SNAP trait profiles as valid indicators of personality pathology in a non-clinical sample

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A B S T R A C T

This study investigated whether profiles of traits included in the Schedule for Nonadaptive and Adaptive Personality (SNAP; Clark, 1993) model of personality were valid indicators of different personality pathologies in a non-clinical sample. We obtained self-reports of SNAP traits for 117 university students and self- and informant-reports of normal personality traits. SNAP trait profiles representing Borderline, Schizotypal, Avoidant, and Obsessive–Compulsive personality characteristics predictably related to normal traits that are considered most relevant to each respective personality pathology. Exploratory analyses showed that relationships among normal traits differed across groups of individuals with different levels of personality pathology. These findings suggest that SNAP profile scales have validity for representing specific personality pathologies on a continuum, and that the configuration of normal traits may be relevant to personality pathology.

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1. Introduction

Over the past two decades, advocates of the categorical model of personality disorders (PDs) described in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 2000) and proponents of dimensional models of PDs have been locked in an increasingly vigorous debate. The validity of the categorical model has been called into question by high levels of comorbidity among categories and symptom heterogeneity within categories (Clark, 1999). Dimensional models address these limitations and provide the added advantages of greater diagnostic flexibility and increased descriptive information (Widiger & Simonsen, 2005). Dimensional models are thus gaining support and are likely to be implemented to some extent within DSM-V (Clark, 2007). However, a challenge still facing dimensional models is they have trouble distinguishing among theoretically distinct personality pathologies (Morey, Gunderson, Quigley, & Lyons, 2000). That is, many PDs share elevations on the same pattern of normal personality traits, calling into question the discriminant validity of dimensional models of PDs.

Existing research attempting to identify dimensions that may uniquely define certain PDs suggests that the Schedule for Nonadaptive and Adaptive Personality (SNAP; Clark, 1993; Harlan & Clark, 1999) may be particularly useful in this regard. The SNAP was designed to assess PD characteristics using a bottom-up strategy. It consists of 15 primary traits in both the normal and abnormal range of personality that are grouped into three higher-order categories: Negative Temperament comprises the lower-order traits of Mistrust, Manipulation, Aggression, Self-Harm, Eccentric Perceptions, Dependency, and Negative Temperament; Positive Temperament comprises Exhibitionism, Entitlement, Detachment (reverse-scored), and Positive Temperament; and Disinhibition includes Impulsivity, Propriety (reverse-scored), Workaholism (reverse-scored), and Disinhibition.

Morey et al. (2003) found that different combinations of SNAP traits distinguished patients with Borderline (BPD), Schizotypal (SPD), Avoidant (APD), and Obsessive–Compulsive PD (OCPD) (a) from each other, (b) from patients with depression but no PDs, and (c) from a non-clinical group. Regarding unique trait elevations, BPD was characterized by high Negative Temperament, Self-Harm, and Aggression; SPD was defined by Mistrust, Eccentric Perceptions, and Detachment; APD was characterized by Detachment, low Workaholism, low Exhibitionism, low Entitlement, and low Positive Temperament; and OCPD was distinguished by Workaholism, Positive Temperament, low Negative Temperament, and low Disinhibition. An important implication of Morey et al. is that specific pathologies may be measured dimensionally by the combinations of SNAP traits that are elevated in each PD. For example, BPD may be measured by elevations on a composite of Negative Temperament, Self-Harm, and Aggression. However, the findings from this study alone do not warrant this conclusion because Morey et al. made a categorical distinction between individuals with and without PDs. The categorical distinction is inconsistent
with the theoretical position of dimensional models that personality pathology lies on a continuum with normality. For dimensional representations of specific personality pathologies to be valid, individuals with elevated levels of personality pathology that do not meet threshold criteria for a PD should have personality characteristics similar to those who do meet the diagnostic threshold.

In this study, we tested whether profiles representing different personality pathologies defined by SNAP traits are meaningfully associated with normal personality characteristics that are typically elevated in individuals with diagnoses of each PD. Discriminant validity is tested by examining whether these profiles have relatively weak relationships with characteristics of normal personality that are typically not (or are only weakly) related to each PD.

As most research relating PDs to normal personality has been conducted within the context of the Big-Five (Goldberg, 1990) and Five-Factor Model (Costa & McCrae, 1992) taxonomies, we chose traits from these models to validate SNAP profiles. These models identify five similar higher-order dimensions (names in parentheses are associated with the Big-Five model): Extraversion (Surgency), Agreeableness, Conscientiousness, Neuroticism (Emotionality Stability – reversed), and Openness (Intellect). For the sake of clarity, we refer to dimensions by their FFM names.

The magnitude of relationships between PDs and normal trait constructs varies widely across studies; thus, we rely on the results of a recent meta-analysis of relationships between PDs and normal traits (Saulsman & Page, 2004) to inform our evaluation of validity. The following correlations reached at least a medium effect size (Cohen, 1988) in non-clinical samples in the Saulsman and Page meta-analysis: BPD was positively correlated with Neuroticism; SPD was negatively related to Extraversion; APD was associated positively with Neuroticism and negatively with Extraversion; and OCPD was positively correlated with Conscientiousness. The validity of our profile scales will be evaluated on the basis of clarity, we refer to dimensions by their FFM names.

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By investigating which dimensions of normal personality are related to profiles of abnormal traits, the current study has the potential to add to the already considerable literature showing that personality pathologies are associated with normal personality dimensions (Widiger & Simonsen, 2005). In contrast, little research has examined the question of whether the configuration of normal personality is related to personality pathology. An exception is the literature on FFM profiles of PDs (Lynam & Widiger, 2001). In this research, expert clinicians were asked to imagine a prototypical patient with each PD and rate that patient across all 30 lower-order FFM facets. The composite of clinician ratings for each PD was used to generate a consensus profile of FFM facet levels for each prototype PD. Intraclass correlations between individual participants' scores and the consensus FFM profile for each PD provide an index of how closely a participant's profile approximates the prototype.

The rationale behind the trait profile approach is that most behavior that is diagnostic of personality pathology is not trait-specific, but rather a complex combination of traits that emerge from the manifestation of multiple traits. It is difficult to describe the diverse behaviors typifying personality pathology without invoking a heterogeneous set of descriptors. To concretize this point, consider that to muster a passable portrayal of just the first DSM-IV criterion for BPD - frantic efforts to avoid real or imagined abandonment – involves references to at least the adjectives “insecure” (rele...
2.2.2. Big-Five/Five-Factor model traits

The Big Five Mini-Markers (Saucier, 1994) is a 40-item scale that assesses each factor with eight adjectives on a 1–9 scale; higher numbers indicate the adjective is more descriptive of the participant. A subset of participants (n = 66) completed the NEO – Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992), a 60-item scale assessing each factor with 12 sentence-descriptors on a 1 to 5 scale; higher numbers indicate the sentence is more descriptive of the participant. informant-reports of Mini-Markers were obtained for 41 participants, and informant-reports on the NEO-FFI were obtained for 20 participants. Informant assessments contained the same content as self-reports but instructed the informant to describe the participant’s personality rather than their own. Cronbach’s Alphas were generally high for both self- and informant-reports (Table 1).

2.2.3. MPQ

Participants completed the Multidimensional Personality Questionnaire-Brief Form, MPQ-BF (Patrick, Curtin, & Tellegen, 2002), a 155-item true–false scale assessing the 11 traits and three higher-order factors of Tellegen’s (1982) personality model (described above). Cronbach’s Alphas for primary traits ranged from .68 to .86 (Table 1).

3. Results

3.1. Descriptive statistics

Table 1 presents descriptive statistics for SNAP composites, self- and informant-reported Big-5/FFM, and self-reported MPQ scales. Scales for each instrument had similar standard deviations; this was important because it reduced the likelihood that divergent relationships between SNAP scales and normal personality traits would emerge simply due to different levels of variation within scales. Different numbers of participants completed each assessment; thus, the magnitude of correlations between SNAP composites and normal personality scales that will be considered reliable varies across measures.

3.2. Partial correlations between SNAP composites and normal personality characteristics

In order to evaluate convergent and discriminant validity of the SNAP composites, we examined partial correlations between each composite and each normal personality scale, partiauling out the effects of the other composites (e.g., the partial correlation between Borderline pathology and Extraversion may be interpreted as the unique association between Borderline characteristics and Extraversion above and beyond the effects of Schizotypal, Avoidant, and Obsessive–Compulsive characteristics.) Table 2 shows partial correlations between SNAP composites and each normal personality characteristic and zero-order correlations among SNAP composites. The moderate intercorrelations between SNAP composites reinforce the importance of the partial correlation analysis.

We evaluated the validity of SNAP composites by the extent to which our results replicated previous research showing that BPD is related to Neuroticism, SPD to Extraversion (negatively), APD to Neuroticism and Extraversion (negatively), and OCD to Conscientiousness (Saulsman & Page, 2004). For Borderline and Obsessive-Compulsive characteristics, we replicated these findings for all four normal personality instruments. Schizotypal characteristics were significantly negatively related to Extraversion for NEO-FFI self-reports and Mini Marker peer reports, and while not significant, associations between Schizotypal characteristics and Extraversion in NEO-FFI peer reports and Mini-Markers self-reports were in the predicted direction. Avoidant characteristics were significantly negatively related to Extraversion for all personality measures except NEO-FFI peer reports, for which the effect size was moderate and in the predicted direction. However, Avoidant characteristics were unrelated to Neuroticism for three measures; it was only negatively related to Mini Marker Neuroticism. The only other relationships between SNAP composites and normal personality characteristics to replicate across instruments were those between the Borderline composite and Extraversion (positively), and between the Obsessive–Compulsive composite and Agreeableness (positively) in both self-report inventories. Thus, with the exception of the lack of a relationship between the Avoidant composite and Neuroticism (discussed below), the results provide rather strong evidence of both the convergent and discriminant validity of SNAP composites in a non-clinical sample, and suggest that unique associations between each composite of interest and particular traits are not driven by covariation among personality pathologies.
We compared the correlation matrices between low and high groups using the Jennrich (1970) test of equality of two correlation matrices computed over independent sub-samples. For an \((n \times n)\) dimensional correlation matrix, the test statistic is distributed as \(x^2\) with \(n(n - 1)/2\) degrees of freedom. Each comparison produced a significant \(x^2\) (df = 55), indicating that the relationships among traits differ across groups with high and low levels of personality pathology: Borderline \((x^2 = 92.97, p = .001)\), Schizotypal \((x^2 = 80.50, p = .014)\), Avoidant \((x^2 = 81.92, p = .011)\), and Obsessive–Compulsive \((x^2 = 92.97, p < .001)\).

A threat to the validity of finding differences between correlation matrices is that the MPQ data may have been characterized by an atypical overall correlational structure, which would call into question the interpretation that subgroups have different correlational structures. Arguing against this, parallel analysis of MPQ data and examination of a scree plot suggested extracting three factors; factors that emerged from a principal axis factor analysis closely matched the theoretical structure of the MPQ (results available upon request).

3.4. Do correlations between higher-order MPQ factors differ between groups with different levels of personality pathology?

The finding that MPQ correlation matrices differed between high and low personality pathology groups suggests that higher-order factors of the MPQ may relate to each other differently across groups. To explore this, we created scales representing higher-order factors of the MPQ. The Positive Emotionality factor was computed by summing Well-Being, Social Potency, Achievement, and Social Closeness; Negative Emotionality was computed by summing Stress Reaction, Alienation, and Aggression; and Constraint was computed by summing Harm Avoidance, Control, and Traditionalism. We computed partial correlations between higher-order factors for each high and low group and tested whether the magnitude of correlations between factors differed across groups. Results showed that correlation between Positive Emotionality and Constraint was significantly more positive in the high \((r = .51)\) than in the low \((r = .06)\) Borderline group \((r_{\text{diff}} = .57, p = .009)\), and that the correlation between Positive Emotionality and Negative Emotionality was more positive in the high \((r = .28)\) than in the low \((r = -.29)\) Schizotypal group \((r_{\text{diff}} = .57, p = .011)\).

4. Discussion

Differentiating between personality pathologies has been a longstanding challenge facing dimensional models of PDs. Results from Morey et al. (2003), combined with the findings from the current study, provide preliminary evidence that SNAP traits show particular promise in this regard. Morey et al. showed that multiple unique elevations on SNAP traits differentiated among BPD, SPD, APD, and OCDD diagnoses in a clinical sample. That study was limited in that it did not test a prediction inherent in dimensional models of PDs, namely that individuals with elevated levels of personality pathology not meeting threshold criteria for a PD diagnosis should have personality characteristics similar to those meeting the diagnostic threshold. The current study confirmed this prediction by showing that SNAP profiles reflecting putatively distinct personality pathologies in a non-clinical sample behaved similarly to PD diagnoses. The Borderline profile was consistently related to Neuroticism, Schizotypal and Avoidant profiles were negatively related to Extraversion, and the Obsessive–Compulsive profile was related to Conscientiousness. An additional strength of these findings is the use of both self- and peer-reports, which reduces the possibility that our findings resulted from methodological artifacts.
These findings suggest that combinations of SNAP traits may be used to represent specific personality pathologies on a continuum.

Although the pattern of relationships that emerged between SNAP profiles and normal personality traits almost exactly mirrored our expectations, the finding that Avoidant characteristics did not relate positively to Neuroticism was unexpected given that this relationship has been found in previous research (Saulsman & Page, 2004). This finding may be explained by the fact that SNAP traits uniquely define Avoidant characteristics (Detachment, low Workaholism, low Exhibitionism, low Entitlement, and low Positive Temperament) do not overlap with SNAP traits reflecting Neuroticism. Thus, it is possible that the relationships between APD and Neuroticism observed in past research were due primarily to the overlap between APD and other PDs. This possibility awaits future research.

We also did not predict the relationship between Borderline characteristics and peer-reported Extraversion, or those between Obsessive–Compulsive characteristics and self-reported Agreeableness and peer-reported Neuroticism. The findings in line with research suggesting that informant-reports of personality pathology may yield different information than self-reports (Oltmanns & Turkheimer, 2009). Indeed, in the current study, there were a number of results that diverged between self and peer reports. It is important to exercise caution in interpreting these differences because they were not the focus of the study and the number of reports differed across self and peer reports. However, perhaps the most notable difference between self and peer results is that Obsessive–Compulsive characteristics were likely to be correlated with only the desirable poles of self-reported traits, but with the undesirable poles of peer-reported normal traits. This suggests that individuals with higher levels of Obsessive–Compulsive characteristics may see themselves more positively than their peers see them.

Findings emerging from the FFM profile approach to PDs attest to the importance of going beyond investigations of mean level associations between normal personality traits and PDs to examining whether the relationships between normal traits explain personality pathology. This study supports the notion that relationships among normal traits differ between groups that differ in levels of personality pathology. MPQ trait correlation matrices for groups with relatively high levels of personality pathology differed from matrices for individuals with fewer pathological characteristics. Exploratory analyses revealed that differences in overall MPQ matrices for Borderline and Schizotypal groups were due in part to divergent relationships between lower-order MPQ factors.

Positive Emotionality and Constraint were highly correlated in the high Borderline group and uncorrelated in the low Borderline group; this suggests that individuals with elevated Borderline pathology who are relatively more impulsive and less behaviorally restrained also experience relatively lower positive emotions/extraversion. Although this analysis was exploratory, it makes intuitive sense that behavioral control relates to positivity in a group of individuals whose impairment theoretically arises from deficits in control (Nigg, Silk, Stavro, & Miller, 2005). Within groups of individuals with high levels of Schizotypal characteristics, the correlation between Positive Emotionality and Negative Emotionality was relatively more positive than for low SPD individuals. Taken in the context of research showing that individuals with SPD have a limited capacity to experience both positive and negative emotions (Waldeck & Miller, 2000), this suggests that the tendency to experience emotion in general (regardless of valence) may be represented on a continuum in individuals with high levels of Schizotypal characteristics (i.e., individuals with Schizotypal pathology who experience more positive emotions also experience more negative emotions).

Limitations of this study suggest avenues for future research. We did not obtain PD diagnoses; thus, future research may further validate SNAP profile scales by examining whether profiles are more strongly related to their respective PD diagnoses than other PD diagnoses. The relatively small number of informant-reports limited the precision of estimates obtained using this method; additionally, potential differences between the characteristics of the participants providing informant reports and those not providing informant reports may have biased results obtained using this method. Future studies will benefit from obtaining informant reports for a greater percentage of participants. The overall sample size of this study yielded relatively small groups of individuals with different levels of personality pathology, which prevented the use of formal factor analytic techniques. Future studies could obtain large samples and explore whether and how the factor structure of groups of individuals with different levels of personality pathology differ. Additionally, this study evaluated only four of the ten putatively distinct categories of personality pathology; future studies should attempt to distinguish other PDs from each other, Axis I disorders, and normal samples. This study converges with Oltmanns and Turkheimer (2009) to provide evidence for the validity of SNAP profile scales in representing specific personality pathologies on a continuum, and it converges with the FFM profile approach to PDs in suggesting that the configuration of normal personality traits (above and beyond mean levels of traits considered in isolation) is important for understanding manifestations of abnormal personality.

References