The Hierarchical Structure of Work-Related Maladaptive Personality Traits

Nigel Guenole

Goldsmiths, University of London

Guenole, N. (In Press). The Hierarchical Structure of Work-Related Maladaptive Personality Traits. European Journal of Psychological Assessment, x, xxx-xxx. Address correspondence to Nigel Guenole, Institute of Management Studies, New Academic Building, Goldsmiths, University of London, New Cross, London, SE14 6NW email n.guenole@gold.ac.uk.

Summary

A brief pathological personality measure, the G-50, was designed to study substantive developments from clinical psychology in occupational settings. Responses to item-pools assessing DSM-5 domain traits were collected from 696 working adults in England, Ireland, Wales and Scotland. Exploratory factor analyses supported a structure comprised of Antagonism, Compulsivity, Detachment, Negative Affect, Disinhibition, and Psychoticism. Gender differences were observed following invariance analyses while five-factor indicators projected into latent space defined by pathological indicators revealed each big-five construct related to multiple pathological traits. Latent profile analyses revealed a maladaptive class that experienced worse outcomes on a range of job performance and health indicators. Support for a hierarchical structure was observed where domain traits are lower order indicators of internalizing and externalizing factors. Mixed evidence for a generalized psychopathology factor was observed. Because lower-level maladaptive traits are described in the organizational sciences as 'Dark', we describe this generalized psychopathology factor as 'Black'.

Keywords: maladaptive personality, dsm-5, job performance, ESEM, latent class analysis

Introduction

De Fruyt and Salgado (2003) made a call for more research into maladaptive personality in the workplace. In recent times significant progress has been made. Judge and Le Pine (2007) summarized research showing high standing on measures of Narcissism, Impulsivity, Hostility, and Type A behavior were associated with a range of performance and health outcomes. Studies of dimensionalized Diagnostic and Statistical Manual of Mental Disorders (DSM) IV categories show maladaptive constructs have implications for managerial derailment and productivity (Hogan & Hogan, 2001). Other researchers have investigated aberrant profiles on normal inventories (e.g., Wille, De Fruyt, and De Clerq, 2013) showing profiles have predictive power for career success beyond normal personality. Finally, research has focused on narrow aspects of maladaptive personality, e.g., the Dark Triad (Paulus & Williams, 2002). A meta-analysis by O'Boyle, Forsyth, Banks, and McDaniel (2012) found that Psychoticism, Narcissism, and Machiavellianism were related to counter-productivity, while the latter two dimensions predicted performance.

Despite progress in our understanding of maladaptive personality at work, there has been practically no industrial and organizational psychology research into the pathological trait model considered during the recent DSM revision (Guenole, in press). This pathological variation of the big five is differentiated from typical big five inventories by its valence and range (Dilchert, Ones, and Krueger, in press). In other words, the pathological trait model focuses on opposite poles to normal personality inventories and contains indicators of extreme standing at these ends of the latent continuum. Given the established relationships between other maladaptive frameworks and performance such as the dark triad (see Guenole, in press for an overview), the role of the DSM 5 maladaptive trait model at work requires more attention. We expect that part of the reason for the lack of work related research is that the taxonomy is new and no brief measures for the trait model exist for

occupational settings. In this paper we describe the development and preliminary validation of a set of marker items to measure the pathological trait model in occupational settings.

The rationally derived DSM-5 maladaptive trait model

The initial DSM-5 trait model proposed was rationally derived and comprised of 6 domain level traits (Skodol et al., 2011): *Negative Emotionality*: Experiences a wide range of negative emotions. *Detachment*: Withdrawal from other people. *Antagonism*: Diverse manifestations of antipathy toward others. *Disinhibition*: Diverse manifestations of being present oriented'. *Compulsivity*: The tendency to think and act according to a narrowly defined and unchanging ideal. *Psychoticism*: Exhibits a range of odd or unusual behaviors and cognitions. At the facet level, the rational model was comprised of 37 facets, whereas empirical analyses supported a 25 facet-structure (Krueger et al. 2012, Wright et al., 2012). Early empirical analyses also supported a five-trait domain structure where Compulsivity is seen as the opposite pole of Disinhibition (e.g. Gore & Widiger, 2013, Krueger et al. 2011, Wright et al. 2012).

The model that we follow here for our scale development is the six domain-trait model originally described by Skodol et al. (2011). Our rationale for choosing the six factor model here is based on our intention to build a brief marker set that can measure the content of maladaptive personality well across all domains. Building scales that cover the entire range of normal and abnormal personality for any dimension is challenging, especially when using short scales and without computerized adaptive testing. The psychometric challenges are compounded for disinhibition-compulsivity, as items need to span the abnormal to normal range from disinhibition to conscientious and normal to abnormal range from conscientious to compulsive. Given that both poles are important, we opted for separate scales in this instance to measure each pole with similar psychometric precision as other domains. We also report the results of fitting hierarchical models based on internalizing and externalizing

factors and a generalized psychopathology factor (Krueger, 1999, Wright et al., 2012). We refer to the generalized psychopathology factor as a 'Black' factor because it sits atop lower level factors referred to in the organizational sciences as 'Dark'.

Desiderata of a set of marker variables

Suitability for occupational populations: Item sets must be appropriate for rating by a wide spectrum of individuals. Special care was taken to ensure items would be palatable to normal population working adults, but still tap their underlying constructs.

Domain trait-focus: Occupational measures focusing on the domain traits, analogous to the IPIP Big Five markers, are yet to emerge. Broad measures are often more appropriate when we are studying the nomology of the trait model at the domain level and as it relates to similarly broad outcome measures.

Open-source: The new DSM model should be examined in different populations, using different instruments, and based on different of techniques (Lykken, 1968). Making item sets widely available to facilitate this process is a key goal of this research.

Brief format: Krueger et al (2012) have developed a measure of the rationally derived pathological trait model, and while a shorter 25-item clinical form also exists, a brief version that can be used by busy workers in occupational settings has yet to emerge.

Item-level analyses Item level analyses are required because conducting scale level analyses provides no indication as to the items within scales that measure the intended constructs well and those that measure the intended constructs poorly.

Criterion-related validity Because we are interested in developing a measure suitable for work settings, we incorporated in our analyses a five-factor model measure and several indicators of job performance and health to provide a preliminary exploration of the model's relevance to the work place.

Materials and Method

Participants. Participants were 696 internet-recruited English speaking, working age adults across England, Ireland, Wales and Scotland, along with 45 participants from Germany who worked in English speaking companies. Internet samples, in general, are just as representative as typical convenience samples in psychology (Gosling et al., 2004). Moreover, when studying the co-variances of maladaptive traits, Wright et al. (2012) argued that an abnormal population was not required. The sample was predominantly female (54%) and had a mean age of 37 years, with a standard deviation of 10.84 years. The age range was 18 to 61. Participants worked across a wide variety of industry sectors including pharmaceuticals, banking, manufacturing, transport and government.

Item pool development for domain level marker set. Investigators with experience in individual differences wrote item sets for the facets described by Skodal et al. (2011). Four items were written per trait facet for a total of 140 items in total. We did not test items for two of 37 facets in Skodol et al.'s (2011) paper because of the concerns about the use of these items in organizational contexts. The two facets were self-harm, including cutting and burning, and intimacy avoidance, including avoidance of sexual intimacy and love. We only wrote positively phrased items, given the brief nature of the measure, and that some research has argued negatively phrased items detrimentally impact validity (Woods, 2006), particularly where people may suffer from psychological illness (Conrad et al., 2004). Qualitative comparison of the resulting item sets against the operational definitions by the writers shortened the item set to three items per facet. This involved the primary author and graduate students comparing the items against operational definitions to identify weak items or items that were too similar to others. A five-point Likert rating scale was used ranging from 1 (strongly disagree) to 5 (strongly agree).

Brief Big Five measure. A sub-sample of participants also completed a brief measure of the Big Five that contained three items per big five construct. We used the same item set

used by Furnham, McManus, and Scott (2003), which they reported contained three items per big five construct sampled from the short form of the NEO personality inventory, the 60-item NEO-FFI.

Item analysis. Item analysis was conducted within each of the six domains on the individual items written to measure each domain. The objective was to create homogenous scales for each domain that could subsequently be tested in a multivariate fashion. Several approaches were considered for item selection. Krueger et al. (2012) considered whether items load on secondary factors when building narrow measures of unidimensional traits, dropping items with prominent secondary loadings. Secondary factors from factor analysis in the scale construction of narrow facets are nuisance factors. However, secondary factors in the construction of general factors based on pools of items measuring multiple facets are not nuisance factors -- they are usually substantive facets. Fitting one more factor than the hypothesized number of facets and choosing items that load prominently on a priori facets but not on the additional factor was also considered. This is unlikely to be appropriate because the rational and indeed empirical facets are not pure indicators of where the edges of the facets are, many are blends of big five traits (Krueger, 2013). We therefore opted to fit one-factor exploratory factor analyses with MPlus 7 (Muthen & Muthen, 2006) to inform item selection. The WLSMV estimator as Likert data ordered categorical data.

Items were selected in a top down fashion, and the single strongest item from each trait-facet was chosen to represent that trait-facet in the overall measure of that domain. The selection process was iterated to arrive at a set of items representative of their intended domains and with high reliability, operationalized as an Omega coefficient in excess of .70. A possible advantage of continuing the iterative process after reaching a reliable scale so that each facet was represented an equal number of times was a balanced representation of the DSM-5 facets, while the advantage of stopping item selection when coherence and reliability

were achieved was brevity. Given that the DSM-5 facets are not pure indicators of higher order constructs, we treated the facets as a sampling frame to guide item choice rather than the final word on how many items to include from each a priori facet. Similar to Goldberg et al.'s (2006) description of the IPIP scale development, psychometric and subject matter expert judgment were integrated to arrive at the final selection for each domain trait.

Exploratory structural equation modeling (ESEM). We next examined how independent the scores on the 6 domain scales were of one another. In other words, we examined the dimensionality of the item pool, expecting to find six relatively independent dimensions. We opted for ESEM, because it has a number of advantages over traditional CFA. These include relaxation of the assumption that items have no cross loadings, availability of standard errors for parameter estimates, availability of traditional structural equation modeling fit tests, and more accurate estimation of latent variable correlations (Asparouhov & Muthén, 2009; Furnham, Guenole, Levine, & Chamorro-Premuzic, 2013). The WLSMV estimator was again used. Geomin rotation was used because an oblique rotation will uncover an orthogonal solution if one is appropriate. While past research has examined higher order structures for psychopathology traits in two stages by correlating or re-factoring saved factor scores, it is in fact possible to fit these models in a single step. With the appropriate number of restrictions for identification at each level, this model can be estimated as an EFA in a CFA framework. We implemented this technique.

Measurement equivalence Under linear factor analysis the process of invariance testing typically proceeds through increasingly restrictive measurement models that first examine configural invariance, then test the equivalence of loadings, and then test for equivalence of intercepts. The accepted practice for ordered categorical involves testing configural invariance followed by simultaneous testing of metric and scalar invariance (Muthen and Muthen, 2006, p484). The steps are as follows. We first estimated a baseline

model which constrained scale factors to be equivalent across gender, fixed the means of the groups to zero in both groups, and freely estimated the loadings and thresholds in both groups. Next we freed the scale factors in both groups and fixed the loadings and thresholds equal across groups, and freed the mean in the second group. In this model, non-equivalence of scale factors is interpreted as non-equivalence of factor variances and error variances because the loadings and thresholds are fixed.

Model selection for structural equation models We evaluated the fit of the overall ESEM analysis based on an overall assessment of the following indices: chi-square, root mean square error of approximation (RMSEA; Steiger, 1990); Bentler's (1990) Comparative Fit Index (CFI); and Bentler and Bonnet's (1980) Non-Normed Fit Index. (NNFI).

Extension analyses. To illustrate the relation between the normal big five and the maladaptive traits measured by the new instrument we conducted an extension analysis, which projects a set of marker variables into the factor space defined by another set of variables. We projected the 15-item market set reported by Furnham, McManus, and Scott (2003) into the maladaptive trait structure identified in the previous analysis. This analysis was performed for a subset of 183 of the 696 participants that also completed the big five items. We fixed all factor variances, factor co-variances and factor loadings of the maladaptive trait marker set at the exact values from the selected 6-factor ESEM model. We then let the big five maker set load freely about the fixed parameters.

Latent profile analyses. Latent profile analysis was used to examine whether evidence existed for unobserved heterogeneity (i.e. subgroups), because past research has used this technique and identified a pathological class on indicators of maladaptive traits (e.g. Clark et al., 2013). Several statistics have been recommended in the past for deciding on the number of latent classes. Particular focus has been placed on information criteria including Akaike's Information Criterion (AIC), the Bayesian Information Criterion and their adjusted

variants. These criteria are used for selection among competing models, and a lower value is better. The Lo-Mendell-Rubin LR test, the adjusted Vuong-Lo-Mendell-Rubin adjusted LR test, and the parametric bootstrapped LR test (BLRT) are also used. For these tests, a significant p-value indicates the current model should be preferred to the model with K-1 classes. We considered these statistics along with class interpretability. We included items written for this study measuring an occupationally relevant performance model comprised of four contextual performance items measuring work engagement, organizational citizenship behavior, counterproductive work behavior, and turnover intentions, and an item measuring experiences of general health problems. Actual items are described below.

Results

Item distributions and patterns of missingness. Inspection of category frequencies for each of the items revealed that, on average, participants tended to endorse the lower categories of each of the items. The minimum covariance coverage of any item with any other item was 97 percent, and missingness was handled using a pairwise present approach.

Exploratory structural equation modeling. Table 1 presents fit for different ESEMs. Fit decreases across all fit indices as the parsimony of the solution increases. Studying the decrement in fit yielded by moving from 7 factors to 6 factors indicates that improvement is marginal, with RMSEA not changing at all. On the other hand, moving from a 6-factor solution to a 5-factor solution shows a considerable decrease in fit. This result, coupled with our a priori rationale for 6 factors led us to adopt a 6-factor model. The item loadings on their targeted domains are substantially larger than the loadings on non-targeted domains. Finally, the mean within factor loading for all factors is substantially larger than the average and maximum loadings for all other items on the dimensions, and the target loading for every item is, in general, considerably larger than the average and maximum of all other loadings for its row.

Reliability for the factors was calculated with McDonald's (1999) Omega. Factor I is Antagonism, .71, Factor II is Antagonism,.80, Factor III is Compulsivity,.86, Factor IV is Disinhibition,.86, Factor V is Negative Affect,.73, and Factor VI is Psychoticism, .80. While recent PID-5 studies by Krueger et al. (2012) and Wright et al. (2012) did not provide full factor analyses of all domains at the item level, they did present factor solutions from factoring all facets simultaneously. This permits a comparison of the number of facets that cross-loaded in these studies with the number of items that cross-loaded in our study. Krueger et al. used a criterion of facet loadings greater than .3 that were not the largest loadings in their row to identify substantial cross-loadings. In that study, 12 facets met the criterion. In the Wright et al. (2012) study, 15 facets met this criterion. In the present study, 7 out of 50 items had loadings on factors greater than .3 that were not the greatest in their rows. Item properties in the current study compare favorably with facet properties in these earlier studies, indicating that the current items reflect the higher order domain traits well.

Insert table 1 about here

Higher order structures. The correlations between the factors were small, the highest correlation was just .36, between Antagonism and Detachment. Nevertheless, it is important to test appropriateness of higher order structures. Previous research consistently shows that psychoticism does not load on either the internalizing or externalizing higher order factors, or on the generalized psychopathology factor, but it is still an important indicator of psychopathology (Wright et al., 2012). Consistent with this research, in the higher order models we now report we did not specify psychoticism to load on the higher-level factors. The convergence of higher order models was sensitive to how many identification restrictions were imposed. A better model was achieved when small loadings i.e. +/- .02 were fixed at their ESEM values for identification rather than the minimum. This led to a well fitting model for the internalizing and externalizing structure (RMSEA=.04,

CFI=.95, TLI=.94) where Antagonism, and Disinhibition loaded positively and significantly on Externalizing while Negative Affect and Detachment loaded on Internalizing. It also led to a similarly well fitting model for the generalized psychopathology factor, save for a negative non-significant residual for the compulsivity factor indicating that either externalizing perfectly explains compulsivity or there is a model misspecification. Given the problematic residual's non-significance, debate exists regarding whether to fix this at zero, report it, or fit another model (Kolenikov & Bollen, 2012) . Because of the inchoate stage of research into this factor we report it here and encourage further research.

Insert table 2 about here

Measurement equivalence results Progressive tightening of the constraints in successive models supported the model where factor loadings and thresholds were equivalent across groups. The model fit for this invariant model was: chi-square=3163.47, df=1932, p=.00, RMSEA=.04, CFI=.94, TLI=.93. There was no decrement in model fit across CFI, TLI, or RMSEA at 2 decimal places, supporting equivalence of loadings and thresholds. Fit statistics also indicated that a better fit was obtained by leaving means relaxed. These results showed that females are lower on FI Antagonism (-.58), similar on FII Compulsivity (-.02), lower on FIII Detachment (-.18) lower on FIV Disinhibition (-.26), higher on FV Negativity (.34), and no different on FVI Psychoticism (.02).

Extension analysis Fit for the model where the five factor model indicators were added and allowed to freely load were also acceptable (Chi-Square = 2280.117, df = 1926, CFI=.92, TLI=.91, RMSEA =.03). Factor loadings from our extension analysis are presented in table 3. Extraversion indicators had their strongest mean loading on pathological factor detachment, consistent with the idea that detachment is the extreme pole of Extraversion. Conscientiousness marker items had their strongest mean loading on Disinhibition, with weaker secondary loadings on Compulsivity. The three neuroticism markers are strongly

related to the Negative Affect pathological trait, consistent with the purported correspondence between Neuroticism and Negative Affect. The openness items had their equally prominent loadings on Psychoticism and Disinhibition, reaffirming recent research that Psychoticism is a related to Openness (Gore & Widiger, 2013). The break in the expected pattern was observed for the Agreeableness items that were related more strongly to Detachment and Negative Affect than to Antagonism

Insert table 3 about here

Latent profile analysis Latent profile results are presented in table 4. While certain fit statistics favored more than two classes, we retained the two class model because the Voung-Lo- Mendell-Rubin likelihood ratio, Mendell-Rubin adjusted likelihood ratio test, and the bootstrapped likelihood ratio test all did not consistently support the adoption of a solution with more than two classes. Support for a two-class solution was also observed from elbow plots of the loglikelihood and information criteria that revealed a clear inflection from the increase from one to two classes (not presented but available from corresponding author).

Insert table 4 about here

The lower scoring class from two-class solution was comprised of 363 individuals (52%) who were predominantly female (57%) and whose profile was lower on all factors: Compulsiveness (3.32 v 3.42), Disinhibition (2.12 v 2.81), Antagonism (2.43 v 2.91), Negativity (2.33 v 3.05), Psychoticism (2.20 v 3.17), and Detachment (1.94 v 2.51). This class was significantly lower on counterproductive behavior against individuals (CPWB-I: Ignored calls or emails from a co-worker), and the organization (CPWB-O: Tried to look busier than I am), significantly higher on work engagement (ENG: Had positive feelings about my job), significantly higher on individually oriented (OCB-I: Was cooperative and helpful to a colleague), and organizationally oriented organizational citizenship behavior (OCB-O: Followed organizational rules and procedures), significantly higher on task

performance (TASK: Was productive at work), significantly lower on turnover intentions (TO: Considered leaving my organization), and significantly higher general health (HEALTH: Lost sleep from worry). These results suggest a normal and a maladaptive class of respondents, consistent with research into psychopathology using latent class approaches (e.g. Clark et al., 2013). However, we cannot rule out the possibility that the 'adaptive class' is not simply responding in a socially desirable fashion from these data.

Discussion

The central role of personality at work behooves occupational psychologists to study and understand clinical developments to avoid unnecessary bifurcation in research and practice between the fields. There are currently no brief and occupationally appropriate psychometric measures assessing the broad spectrum of maladaptive traits at work. A new measure that fills this void would help in unifying normal and abnormal personality across clinical and occupational settings. To facilitate the process, this paper reported the development of a brief new set of marker items that used modern psychometric methods to clearly delineate the boundaries and edges of the new model and offer a suggested item set for studying this model in normal populations. The fitted SEM models showed strong correspondence with models from the clinical literature in terms of hierarchical structure and gender differences.

We see these scales being used in organizational practice in the first instance as a research tool. They might be included in test batteries by researchers working in industry alongside other personnel selection techniques, such as interviews, assessment centres, or also alongside existing personality measures. Users would want to see either incremental validity for the G-50 over normal personality inventories, or that the G-50 predicts outcomes that normal inventories do not. This tool might also be used in development contexts with caveats that the constructs and this measure are new, and that their relevant to job

performance is being evaluated. In this latter case, the instrument's use in a multisource feedback context would be very useful, as the alternate rater groups in the multisource rating process (e.g. Guenole, Chamorro, Smillie, & Cockerill, 2011) could provide an alternate and useful validation strategy for this measure. This paper also suggests substantive future research directions, in particular, the study of psychometric and validity evidence for the Black factor at the apex of the hierarchy of work-related maladaptive personality traits.

Our study is not without limitations. Paramount amongst these is the data were self-report. While self-report data have certain limitations, they are by far the most common data source in clinical psychometrics (Bornstein, 2003). The constructs assessed are also likely to be best assessed from the perspective of the self. Future research should examine an expanded version of this measure, to show that the items are indeed sound indicators of their parent facets, in addition to being indicators of the higher order domains. Overall, the results so far are promising and suggest the item set is appropriate for use by researchers studying the new DSM-5 trait model at the domain level in the workplace.

References

Asparouhov, T. & Muthén, B. (2009). Exploratory structural equation modeling. *Structural Equation Modeling*, 16, 397-438.

Bentler, P.M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107, 238-46.

Bentler, P.M. & Bonnet, D.C. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*, 88, 588-606.

Bornstein, R. F. (2003). Behaviorally referenced experimentation and symptom validation: A paradigm for 21st-century personality disorder research. *Journal of Personality Disorders*, 17, 1–18.

Clark, S. L., Muthén, B., Kaprio, J., D'Onofrio, B. M., Viken, R., & Rose, R. J. (2013). Models and Strategies for Factor Mixture Analysis: An Example Concerning the Structure Underlying Psychological Disorders. *Structural Equation Modeling: A Multidisciplinary Journal*, 20, 681-703.

Conrad, K. J., Wright, B. D., McKnight, P., McFall, M., Fontana, A., & Rosenbeck, R. (2004). Comparing traditional and Rasch analyses of the Mississippi PTSD Scale: Revealing limitations of reverse-scored items. *Journal of Applied Measurement*, 5, 15–30.

Dilchert, S., Ones, D. S., and Krueger, R. F. (in press). Maladaptive Personality Constructs, Measures, and Work Behaviors. *Industrial and Organizational Psychology: Perspectives on Science and Practice.*

Furnham, A., McManus, I.C., & Scott, D. (2003). Personality, empathy, and attitudes to animal welfare. *Anthrozoös*, 16, 135–146.

Furnham, A., Guenole, N., Levine, S. J., & Chamorro-Premuzic, T., (In press). The NEO-PI-R: Factor structure and gender invariance from exploratory structural equation modeling analyses in a high-stakes setting. *Assessment*, 20, 14-23.

Gore, W. L., Widiger, T. A. (2013). The DSM-5 dimensional trait model and five-factor models of general personality. Journal of abnormal psychology 122, 3, 816-21.

Gosling, S. D., Vazire, S., Srivastava, S., & John, O. P. (2004). Should we trust web-based studies. *American Psychologist*, 59, 93-104.

Guenole, N, Cockerill, T, Chamorro-Premuzic, T and Smillie, L D. (2011). Evidence for the validity of dimensions in the presence of rater source factors. *Consulting Psychology Journal: Practice and Research*, 63, 203-218.

Guenole, N. (in press). Maladaptive Personality at Work: Exploring the Darkness. *Industrial and Organizational Psychology: Perspectives on Science and Practice*.

Gore, W. L., & Widiger, T. A. (2013). The DSM-5 dimensional trait model and five-factor models of general personality. *Journal of Abnormal Psychology*, 122, 816-821.

Hogan, R. and Hogan, J. (2001) Assessing leadership. A view from the dark side. *International Journal of Selection and Assessment*, 9, 40–51.

Judge, T. A., & LePine, J. A. (2007). 20 The bright and dark sides of personality: implications for personnel selection in individual and team contexts. Research companion to the dysfunctional workplace: Management challenges and symptoms, 332.

Kolenikov, S., & Bollen, K. A. (2012). Testing Negative Error Variances Is a Heywood Case a Symptom of Misspecification?. *Sociological Methods & Research*, *41*, 124-167.

Krueger, R. F., Derringer, J., Markon, K. E., Watson, D., & Skodol, A. V. (2012). Initial construction of a maladaptive personality trait model and inventory for DSM-5. *Psychological Medicine*, 42, 1879.

Krueger, R. F. (1999). The structure of common mental disorders. Archives of *General Psychiatry*, 56, 921-926.

Lykken, D. T. (1968). Statistical significance in psychological research. *Psychological Bulletin*, 70, 151-159.

McDonald, R. P. (1999). Test Theory: A Unified Treatment. . Mahwah, NJ: Erlbaum

Muthén, L. K., & Muthén, B. (2006). Mplus: User's guide. Los Angeles, CA: Muthén & Muthén.

O'Boyle E. H, Forsyth D. R, Banks G. C, McDaniel M. A. (2011). A meta-analysis of the Dark Triad and work behavior: a social exchange perspective. *Journal of Applied Psychology*, 97, 557-579.

Paulhus, D.L., & Williams, K. (2002). The Dark Triad of personality: Narcissism, Machiavellianism, and psychopathy. *Journal of Research in Personality*, 36, 556-568.

Skodol, A. E., Bender, D. S., Oldham, J. M., Clark, L. A., Morey, L. C., Verheul, R., Krueger, R. F., and & Siever, L. J. (2011). Proposed changes in personality and personality disorder assessment and diagnosis for DSM-5 Part II: Clinical application. *Personality Disorders: Theory, Research, and Treatment*, 2, 23.

Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research*, 25, 214-12.

Wille, B., De Fruyt, F., & De Clercq, B. (in press). Expanding and reconceptualizing aberrant personality at work: Validity of Five-Factor Model aberrant personality tendencies to predict career outcomes. *Personnel Psychology*.

Woods, M. (2006). Careless Responding to Reverse-Worded Items: Implications for Confirmatory Factor Analysis. Journal of Psychopathology and Behavioral Assessment, 28, 3, 186-191.

Wright, A. G., Thomas, K. M., Hopwood, C. J., Markon, K. E., Pincus, A. L., & Krueger, R. F. (2012). The hierarchical structure of DSM-5 pathological personality traits. *Journal of abnormal psychology*, 121, 4, 951.

Table 1. Fit for 7, 6, 5, 4 and 1 factor models

Model	χ^2	df	p	RMSEA	CFI	TLI
7 Factor	1806.88	896	.00	.04	.95	.93
6 Factor	2078.67	940	.00	.04	.94	.92
5 Factor	2691.64	437	.00	.05	.91	.89
4 Factor	3883.37	1031	.00	.06	.85	.82
1 Factor	10031.46	1175	.00	.10	.53	.51

RMSEA= Root Mean Error of Approximation, CFI=Comparative Fit Index, TLI= Tucker Lewis Index.

Table 2. Factor loadings and significance for 6 factor exploratory promax rotated solution

Domain / Facet	Item	I AN	II CO	III DE	IV DI	V NE	VI SC	Mean on target	Max off target
AN-Hostility	Fight fire with fire.	**.65**	.13	-.02	.02	.09	.00	.05	.13
AN-Histrionism	Behave boldly.	**.58**	.06	-.11	-.10	-.04	.08	.08	.11
AN-Aggression	Tell people when they're annoying me.	**.53**	.02	-.07	-.03	.00	.10	.05	.10
AN-Callousness	See how far I can push people.	**.52**	.19	.14	-.04	-.03	-.05	.09	.19
AN-Narcissism	Am better than my colleagues.	**.48**	.06	.20	-.01	.06	.05	.07	.20
AN-Oppositionality	Don't back down.	**.47**	.13	.02	.01	.05	.03	.05	.13
AN-Manipulativeness	Can get whatever I want through flattery.	**.41**	.16	-.06	-.05	.27	.06	.12	.27
AN-Deceitfulness	Never tell the whole story.	**.20**	.02	.28	.02	.23	.07	.12	.28
CO-Perfectionism	Insist on everything being perfect.	.00	**.71**	.16	.06	.02	.03	.05	.16
CO-Perfectionism	Can't stand errors.	.08	**.63**	.09	.10	.01	-.10	.08	.10
CO-Rigidity	Believe there is usually a right way to do things.	.06	**.63**	-.04	.07	-.03	-.11	.06	.11
CO-Rigidity	Believe most things should be done a certain way.	-.20	**.62**	.02	-.05	-.17	.07	.10	.20
CO-Orderliness	Am a detail person.	.10	**.60**	.12	.17	.03	-.08	.10	.17
CO-Rigidity	Do everything properly.	-.10	**.59**	.01	-.07	-.24	.05	.09	.24
CO-Perseveration	See failure as a result of lack of effort.	.14	**.54**	.10	.09	.09	-.05	.10	.14
CO-Perseveration	Never give up.	.19	**.41**	-.08	-.23	-.16	.11	.15	.23
CO-Risk aversion	Know a risky situation when I see one.	.22	**.18**	-.06	-.04	-.09	.01	.08	.22
DE-Withdrawal	Prefer being alone.	-.13	.01	**.85**	.01	.01	.05	.04	.13
DE-Detachment	Avoid others whenever possible.	-.08	.03	**.83**	.00	.02	.02	.03	.08
DE-Restricted affect	Have a cold personality.	.04	-.04	**.69**	.05	.00	.00	.03	.05
DE-Withdrawal	Have few close friends.	-.07	.08	**.65**	-.11	.13	.13	.10	.13
DE-Withdrawal	Keep my distance from colleagues.	.00	.05	**.63**	.12	.12	.07	.07	.12
DE-Anhedonia	Rarely feel happy.	.08	.04	**.60**	-.02	.02	.09	.05	.09
DE-Restricted affect	Have no feelings to express.	-.02	.04	**.50**	.01	-.02	.07	.03	.07
DE-Detachment	Keep interaction to a minimum.	.17	-.06	**.43**	.58	-.12	-.07	.20	.58
DI-Distractibility	Have a short attention span.	-.02	.01	.03	.00	**.87**	-.03	.02	.03
DI-Distractibility	Can't concentrate for long.	-.03	.03	-.03	.01	**.87**	-.01	.02	.03
DI-Irresponsibility	Don't follow through.	.10	-.15	.15	.14	**.51**	.01	.11	.15
DI-Recklessness	Break agreements.	.34	.00	-.17	-.01	**.37**	.31	.17	.34
DI-Irresponsibility	Throw caution to the wind.	.16	-.10	.16	.19	**.37**	.06	.13	.19
DI-Recklessness	Get into trouble.	.45	-.16	.08	.20	**.29**	.14	.21	.45
DI-Impulsivity	Like to do crazy things.	.26	-.02	-.21	-.09	**.22**	.51	.22	.51

Domain / Facet	Item	I AN	II CO	III DE	IV DI	V NE	VI SC	Mean on target	Max off target
DI-Impulsivity	Don't overthink important decisions.	.26	-.14	.11	-.26	**.20**	-.02	.16	.26
NE-Depressivity	Often feel down.	.12	-.06	.11	**.79**	-.05	.04	.08	.12
NE-Pessimism	Have a negative outlook.	.05	-.03	.18	**.74**	-.04	-.02	.07	.18
NE-Low self-esteem	Have a poor opinion of myself.	-.05	-.04	.07	**.73**	.07	-.02	.05	.07
NE-Emotional liability	Am a victim of my emotions.	-.15	.14	-.16	**.66**	.00	.23	.14	.23
NE-Anxiousness	Am concerned about things that might happen.	-.05	.07	-.13	**.64**	.04	.28	.11	.28
NE-Guilt/shame	Feel a lot of guilt.	-.18	.17	-.20	**.63**	.12	.09	.15	.20
NE-Separation insecurity	Wonder if friends have changed their minds about me.	-.04	-.01	.06	**.62**	.05	.03	.04	.06
NE-Submissiveness	Imagine what others think about me.	-.07	.12	-.01	**.59**	.12	.06	.08	.12
NE-Suspiciousness	Find that people are against me.	.24	.02	.31	**.56**	-.01	-.09	.13	.31
PS-Unusual perceptions	Have weird perceptions.	-.02	.04	.09	.05	.01	**.77**	.04	.09
PS-Cognitive dysregulation	Have unusual thought processes.	.05	.02	.11	.04	.03	**.70**	.05	.11
PS-Unusual beliefs	Have uncoventional beliefs.	.11	-.08	.14	-.02	-.08	**.64**	.09	.14
PS-Unusual perceptions	Have bizarre experiences.	.17	.00	-.07	.15	-.03	**.58**	.08	.17
PS-Eccentricity	Have peculiar mannerisms.	-.04	.11	.12	.00	.10	**.58**	.08	.12
PS-Eccentricity	Seem eccentric to other people.	.19	-.13	.08	.14	-.14	**.58**	.14	.19
PS-Dissociation proneness	Forget how I got places.	-.03	-.09	.10	.09	.12	**.41**	.09	.12
PS-Dissociation proneness	Wonder why I do the things I do.	.00	.05	-.02	.40	.17	**.36**	.13	.40
	Mean target	.48	.54	.65	.66	.46	.58	--	--
	Mean off target	.11	.07	.11	.09	.08	.08	--	--
	Max off target	.45	.19	.31	.58	.27	.51	--	--

AN=Antagonism, CO=Compulsivity, DE=Detachment, DI=Disinhibition, NE=Negative Affect, PS=Psychoticism. Labels following two letter codes reflect the facets from Skodol et al (2011) that each item was written to describe.

Table 3. FFM items projected into Maladaptive Factor Space

	AN	CO	DE	NA	DI	PS
A1	**-.15**	.06	-.63	.32	-.23	.01
A2 (R)	**.24**	-.02	.51	-.22	.05	.18
A3	**-.18**	.04	-.58	.21	-.33	.10
C1	.02	**.20**	-.21	-.06	**-.46**	-.08
C2 (R)	-.20	**-.17**	-.01	.12	**.46**	.13
C3	-.05	**.36**	-.04	.01	**-.41**	.12
EX1	.09	-.02	**-.70**	.10	-.08	.01
EX2	.31	.10	**-.27**	-.14	.16	.14
EX3	.30	.11	**-.33**	-.10	-.15	.22
N1	-.15	.15	-.15	**.69**	-.03	.01
N2	-.13	.14	-.01	**.68**	.03	-.07
N3	.28	.10	-.01	**.64**	-.19	-.07
O1	.11	-.16	-.21	.40	-.37	**.29**
O2 (R)	-.10	.11	.14	-.16	.26	**-.31**
O3	.16	-.22	-.10	.14	-.54	**.43**

A=Agreeableness, C=Conscientiousness, E=Extraversion, N=Neuroticism, O=Openness, (R) = reverse keyed item. AN=Antagonism, CO=Compulsivity, DE=Detachment, DI=Disinhibition, NE=Negative Affect, PS=Psychoticism.

Table 4. Fit for Latent Profile Analyses

Classes	LL	# fp	AIC	BIC	SSA-BIC	VLMR_LRT	LMR-ALRT	PB-LRT	SC
1	-3904.56	12	7833.12	7887.63	7887.63	--	--	--	--
2	-3692.53	19	7423.06	7509.37	7449.04	.00	.00	.00	42%
3	-3622.76	26	7297.52	7415.62	7333.07	.03	.03	.00	12%
4	-3586.64	33	7239.28	7389.18	7284.40	.02	.00	.00	3%
5	-3556.55	40	7193.10	7374.80	7247.79	.36	.36	.00	3%
6	-3535.59	47	7165.18	7378.68	7229.45	.21	.21	.00	3%

LL = log likelihood, # fp = number of free parameters, AIC = Akaike's Information Criterion, BIC = Bayes Information Criterion, SSA-BIC = Sample Size Adjusted Bayes Information Criterion, LMR-ALRT = Lo-Mendell-Reuben Adjusted Likelihood Ratio Test, VLMR-LR = Voung-Lo-Mendell-Reuben Adjusted Likelihood Ratio Test, B-LRT = Bootstrapped Likelihood Ratio Test, SC=Smallest class size (count followed by percentage)