Heinssen, R., Pine, D. S., Quinn, K., & Wang, P., (2010). Research domain criteria (RDoC): Toward a new classification framework for research on mental disorders. *American Journal of Psychiatry*, *167*, 748-751.
- *James, R. J., Dubey, I., Smith, D., Ropar, D., & Tunney, R. J. (2016). The latent structure of autistic traits: A taxometric, latent class and latent profile analysis of the adult autism spectrum quotient. *Journal of Autism and Developmental Disorders*, *46*, 3712-3728.
- *James, R. J., O'Malley, C., & Tunney, R. J. (2014). On the latent structure of problem gambling: A taxometric analysis. *Addiction*, *109*, 1707-1717.
- *Jasper, F., Hiller, W., Rist, F., Bailer, J., & Witthöft, M. (2012). Somatic symptom reporting has a dimensional latent structure: Results from taxometric analyses. *Journal of Abnormal Psychology*, *121*, 725-738.
- *Kerridge, B. T., Saha, T. D., Gmel, G., & Rehm, J. (2013). Taxometric analysis of DSM-IV and DSM-5 alcohol use disorders. *Drug and Alcohol Dependence*, *129*, 60-69.
- *Kerridge, B. T., Saha, T. D., & Hasin, D. S. (2014). DSM-IV antisocial personality disorder and conduct disorder: Evidence for taxonic structures among individuals with and without substance use disorders in the general population. *Journal of Studies on Alcohol and Drugs*, *75*, 496-509.
- *Kerridge, B. T., Saha, T. D., & Hasin, D. S. (2014). DSM-IV schizotypal personality disorder: a taxometric analysis among individuals with and without substance use disorders in the general population. *Mental Health and Substance Use*, *7*, 446-460.
- *Kertz, S. J., McHugh, R. K., Lee, J., & Björgvinsson, T. (2014). Examining the latent structure of worry and generalized anxiety in a clinical sample. *Journal of Anxiety Disorders*, *28*, 8-15.
- *Kincaid, H., Daniels, R., Dellis, A., Hofmeyr, A., Rousseau, J., Sharp, C., & Ross, D. (2013). A taxometric analysis of problem gambling data from a South African national urban sample. *Journal of Gambling Studies*, *29*, 377-392.

- *Kingston, D. A., Walters, G. D., Olver, M. E., Levaque, E., Sawatsky, M., & Lalumière, M. L. (2018). Understanding the latent structure of hypersexuality: A taxometric investigation. *Archives of Sexual Behavior, 47*, 2207-2221.
- *Kliem, S., Beller, J., Kröger, C., Birowicz, T., Zenger, M., & Brähler, E. (2014). Dimensional latent structure of somatic symptom reporting in two representative population studies: Results from taxometric analyses. *Psychological Assessment, 26*, 484-492.
- *Kliem, S., Foran, H. M., Beller, J., Hahlweg, K., Stöbel-Richter, Y., & Brähler, E. (2015). Dimensional latent structure of relationship quality: Results of three representative population samples. *Journal of Marriage and Family, 77*, 1190-1201.
- *Kliem, S., Heinrichs, N., Lohmann, A., Bussing, R., Schwarzer, G., & Briegel, W. (2018). Dimensional latent structure of early disruptive behavior disorders: A taxometric analysis in preschoolers. *Journal of Abnormal Child Psychology, 46*, 1385-1394.
- *Kliem, S., Kröger, C., Foran, H. M., Mößle, T., Glaesmer, H., Zenger, M., & Brähler, E. (2016). Dimensional latent structure of PTSD-symptoms reporting: Is it adding by subtracting? *Psychological Assessment, 28*, 1663-1673.
- *Kliem, S., Lohmann, A., Mößle, T., Kröger, C., Brähler, E., & Kersting, A. (2018). The latent nature of prolonged grief: A taxometric analysis: Results from a representative population sample. *Psychiatry Research, 260*, 400-405.
- *Knight, R. A., Sims-Knight, J., & Guay, J. P. (2013). Is a separate diagnostic category defensible for paraphilic coercion? *Journal of Criminal Justice, 41*, 90-99.
- *Kollman, D. M., Brown, T. A., Liverant, G. I., & Hofmann, S. G. (2006). A taxometric investigation of the latent structure of social anxiety disorder in outpatients with anxiety and mood disorders. *Depression and Anxiety, 23*, 190-199.
- *Korfine, L., & Lenzenweger, M. F. (1995). The taxonicity of schizotypy: a replication. *Journal of Abnormal Psychology, 104*, 26-31.
- 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. (2017). The Hierarchical Taxonomy of Psychopathology (HiTOP): A dimensional alternative to traditional nosologies. *Journal of Abnormal Psychology, 126*, 454-477.
- *Kotov, R., Schmidt, N. B., Lerew, D. R., Joiner, T. E., & Ialongo, N. S. (2005). Latent structure of anxiety: taxometric exploration. *Psychological Assessment, 17*, 369-374.

- *Lanciano, T., & Curci, A. (2012). Type or dimension? A taxometric investigation of flashbulb memories. *Memory, 20*, 177-188.
- *Lenzenweger, M. F. (1999). Deeper into the schizotypy taxon: on the robust nature of maximum covariance analysis. *Journal of Abnormal Psychology, 108*, 182–187.
- *Lenzenweger, M. F., & Korfine, L. (1992). Confirming the latent structure and base rate of schizotypy: a taxometric analysis. *Journal of Abnormal Psychology, 101*, 567–571.
- *Lenzenweger, M. F., McLachlan, G., & Rubin, D. B. (2007). Resolving the latent structure of schizophrenia endophenotypes using expectation-maximization-based finite mixture modeling. *Journal of Abnormal Psychology, 116*, 16–29.
- Lilienfeld, S. O., & Treadway, M. T. (2016). Clashing diagnostic approaches: DSM-ICD versus RDoC. *Annual Review of Clinical Psychology, 12*, 435-463.
- *Linscott, R. J. (2007). The latent structure and coincidence of hypohedonia and schizotypy and their validity as indices of psychometric risk for schizophrenia. *Journal of Personality Disorders, 21*, 225–242.
- *Linscott, R. J. (2013). The taxonicity of schizotypy: does the same taxonic class structure emerge from analyses of different attributes of schizotypy and from fundamentally different statistical methods? *Psychiatry Research, 210*, 414-421.
- *Linscott, R. J., Marie, D., Arnott, K. L., & Clarke, B. L. (2006). Over-representation of Maori New Zealanders among adolescents in a schizotypy taxon. *Schizophrenia Research, 84*, 289–296.
- *Linscott, R. J., & Morton, S. E. (2018). The latent taxonicity of schizotypy in biological siblings of probands with schizophrenia. *Schizophrenia Bulletin, 44*, 922-932.
- *Liu, R. T. (2016). Taxometric evidence of a dimensional latent structure for depression in an epidemiological sample of children and adolescents. *Psychological Medicine, 46*, 1265-1275.
- *Liu, R. T. (2017). Substance use disorders in adolescence exist along continua: taxometric evidence in an epidemiological sample. *Journal of Abnormal Child Psychology, 45*, 1577-1586.
- *Liu, R. T., Burke, T. A., Abramson, L. Y., & Alloy, L. B. (2018). The behavioral approach system. (BAS) model of vulnerability to bipolar disorder: Evidence of a continuum in BAS sensitivity across adolescence. *Journal of Abnormal Child Psychology, 46*, 1333-1349.

- *Liu, R. T., Jones, R. N., & Spirito, A. (2015). Is adolescent suicidal ideation continuous or categorical? A taxometric analysis. *Journal of Abnormal Child Psychology*, *43*, 1459-1466.
- *Liu, R. T., McArthur, B. A., Burke, T. A., Hamilton, J. L., Mac Giollabhui, N., Stange, J. P., Hamlat, E. J., Abramson, L. Y., & Alloy, L. B. (2019). A latent structure analysis of cognitive vulnerability to depression in adolescence. *Behavior Therapy*, *50*, 755-764.
- *Longley, S. L., Broman-Fulks, J. J., Calamari, J. E., Noyes, R., Wade, M., & Orlando, C. M. (2010). A taxometric study of hypochondriasis symptoms. *Behavior Therapy*, *41*, 505-514.
- *Longley, S. L., Miller, S. A., Broman-Fulks, J., Calamari, J. E., Holm-Denoma, J. M., & Meyers, K. (2017). Taxometric analyses of higher-order personality domains. *Personality and Individual Differences*, *108*, 207-219.
- *Longpré, N., Guay, J. P., Knight, R. A., & Benbouriche, M. (2018). Sadistic offender or sexual sadism? Taxometric evidence for a dimensional structure of sexual sadism. *Archives of Sexual Behavior*, *47*, 403-416.
- *Lubiewska, K., & Van de Vijver, F. J. (2020). Attachment categories or dimensions: The Adult Attachment Scale across three generations in Poland. *Journal of Social and Personal Relationships*, *37*, 233-259.
- *MacDonald, K., Thomas, M. L., Sciolla, A. F., Schneider, B., Pappas, K., Bleijenberg, G., Bohus, M., Bekh, B., Carpenter, L., Carr, A., & Dannlowski, U. (2016). Minimization of childhood maltreatment is common and consequential: results from a large, multinational sample using the childhood trauma questionnaire. *PLoS One*, *11*, e0146058
- *Mackaronis, J. E., Strassberg, D. S., & Marcus, D. K. (2011). The latent structure of Multiphasic Sex Inventory-Assessed pedophilic interest. *Psychological Assessment*, *23*, 1017-1022.
- *Marcus, D.K., & Barry T.D. (2011). Does attention-deficit/hyperactivity disorder have a dimensional latent structure? A taxometric analysis. *Journal of Abnormal Psychology*, *120*, 427-442.
- *Marcus, D.K., Fulton J. J., & Turchik, J. A. (2011). Is risky sexual behavior continuous or categorical? A taxometric analysis of the Sexual Risk Survey. *Psychological Assessment*, *23*, 282-286.

- *Marcus, D.K., John, S., & Edens, J.F. (2004). A taxometric analysis of psychopathy. *Journal of Abnormal Psychology, 113*, 626–635.
- *Marcus, D.K., Lilienfeld, S. O., Edens, J.F., & Poythress, N. G. (2006). Is antisocial personality disorder continuous or categorical ? A taxometric analysis. *Psychological Medicine, 36*, 1571–1581.
- *Marcus, D.K., Norris, A. L., & Coccaro, E. F. (2012). The latent structure of attention deficit/hyperactivity disorder in an adult sample. *Journal of Psychiatric Research, 46*, 782-789.
- *Marcus, D.K., Poythress, N. G., Edens, J.F., & Lilienfeld, S. O. (2010). Adjudicative competence: evidence that impairment in ‘rational understanding’ is taxonic. *Psychological Assessment, 22*, 716–722.
- *Marcus, D.K., Ruscio, J., Lilienfeld, S. O., & Hughes, K. T. (2008). Converging evidence for the latent structure of antisocial personality disorder: consistency of taxometric and latent class analyses. *Criminal Justice and Behavior, 35*, 284–293.
- *Marcus, D.K., Sawaqdeh, A., & Kwon, P. (2014). The latent structure of generalized anxiety disorder in midlife adults. *Psychiatry Research, 215*, 366-371.
- Markon, K. E., Chmielewski, M., & Miller, C. J. (2011). The reliability and validity of discrete and continuous measures of psychopathology: A quantitative review. *Psychological Bulletin, 137*, 856–879.
- *Mattila, A. K., Keefer, K. V., Taylor, G. J., Joukamaa, M., Jula, A., Parker, J. D. A., & Bagby, R. M. (2010). Taxometric analysis of alexithymia in a general population sample from Finland. *Personality and Individual Differences, 49*, 216–221.
- *McGrath, R. E., Rashid, T., Park, N., & Peterson, C. (2010). Is optimal functioning a distinct state? *The Humanistic Psychologist, 38*, 159-169.
- *McPhail, I. V., Olver, M. E., Brouillette-Alarie, S., & Looman, J. (2018). Taxometric analysis of the latent structure of pedophilic interest. *Archives of Sexual Behavior, 47*, 2223-2240.
- Meehl, P. E. (1992). Factors and taxa, traits and types, difference of degree and differences in kind. *Journal of Personality, 60*, 117–174.
- Meehl, P. E. (1995). Bootstraps taxometrics: Solving the classification problem in psychopathology. *American Psychologist, 50*, 266–275.

- *Meyer, T., & Keller, F. (2001). Exploring the latent structure of the Perceptual Aberration, Magical Ideation and Physical Anhedonia Scales in a German sample: A partial replication. *Journal of Personality Disorders, 15*, 521–535.
- *Meyer, T., & Keller, F. (2003). Is there evidence for a latent class called ‘hypomanic temperament’? *Journal of Affective Disorders, 75*, 259–267.
- *Mokros, A., Schilling, F., Weiss, K., Nitschke, J., & Eher, R. (2014). Sadism in sexual offenders: Evidence for dimensionality. *Psychological Assessment, 26*, 138-147.
- *Morton, S. E., O’Hare, K. J., Maha, J. L., Nicolson, M. P., Machado, L., Topless, R., Merriman, T. R., & Linscott, R. J. (2017). Testing the validity of taxonic schizotypy using genetic and environmental risk variables. *Schizophrenia Bulletin, 43*, 633-643.
- *Munson, J., Dawson, G., Sterling, L., Beauchaine, T., Zhou, A., Koehler, E., Lord, C., Rogers, S., Sigman, M., Estes, A., & Abbott, R. (2008). Evidence for latent classes of IQ in young children with autism spectrum disorder. *American Journal of Mental Retardation, 113*, 439–452.
- *Murrie, D. C., Marcus, D.K., Douglas, K. S., Lee, Z., Salekin, R. T., & Vincent, G. (2007). Youth with psychopathy features are not a discrete class: a taxometric analysis. *Journal of Child Psychology and Psychiatry, 48*, 714–723.
- *Norris, A. L., Marcus, D.K., & Green, B. A. (2015). Homosexuality as a discrete class. *Psychological Science, 26*, 1843-1853.
- *Oakman, J. M., & Woody, E. Z. (1996). A taxometric analysis of hypnotic susceptibility. *Journal of Personality and Social Psychology, 71*, 980–991.
- *O'Brien, B. A., Wolf, M., & Lovett, M. W. (2012). A taxometric investigation of developmental dyslexia subtypes. *Dyslexia, 18*, 16-39.
- *Okumura, Y., Sakamoto, S., & Ono, Y. (2009). Latent structure of depression in a Japanese population sample: taxometric procedures. *Australian and New Zealand Journal of Psychiatry, 43*, 666–673.
- *Okumura, Y., Sakamoto, S., Tomoda, A., & Kijima, N. (2009). Latent structure of self-reported depression in undergraduates: using taxometric procedures and information-theoretic latent variable modelling. *Personality and Individual Differences, 46*, 166–171.

- *Olatunji, B. O., & Broman-Fulks, J. J. (2007). A taxometric study of the latent structure of disgust sensitivity: converging evidence for dimensionality. *Psychological Assessment, 19*, 437–448.
- *Olatunji, B. O., Broman-Fulks, J. J. (2009). Latent structure of aversion: taxometric exploration. *Journal of Anxiety Disorders, 23*, 87–92.
- *Olatunji, B. O., Broman-Fulks, J. J., Bergman, S. M., Green, B. A., & Zlomke, K. R. (2010). A taxometric investigation of the latent structure of worry: dimensionality and associations with depression, anxiety, and stress. *Behavior Therapy, 41*, 212–228.
- *Olatunji, B. O., Broman-Fulks, J. J., Ciesielski, B. G., Zawilinski, L. L., Shewmaker, S., & Wall, D. (2012). A taxometric investigation of the latent structure of eating disorders. *Psychiatry Research, 197*, 97-102.
- *Olatunji, B. O., Williams, B., Haslam, N., Abramowitz, J. S., & Tolin, D. F. (2008). The latent structure of obsessive-compulsive symptoms: a taxometric study. *Depression and Anxiety, 25*, 956–968.
- *Orlando, C. M., Broman-Fulks, J. J., Whitlock, J. L., Curtin, L., & Michael, K. D. (2015). Nonsuicidal self-injury and suicidal self-injury: A taxometric investigation. *Behavior Therapy, 46*, 824–833.
- *Parker, J. D. A., Keefer, K. V., Taylor, G. J., & Bagby, R. M. (2008). Latent structure of the alexithymia construct: a taxometric investigation. *Psychological Assessment, 20*, 385–396.
- *Prisciandaro, J. J., & Roberts, J. E. (2005). A taxometric investigation of unipolar depression in the National Comorbidity Survey. *Journal of Abnormal Psychology, 114*, 718–728.
- *Prisciandaro, J. J., & Roberts, J. E. (2011). Evidence for the continuous latent structure of mania in the Epidemiological Catchment Area from multiple latent structure and construct validation methodologies. *Psychological Medicine, 41*, 575–588.
- *Prisciandaro, J. J., & Tolliver, B. K. (2015). Evidence for the continuous latent structure of mania and depression in out-patients with bipolar disorder: Results from the Systematic Treatment Enhancement Program for Bipolar Disorder. (STEP-BD). *Psychological Medicine, 45*, 2595-2603.
- *Rawlings, D., Williams, B., Haslam, N., & Claridge, G. (2008). Taxometric analysis supports a dimensional latent structure for schizotypy. *Personality and Individual Differences, 44*, 1640–1651.

- *Ren, F., Wang, G., Phull, G., & Zhang, J. (2015). Taxometric analysis of the Children's Sleep Habits Questionnaire. *Sleep and Biological Rhythms, 13*, 261-270.
- *Rhudy, J. L., Green B.A., Arnau, R. C., & France, C. R. (2008). Taxometric analysis of biceps femoris EMG following electrocutaneous stimulation over the sural nerve: Determining the latent structure of the nociceptive flexion reflex. (NFR). *International Journal of Psychophysiology, 69*, 18–26.
- *Richey, J. A., Schmidt, N. B., Lonigan, C. J., Philips, B. M., Catanzaro, S. J., Laurent, J., Gerhardstein, R. R., & Kotov, R. (2009). The latent structure of child depression: a taxometric analysis. *Journal of Child Psychiatry and Psychology, 50*, 1147–1155.
- *Roisman, G. I., Fraley, R. C., & Belsky, J. (2007). A taxometric study of the adult attachment interview. *Developmental Psychology, 43*, 675–686.
- Rosenström, T., Gjerde, L. C., Krueger, R. F., Aggen, S. H., Czajkowski, N. O., Gillespie, N. A., ... & Ystrom, E. (2019). Joint factorial structure of psychopathology and personality. *Psychological Medicine, 49*, 2158-2167.
- *Rothschild, L., Cleland, C., Haslam, N., & Zimmerman, M. (2003). Taxometric analysis of borderline personality disorder. *Journal of Abnormal Psychology, 112*, 657–666.
- *Rufino, K. A., Marcus, D.K., Ellis, T. E., & Boccaccini, M. T. (2018). Further evidence that suicide risk is categorical: A taxometric analysis of data from an inpatient sample. *Psychological Assessment, 30*, 1541-1547.
- *Ruscio, A.M. (2010). The latent structure of social anxiety disorder: consequences of shifting to a dimensional diagnosis. *Journal of Abnormal Psychology, 119*, 662–671.
- *Ruscio, A.M., Borkovec, T.D., & Ruscio, J. P. (2001). A taxometric investigation of the latent structure of worry. *Journal of Abnormal Psychology, 110*, 413–422.
- *Ruscio, A.M., & Ruscio, J. (2002). The latent structure of analogue depression: should the BDI be used to classify groups? *Psychological Assessment, 14*, 135–145.
- *Ruscio, A.M., Ruscio, J., & Keane, T. M. (2002). The latent structure of post-traumatic stress disorder: a taxometric investigation of reactions to extreme stress. *Journal of Abnormal Psychology, 111*, 290–301.
- *Ruscio, J., Brown, T. A., & Ruscio A.M. (2009). A taxometric investigation of DSM-IV major depression in a large outpatient sample: interpretable structural results depend on the mode of assessment. *Assessment, 16*, 127–144.

- Ruscio, J., Haslam, N., & Ruscio, A. M. (2006). *Introduction to the Taxometric Method: A Practical Guide*. Lawrence Erlbaum Associates: Mahwah, NJ.
- Ruscio, J., & Kaczetow, W. (2009). Differentiating categories and dimensions: Evaluating the robustness of taxometric analyses. *Multivariate Behavioral Research, 44*, 259–280.
- *Ruscio, J., & Ruscio A.M. (2000). Informing the continuity controversy: a taxometric analysis of depression. *Journal of Abnormal Psychology, 109*, 473–487.
- *Ruscio, J., Ruscio, A.M., & Keane T. M. (2004). Using taxometric analysis to distinguish a small latent taxon from a latent dimension with positively skewed indicators: The case of involuntary defeat syndrome. *Journal of Abnormal Psychology, 113*, 145–154.
- Ruscio, J., Ruscio, A. M., & Meron, M. (2007). Applying the bootstrap to taxometric analysis: Generating empirical sampling distributions to help interpret results. *Multivariate Behavioral Research, 42*, 349–386.
- *Ruscio, J., & Walters, G. D. (2009). Using comparison data to differentiate categorical and dimensional data by examining factor score distributions: resolving the mode problem. *Psychological Assessment, 21*, 578–594.
- *Ruscio, J., Walters, G. D., Marcus, D.K., & Kaczetow, W. (2010). Comparing the relative fit of categorical and dimensional latent variable models using consistency tests. *Psychological Assessment, 22*, 5–21.
- *Ruscio, J., Zimmerman, M., McGlinchey, J. B., Chelminski, I., & Young D. (2007). Diagnosing major depressive disorder XI: a taxometric investigation of the structure underlying DSM-IV symptoms. *Journal of Nervous and Mental Disease, 195*, 10–19.
- *Schmidt, A. F., Mokros, A., & Banse, R. (2013). Is pedophilic sexual preference continuous? A taxometric analysis based on direct and indirect measures. *Psychological Assessment, 25*, 1146-1153.
- *Schmidt, N. B., Kotov, R., Bernstein, A., Zvolensky, M. J., Joiner, T. E., & Lewinsohn, P. M. (2007). Mixed anxiety depression: taxometric exploration of the validity of a diagnostic category in youth. *Journal of Affective Disorders, 98*, 83–89.
- *Schmidt, N. B., Kotov, R., Lerew, D. R., Joiner, T. E., & Ialongo, N. S. (2005). Evaluating latent discontinuity in cognitive vulnerability to panic: A taxometric investigation. *Cognitive Therapy and Research, 29*, 673–690.

- Schomerus, G., Matschinger, H., & Angermeyer, M. C. (2013). Continuum beliefs and stigmatizing attitudes towards persons with schizophrenia, depression, and alcohol dependence. *Psychiatry Research, 209*, 665-669.
- *Shean, G. D., & Baldwin, G. (2012). The latent structure of the Center for Epidemiological Studies-Depression scale. *Journal of Psychopathology and Behavioral Assessment, 34*, 502-509.
- *Shimizu, A. B., Dik, B. J., & Conner, B. T. (2019). Conceptualizing calling: Cluster and taxometric analyses. *Journal of Vocational Behavior, 114*, 7-18.
- *Silove, D., Slade, T., Marnane, C., Wagner, R., Brooks, R., & Manicavasagar, V. (2007). Separation anxiety in adulthood: dimensional or categorical? *Comprehensive Psychiatry, 48*, 546–553.
- *Skilling, T. A., Harris, G. T., Rice, M. T., & Quinsey, V. L. (2001). Identifying persistently antisocial offenders using the Hare Psychopathy Checklist and DSM antisocial personality disorder criteria. *Psychological Assessment, 14*, 27–38.
- *Skilling, T. A., Quinsey, V. L., & Craig, W. M. (2001). Evidence of a taxon underlying serious antisocial behavior in boys. *Criminal Justice and Behavior, 28*, 450–470.
- *Slade T. (2007). Taxometric investigation of depression: evidence of consistent latent structure across clinical and community samples. *Australian and New Zealand Journal of Psychiatry, 41*, 403–410.
- *Slade, T., & Andrews, G. (2005). Latent structure of depression in a community sample: a taxometric analysis. *Psychological Medicine, 35*, 489–497.
- *Slade, T., & Grisham, J. R. (2009). A taxometric investigation of agoraphobia in a clinical and community sample. *Journal of Anxiety Disorders, 23*, 799–805.
- *Slade, T., Grove, R., & Teeson, M. (2009). A taxometric study of alcohol abuse and dependence in a general population sample: evidence of dimensional latent structure and implications for DSM-V. *Addiction, 104*, 742–751.
- Smoller, J. W., Andreassen, O. A., Edenberg, H. J., Faraone, S. V., Glatt, S. J., & Kendler, K. S. (2019). Psychiatric genetics and the structure of psychopathology. *Molecular Psychiatry, 24*, 409-420.
- *Solomon, A., Ruscio, J., Seeley, J. R., & Lewinsohn, P. M. (2006). A taxometric investigation of unipolar depression in a large community sample. *Psychological Medicine, 36*, 973–985.

- *Somma, A., Krueger, R. F., Markon, K. E., Borroni, S., & Fossati, A. (2019). Schizotypy from the perspective of the DSM-5 alternative model of personality traits: a study on a sample of 1056 Italian adult university students. *Journal of Psychopathology and Behavioral Assessment, 41*, 560-573.
- *Somma, A., Maffei, C., Borroni, S., Gialdi, G., & Fossati, A. (2019). Post traumatic reactions as individual differences: Latent structure analysis of the international trauma questionnaire in Italian trauma-exposed and non-trauma exposed adults. *Mediterranean Journal of Clinical Psychology, 7*.
- *Stamovlasis, D., Papageorgiou, G., Tsitsipis, G., Tsikalas, T., & Vaiopoulou, J. (2018). Illustration of step-wise latent class modeling with covariates and taxometric analysis in research probing children's mental models in learning sciences. *Frontiers in Psychology, 9*, 532.
- *Stephens, S., Leroux, E., Skilling, T., Cantor, J. M., & Seto, M. C. (2017). Taxometric analyses of pedophilia utilizing self-report, behavioral, and sexual arousal indicators. *Journal of Abnormal Psychology, 126*, 1114-1119.
- *Stevens, K. T., Kertz, S. J., Björgvinsson, T., & McHugh, R. K. (2018). Investigating the latent structure of distress intolerance. *Psychiatry Research, 262*, 513-519.
- *Stevens, M. C., Pearlson, G. D., Calhoun, V. D., & Bessette, K. L. (2018). Functional neuroimaging evidence for distinct neurobiological pathways in attention-deficit/hyperactivity disorder. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging, 3*, 675-685.
- *Strong, D. R., Brown, R. A., Kahler, C. W., Lloyd-Richardson, E. E., & Niaura, R. (2004). Depression proneness in treatment seeking smokers: a taxometric analysis. *Personality and Individual Differences, 36*, 1155-1170.
- *Strong, D. R., Glassmire, D. M., Frederick, R. I., & Greene, R. L. (2006). Evaluating the latent structure of the MMPI-2 F(p) scale in a forensic sample: a taxometric analysis. *Psychological Assessment, 18*, 250-261.
- *Strong, D. R., Greene, R. L., Hoppe, C., Johnston, T., & Olesen, N. (1999). Taxometric analysis of impression management and self-deception on the MMPI-2 in child-custody litigants. *Journal of Personality Assessment, 73*, 1-18.

- *Strong, D. R., Greene, R. L., & Kordinak, S. T. (2002). Taxometric analysis of impression management and self-deception in college student and personnel evaluation settings. *Journal of Personality Assessment, 78*, 161–175.
- *Strong, D. R., Greene, R. L., & Schinka, J. A. (2000). A taxometric analysis of the MMPI-2 Infrequency scales [F and F(p)] in clinical settings. *Psychological Assessment, 12*, 166–173.
- *Strube, M. J. (1989). Evidence for the type in type A behavior: a taxometric analysis. *Journal of Personality and Social Psychology, 56*, 972–987.
- *Taylor, M. J., Freeman, D., & Ronald, A. (2016). Dimensional psychotic experiences in adolescence: Evidence from a taxometric study of a community-based sample. *Psychiatry Research, 241*, 35-42.
- *Thomas J.J., Eddy, K. T., Ruscio, J., Ng, K. L., Casale, K. E., Becker, A. E., & Lee, S. (2015). Do recognizable lifetime eating disorder phenotypes naturally occur in a culturally Asian population? A combined latent profile and taxometric approach. *European Eating Disorders Review, 23*, 199-209.
- *Thomas, M. L., & Locke, D. E. C. (2010). Psychometric properties of the MMPI-2-RF Somatic Complaints. (RC1) scale. *Psychological Assessment, 22*, 492–503.
- *Timpano, K. R., Broman-Fulks, J.J., Glaesmer, H., Exner, C., Rief, W., Olatunji, B. O., Keough, M. E., Riccardi, C. J., Brähler, E., Wilhelm, S., & Schmidt, N. B. (2013). A taxometric exploration of the latent structure of hoarding. *Psychological Assessment, 25*, 194-213.
- *Tran, U. S., Bertl, B., Kossmeier, M., Pietschnig, J., Stieger, S., & Voracek, M. (2018). “I’ll teach you differences”: Taxometric analysis of the Dark Triad, trait sadism, and the Dark Core of personality. *Personality and Individual Differences, 126*, 19-24.
- *Trull, T. J., Widiger, T. A., & Guthrie, P. (1990). Categorical versus dimensional status of borderline personality disorder. *Journal of Abnormal Psychology, 99*, 40–48.
- *Turner, D. P., Smitherman, T. A., Black, A. K., Penzien, D. B., Porter, J. A., Lofland, K. R., & Houle, T. T. (2015). Are migraine and tension-type headache diagnostic types or points on a severity continuum? An exploration of the latent taxometric structure of headache. *Pain, 156*, 1200-1207.

- *Tylka, T. L., & Subich, L. M. (2003). Revisiting the latent structure of eating disorders: taxometric analyses with nonbehavioral indicators. *Journal of Counseling Psychology, 50*, 276–286.
- *Tyrka, A., Cannon, T.D., Haslam, N., Mednick, S. A., Schulsinger, F., Schulsinger, H., & Parnas, J. (1995). The latent structure of schizotypy: I. Premorbid indicators of a taxon of individuals at risk for schizophrenia-spectrum disorders. *Journal of Abnormal Psychology, 104*, 173–183.
- *van Kampen, D. (1999). Genetic and environmental influences on pre-schizophrenic personality: MAXCOV-HITMAX and LISREL analyses. *European Journal of Personality, 13*, 63–80.
- *Van Oudenhove, L., Jasper, F., Walentynowicz, M., Witthöft, M., Van den Bergh, O., & Tack, J. (2016). The latent structure of the functional dyspepsia symptom complex: A taxometric analysis. *Neurogastroenterology & Motility, 28*, 985-993.
- *Vasey, M. W., Kotov, R., Frick, P. J., & Loney, B. R. (2005). The latent structure of psychopathy in youth: a taxometric investigation. *Journal of Abnormal Child Psychology, 33*, 411–429.
- *Veale, J. F. (2014). Evidence against a typology: A taxometric analysis of the sexuality of male-to-female transsexuals. *Archives of Sexual Behavior, 43*, 1177-1186.
- *Waelde, L. C., Silvern, L., & Fairbank, J. A. (2005). A taxometric investigation of dissociation in Vietnam veterans. *Journal of Traumatic Stress, 18*, 359–369.
- *Waller, N. G., Putnam, F. W., & Carlson, E. B. (1996). Types of dissociation and dissociative types: a taxometric analysis of dissociative experiences. *Psychological Methods, 3*, 300–321.
- *Waller, N. G., & Ross, C. A. (1997). The prevalence and biometric structure of pathological dissociation in the general population: taxometric and behavior genetic findings. *Journal of Abnormal Psychology, 106*, 499–510.
- *Walters, G. D. (2007). The latent structure of the criminal lifestyle: a taxometric analysis of the lifestyle criminality screening form and psychological inventory of criminal thinking styles. *Criminal Justice and Behavior, 34*, 1623–1637.
- *Walters, G. D. (2008). The latent structure of alcohol use disorders: a taxometric analysis of structured interview data obtained from male federal prison inmates. *Alcohol and Alcoholism, 43*, 326–333.

- *Walters, G. D. (2009a). Taxometric analysis of alcohol dependence in male prisoners: measuring latent structure with indicators from DSM-IV. *Addiction Research and Theory, 17*, 372–380.
- *Walters, G. D. (2009b). Latent structure of a two-dimensional model of antisocial personality disorder: construct validation and taxometric analysis. *Journal of Personality Disorders, 23*, 647–660.
- *Walters, G. D. (2010). Dementia: Continuum or distinct entity? *Psychology and Aging, 25*, 534–544.
- *Walters, G. D. (2011). The latent structure of life-course persistent antisocial behaviour: is Moffitt's developmental taxonomy a true taxonomy? *Journal of Consulting and Clinical Psychology, 79*, 96–105.
- *Walters, G. D. (2011). Childhood temperament: dimensions or types? *Personality and Individual Differences, 50*, 1168–1173.
- *Walters, G. D. (2012). Taxometrics and criminal justice: Assessing the latent structure of crime-related constructs. *Journal of Criminal Justice, 40*, 10-20.
- *Walters, G. D. (2014). The latent structure of psychopathy in male adjudicated delinquents: A cross-domain taxometric analysis. *Personality Disorders: Theory, Research, and Treatment, 5*, 348-355.
- *Walters, G. D. (2015). The latent structure of criminal persistence: A taxometric analysis of offending behavior from late adolescence to early adulthood in adjudicated male delinquents. *American Journal of Criminal Justice, 40*, 542-559.
- *Walters, G. D. (2015). The latent structure of alcohol misuse in young adults: Do taxometric results differ as a function of prior criminal history? *Drug and Alcohol Dependence, 157*, 90-98.
- *Walters, G. D., Berry, D. T. R., Lanyon, R. I., & Murphy, M. P. (2009a). Are exaggerated health complaints continuous or categorical? A taxometric analysis of the Health Problem Overstatement Scale. *Psychological Assessment, 21*, 219–226.
- *Walters, G. D., Berry, D. T. R., Rogers, R., Payne, J. W., & Granacher, R. P. (2009b). Feigned neurocognitive deficit: taxon or dimension? *Journal of Clinical and Experimental Neuropsychology, 31*, 584–593.

- *Walters, G. D., Brinkley, C. A., Magaletta, P. R., & Diamond, P. M. (2008). Taxometric analysis of the Levenson Self-Report Psychopathy scale. *Journal of Personality Assessment, 90*, 491–498.
- *Walters, G. D., Diamond, P. M., & Magaletta, P. R. (2010a). What is the latent structure of alcohol use disorders ? A taxometric analysis of the Personality Assessment Inventory Alcohol Problems Scale in male and female prison inmates. *Psychology of Addictive Behaviors, 24*, 26–37.
- *Walters, G. D., Diamond, P. M., Magaletta, P. R., Geyer, M. D., & Duncan, S. A. (2007). Taxometric analysis of the antisocial features scale of the Personality Assessment Inventory in federal prison inmates. *Assessment, 14*, 351–360.
- *Walters, G. D., Duncan, S. A., & Mitchell-Perez, K. (2007). The latent structure of psychopathy: a taxometric investigation of the Psychopathy Checklist-Revised in a heterogeneous sample of male prison inmates. *Assessment, 14*, 270–278.
- *Walters, G. D., Ermer, E., Knight, R. A., & Kiehl, K. A. (2015). Paralimbic biomarkers in taxometric analyses of psychopathy: Does changing the indicators change the conclusion? *Personality Disorders: Theory, Research, and Treatment, 6*, 41-52.
- *Walters, G. D., & Espelage, D. L. (2019). Latent structure of early adolescent bullying perpetration: a taxometric analysis of raw and ranked scores. *Educational and Psychological Measurement, 79*, 754-772.
- *Walters, G. D., Gray, N. S., Jackson, R. L., Sewell, K. W., Rogers, R., Taylor, J., & Snowden, R. J. (2007). A taxometric analysis of the Psychopathy Checklist: Screening Version. (PCL:SV): Further evidence of dimensionality. *Psychological Assessment, 19*, 330–339.
- *Walters, G. D., Hennig, C. L., Negola, T. D., & Fricke, L. A. (2009c). The latent structure of alcohol dependence in female federal prisoners. *Addiction Research and Theory, 17*, 525–537.
- *Walters, G. D., Knight, R. A., & Langstrom, N. (2011). Is hypersexuality dimensional ? Evidence for the DSM-5 from general population and clinical samples. *Archives of Sexual Behavior, 40*, 1309-1321.
- *Walters, G. D., Knight, R. A., Looman, J., & Abracen, J. (2016). Child molestation and psychopathy: A taxometric analysis. *Journal of Sexual Aggression, 22*, 379-393.

- *Walters, G. D., Knight, R. A., & Thornton D. (2009d). The latent structure of sexual violence risk: a taxometric analysis of widely used sex offender actuarial risk measures. *Criminal Justice and Behavior, 36*, 290–306.
- *Walters, G. D., Marcus, D. K., Edens J. F., Knight, R. A., & Sanford, G. M. (2011). In search of the psychopathic sexuality taxon: indicator size does matter. *Behavioral Sciences and the Law, 29*, 23–39.
- *Walters, G. D., & McCoy, K. (2007). Taxometric analysis of the Psychological Inventory of Criminal Thinking Styles in incarcerated offenders and college students. *Criminal Justice and Behavior, 34*, 781–793.
- *Walters, G. D., Rogers, R., Berry, D. T. R., Miller, H. A., Duncan, S. A., McCusker, P. J., Payne, J. W., & Granacher, R. P. (2008). Malingering as a categorical or dimensional construct: the latent structure of feigned psychopathology as measured by the SIRS and MMPI-2. *Psychological Assessment, 20*, 238–247.
- *Walters, G. D., Ronen, T., & Rosenbaum, M. (2010b). The latent structure of childhood aggression: a taxometric study of self-reported and teacher-rated aggression in Israeli schoolchildren. *Psychological Assessment, 22*, 628–637.
- *Walters, G. D., & Ruscio J. (2009). To sum or not to sum: taxometric analysis with ordered categorical assessment items. *Psychological Assessment, 21*, 99–111.
- *Walters, G. D., & Ruscio J. (2010). Where do we draw the line ? Assigning cases to subsamples for MAMBAC, MAXCOV, and MAXEIG taxometric analyses. *Assessment, 17*, 321–333.
- *Waters, T. E., Facompré, C. R., Dujardin, A., Van De Walle, M., Verhees. M., Bodner, N., Boldt, L. J., & Bosmans, G. (2019). Taxometric analysis of secure base script knowledge in middle childhood reveals categorical latent structure. *Child Development, 90*, 694–707.
- *Waters, T. E., Fraley, R. C., Groh, A. M., Steele, R. D., Vaughn, B. E., Bost, K. K., Veríssimo, M., Coppola, G., & Roisman, G. I. (2015). The latent structure of secure base script knowledge. *Developmental Psychology, 51*, 823–830.
- *Weeks, J. W., Carleton, R. N., Asmundson, G. J. G., McCabe, R. E., & Anthony, M. M. (2010). ‘Social anxiety disorder carved at its joints’: evidence for the taxonicity of social anxiety disorder. *Journal of Anxiety Disorders, 24*, 734–742.

- *Weeks, J. W., Norton, P. J., & Heimberg, R. G. (2009). Exploring the latent structure of two cognitive components of social anxiety: taxometric analysis of fears of negative and positive evaluation. *Depression and Anxiety, 26*, E40–E48.
- *Whisman, M. A., Beach, S. R. H., & Snyder, D. K. (2008). Is marital discord taxonic and can taxonic status be assessed reliably? Results from a national, representative sample of married couples. *Journal of Consulting and Clinical Psychology, 76*, 745–755.
- *Whisman, M. A., & Pinto A. (1997). Hopelessness depression in depressed inpatient adolescents. *Cognitive Therapy and Research, 21*, 345–358.
- Widiger, T. A., & Samuel, D. B. (2005). Diagnostic categories or dimensions? A question for the Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition. *Journal of Abnormal Psychology, 114*, 494–504.
- *Williamson, D. A., Womble, L. G., Smeets, M. A. M., Netemeyer, R. G., Thaw, J., Kutlesic, V., & Gleaves, D. H. (2002). The latent structure of eating disorder symptoms: a factor analytic and taxometric investigation. *American Journal of Psychiatry, 159*, 412–418.
- *Wilmot, M. P. (2015). A contemporary taxometric analysis of the latent structure of self-monitoring. *Psychological Assessment, 27*, 353–364.
- *Wilmot, M. P., Haslam, N., Tian, J., & Ones, D. S. (2019). Direct and conceptual replications of the taxometric analysis of Type A behavior. *Journal of Personality and Social Psychology, 116*, e12–e26.
- *Witte, T. K., Holm-Denoma, J. M., Zuromski, K. L., Gauthier, J. M., & Ruscio, J. (2017). Individuals at high risk for suicide are categorically distinct from those at low risk. *Psychological Assessment, 29*, 382–393.
- *Woodward, S. A., Lenzenweger, M. F., Kagan, J., Snidman, N., & Arcus, D. (2000). Taxonic structure of infant reactivity: evidence from a taxometric perspective. *Psychological Science, 11*, 296–301.
- *Zheng, Y., Kang, Q., Huang, J., Jiang, W., Liu, Q., Chen, H., Fan, Q., Wang, Z., Xiao, Z., & Chen, J. (2019). The classification of eating disorders in China: A categorical model or a dimensional model. *International Journal of Eating Disorders, 52*, 712–720.

Table 1: Descriptive statistics on finding-level codes ($N=502$)

Code	Mean or N (%)
<i>Sample characteristics</i>	
Community sample	190 (37.85)
Clinical/forensic sample	174 (34.66)
Undergraduate sample	164 (32.67)
Child/adolescent sample	88 (17.53)
Compound sample (A)	98 (19.52)
Compound Sample (B)	19 (3.78)
<i>Data type</i>	
Self-ratings data	347 (69.12)
Interview data	105 (20.92)
Other-ratings data	49 (9.76)
<i>Indicator properties</i>	
One-item indicator	216 (43.03)
Use of dichotomous item	74 (14.74)
Validated indicators	345 (68.73)
<i>Data analysis</i>	
MAMBAC	415 (82.67)
MAXEIG	259 (51.59)
L-Mode	256 (51.00)
MAXCOV	249 (49.60)
MAXSLOPE	12 (2.39)
Other taxometric procedure	12 (2.39)
CCFI used	317 (63.15)
Number of CCFI procedures	2.74

Table 2: Taxonicity-related findings for each construct domain as a function of use or non-use of the CCFI technique

Domain	CCFI studies			Non-CCFI studies	
	Total findings	Taxonic findings	Mean CCFI	Total findings	Taxonic findings
1. Mood disorders	25	5	.392	23	9
2. Anxiety disorders	44	1	.334	27	14
3. Eating disorders	12	5	.496	17	12
4. Substance use disorders	19	8	.493	0	0
5. Other externalizing disorders	15	4	.420	0	0
6. Schizotypy	11	1	.392	33	29
7. Other personality disorders	35	1	.299	8	5
8. Childhood disorders	15	6	.504	9	1
9. Psychotic disorders	9	1	.406	2	1
10. Somatoform disorders	6	0	.332	1	0
11. Other psychopathology	7	3	.504	4	4
12. Personality	52	0	.338	28	7
13. Sexuality	28	6	.422	3	2
14. Gender	9	1	.392	1	0
15. Response styles	4	0	.287	10	7
16. Other psychological	13	4	.441	0	0
17. Miscellaneous	13	7	.513	19	16
TOTAL	317	53 (16.7%)	.392	185	107 (57.8%)

Note: Taxonic findings for CCFI studies represents CCFI > .55

Table 3: Findings of single-predictor multilevel logistic regression analyses predicting CCFI values in studies involving simulations (moderators)

Predictor	B (SE)	<i>p</i>
<i>Publication year</i>	0.020 (0.014)	.160
<i>Sample characteristics</i>		
Sample size (log-transformed)	-0.030 (0.035)	.396
Compound sample type A	.063 (0.118)	.596
Compound sample type B	1.043 (0.593)	.080
Undergraduate sample	0.106 (0.172)	.538
Clinical/forensic sample	0.185 (0.173)	.291
Community sample	0.119 (0.157)	.450
Child/adolescent sample	-0.341 (0.130)	.011
<i>Data type</i>		
Self-ratings data	-0.227 (0.172)	.191
Other-ratings data	-0.049 (.187)	.796
Interview data	-0.198 (0.162)	.227
One-item indicator	0.128 (0.099)	.199
Use of dichotomous item	-0.024 (0.304)	.937
Validated indicator	0.111 (0.149)	.460
<i>Data analysis: number of CCFI procedures</i>		
1 (intercept)	0.420 (0.290)	0.149
2	-1.200 (0.248)	<.001
3	-1.093 (0.267)	<.001
4 or more	-1.093 (0.366)	.003

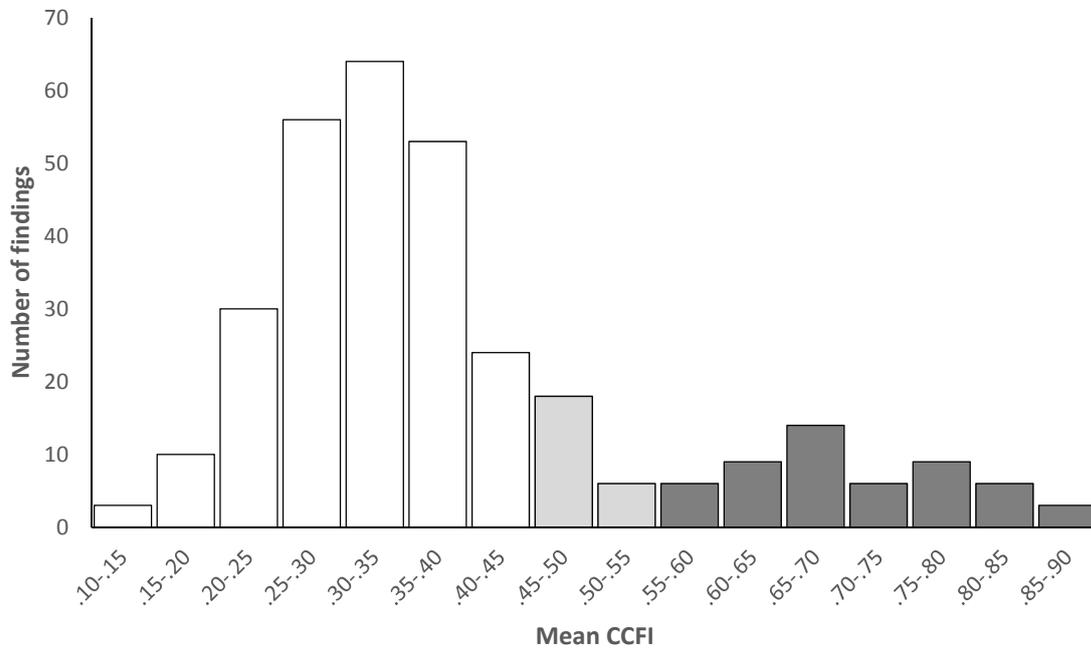
Figure 1: Distribution of average CCFI values for the 317 findings

Figure 2: Forest plot with estimated average CCFI (and associated 95% CI) by construct domain

