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Psychometric Properties of the Schedule for Nonadaptive and Adaptive Personality in a PTSD Sample

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Abstract

This study evaluated the psychometric characteristics of the Schedule for Nonadaptive and Adaptive Personality (SNAP; Clark, 1996) in 280 individuals who screened positive for posttraumatic stress disorder (PTSD). The SNAP validity, trait, temperament, and personality disorder (PD) scales were compared with scales on the Brief Form of the Multidimensional Personality Questionnaire (Patrick, Curtin, & Tellegen, 2002). In a subsample of 86 veterans, the SNAP PD, trait, and temperament scales were also evaluated in comparison to the International Personality Disorder Exam (IPDE; Loranger, 1999), a semi-structured diagnostic interview. Results revealed that the SNAP scales have good convergent validity, as evidenced by their pattern of associations with related measures of personality and PD. However evidence for their discriminant validity in relationship to other measures of personality and PD was more mixed and test scores on the SNAP trait and temperament scales left much unexplained variance in IPDE-assessed PDs. The diagnostic scoring of the SNAP PD scales greatly inflated prevalence estimates of PDs relative to the IPDE and showed poor agreement with the IPDE. In contrast, the dimensional SNAP scores yielded far stronger associations with continuous scores on the IPDE. The SNAP scales also largely evidenced expected patterns of association with a measure of PTSD severity. Overall, findings support the use of this measure in this population and contribute to our conceptualization of the association between temperament, PTSD, and Axis II psychopathology.

Keywords

Schedule for Nonadaptive and Adaptive Personality; Multidimensional Personality Questionnaire; International Personality Disorder Exam; psychometric; posttraumatic stress disorder

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The Schedule for Nonadaptive and Adaptive Personality (SNAP; Clark, 1996) is a measure of personality and personality dysfunction that offers clinicians useful information for case conceptualization and treatment planning and it also affords researchers a tool for studying the structure and heterogeneity of psychopathology. Though the SNAP is potentially useful for the assessment of personality characteristics and Axis II comorbidity in individuals with posttraumatic stress disorder (PTSD), no prior study has examined its reliability and validity in this population. Therefore, the primary aim of this study was to examine the psychometric properties of the SNAP in a sample of individuals with histories of trauma exposure and current PTSD symptoms. Specifically, we evaluated the reliability and construct validity of test scores on the SNAP validity, trait, temperament, and personality disorder (PD) scales as well as the association between these scales and PTSD severity.

The SNAP was developed primarily to assess maladaptive, unidimensional personality traits that cut across individual *Diagnostic and Statistical Manual (DSM)*-defined PD constructs and are thought to reflect the underlying structure of the PDs (Clark, 1996). The scales were created, in part, to address the poor discriminant validity and multidimensionality of the *DSM* PDs and problems associated with arbitrary cut-points and the categorical nature of the diagnoses. Clark (1996) developed the trait scales by asking psychologists and psychology graduate students to sort personality dysfunction symptoms into categories or “symptom clusters.” Items from each symptom cluster were evaluated in terms of response rates and their association with trait negative emotionality and revised or eliminated as appropriate. Refined item pools were then analyzed using principal components analysis (PCA) with varimax rotation¹ to test the unidimensionality of each scale and to further refine the items and scales in order to develop unidimensional, non-overlapping scales. The structure of the dimensional scales was also evaluated using PCA, as was their convergent and discriminant validity with other measures of personality and psychopathology. This iterative, empirical approach to test construction was repeated in multiple samples to ultimately yield 12 trait, three temperament, 13 PD, and six validity scales. The SNAP temperament and trait scales have been found to possess excellent psychometric properties, as evaluated in college student, adolescent, as well as inpatient and outpatient samples (Clark, 1996). For example, the median Cronbach’s alpha coefficient for the temperament and trait scales across patient samples ranged from .76–.84 and the median 1-week test-retest reliability for the test scores was .81 in a patient sample (Clark, 1996). The constructs tapped by the scales have been shown to overlap substantially with those from the Dimensional Assessment of Personality Pathology—Basic Questionnaire (Livesley & Jackson, 2002), despite considerable differences in the methods used to develop the two measures (Clark, Livesley, Schroeder, & Irish, 1996). This provides evidence of the construct validity of score interpretations of the temperament scales. The trait scales also show expected patterns of associations with Tellegen’s three-factor model of temperament and normal-range personality (Tellegen, in press; Tellegen, & Waller, 2008) such that the SNAP trait scales load on the higher-order temperament domains negative emotionality/negative temperament, positive emotionality/positive temperament, and disinhibition (Clark, 1996; Markon, Krueger, & Watson, 2005). The trait scales also evidence systematic relationships with the Five Factor Model of personality (e.g., Clark, 1996; Reynolds & Clark, 2001; Samuel, Simms, Clark, Livesley, & Widiger, 2010).

¹We would like to thank an anonymous reviewer for bringing to our attention concerns about the use of PCA on dichotomous items in Clark’s (1996) original development of the SNAP. Specifically, PCA and other traditional exploratory factor analytic methods are designed for use with continuous items and their application to binary items can result in underestimation of factor loadings, over-extraction of factors, and potential bias in standard errors (Muthén, 1978; Woods, 2002). It would be helpful if future work evaluating the item-level factor structure of the SNAP used a weighted least squares estimator (which models the underlying dimensionality of the items using a tetrachoric correlation matrix; Muthén, 1978, 1984) or full-information item factor analysis (Bock, Gibbons, & Muraki, 1988; Woods, 2002).

The SNAP trait and temperament scales have also been evaluated in terms of their relationship to *DSM*-defined PDs, albeit with some limitations in the samples and instruments used to assess the *DSM* PDs (i.e., small samples, less well validated PD criterion measures). The scales have generally demonstrated meaningful and expected patterns of association with the PDs, although substantial proportions of PD variance tends to go unexplained by the SNAP scales (e.g., Clark, 1996; Clark, McEwen, Collard, & Hickok, 1993; Morey et al., 2003; Reynolds & Clark, 2001). The scales have also been shown to predict functional correlates of PD diagnoses, such as global assessment of functioning, suicide attempts, and social and occupational functioning (Morey et al., 2007).

SNAP PD Scales

The SNAP also includes *DSM*-based PD scales, though these scales have generally received less attention in the literature relative to the trait scales. Nevertheless, there is clear value and utility in further evaluation of the *DSM*-referenced scales given that there is still substantial variability in the literature regarding the optimal number and composition of the traits that account for the covariation of the PDs (see for example, Widiger & Simonsen, 2005). Further, there are concerns regarding the clinical utility and feasibility of trait-based only models that are largely derived from models of normal-range temperament (Gunderson, 2010; Huprich & Bornstein, 2007; Krueger, Skodol, Livesley, Shrout, & Huang, 2007; Rottman, Ahn, Sanislow, & Kim, 2009; Shedler & Westen, 2004; Shedler et al., 2010). Finally, a number of studies have used the SNAP PD scales as primary dependent variables in their analyses (i.e., Haigler & Widiger, 2001; Hurt & Oltmanns, 2002; Miller & Resick, 2007), suggesting the need to further evaluate the psychometric properties of these scales.

Items on the SNAP *DSM* PD scales were created rationally, refined empirically, and include item-overlap with the trait and temperament scales. Items on each PD scale are referenced to a specific *DSM* PD criterion, with variability in the number of items associated with each criterion. Psychometric properties and mean scores are listed in the SNAP manual (Clark, 1996) for adolescent, college, inpatient, and outpatient samples. These results suggest that the Axis II scales are internally consistent (median alpha in clinical sample = .79) and evidence good convergent validity with an interview-based measure of PD (median correlation in normative sample = .54; Clark, 1996). The scales have also been shown to have good test-retest reliability (mean = .74) over a 7–14 month interval in a college student sample (Melley, Oltmanns, & Turkheimer, 2002). To our knowledge, psychometric evaluation of the PD scales is limited to the *DSM-III-R* version of the scales, whereas the *DSM-IV* version of the scales, which include 36 additional items available in the SNAP Supplement (Clark, 2003), have not yet been evaluated. Therefore, a second major aim of this study was to evaluate the psychometric properties of the SNAP *DSM-IV* PD scales in a PTSD sample. The use of a self-report instrument for the assessment of *DSM*-referenced PDs in the PTSD population is likely to be particularly useful given the high rates of Axis II comorbidity in primary PTSD samples (i.e., 50–80% across clusters A, B, and C of the PDs; Bollinger, Riggs, Blake, & Ruzek, 2000; Dunn et al., 2004; Southwick, Yehuda, & Giller, 1993). Further, there is clear utility in the use of a self-report measure of PD, given that the administration of structured diagnostic interviews for the assessment of PD (i.e., the “gold standard” assessment approach), can be costly in terms of time to administer and score the interview, to train reliable interviewers, and to maintain their fidelity to the administration of the measure.

Aims & Hypotheses

The primary aim of this study was to evaluate the psychometric properties of the SNAP as a measure of personality and PD assessment in a sample of veterans and non-veterans who

screened positive for PTSD. We began by evaluating the degree to which the validity scales on the SNAP overlapped with those on the Brief Form of the Multidimensional Personality Questionnaire (MPQ-BF; Patrick, Curtin, & Tellegen, 2002). We expected that the two sets of Variable Response Inconsistency (VRIN) and True Response Inconsistency (TRIN) scales would correlate positively with one another and that the SNAP Rare Virtues scale would correlate with the MPQ-BF Unlikely Virtues scale. We then examined whether the temperament scales on the SNAP (i.e., Negative Temperament, Positive Temperament, and Disinhibition) showed associations with the higher-order temperament scales, Negative Emotionality (NEM), Positive Emotionality (PEM), and Constraint (CON), respectively, on the MPQ-BF. We next evaluated whether the scores on the trait scales of the SNAP would evidence a similar pattern of convergent associations with the relevant higher-order scales on the MPQ-BF (e.g., the SNAP trait scales related to negative temperament would show convergent associations with MPQ-BF NEM and discriminant associations with the other higher-order scales). Given the high levels of generalized distress associated with PTSD, we also hypothesized that the strongest SNAP predictor of PTSD severity would be the Negative Temperament scale.

A second aim of this study was to evaluate the reliability and construct validity of the SNAP *DSM-IV* PD scales in a subset of participants who also underwent clinician-administered diagnostic interview for the assessment of PDs using the International Personality Disorder Examination (IPDE; Loranger, 1999), a gold standard measure of PD. We hypothesized that each SNAP PD scale would evidence convergent associations with the comparable IPDE scale, thereby providing evidence of the construct validity of the SNAP score interpretations. As reviewed above, there have been only limited examinations of the association between the SNAP PD scales and interview-based measures of PD; to our knowledge, this study is the first to evaluate the SNAP PD scales using the IPDE as the criterion variable.

Method

Participants

Two hundred ninety participants were enrolled after screening positive for PTSD during a telephone screen (see below). Of these, two participants were eliminated for inability to complete the protocol in the allotted study time and an additional eight participants were eliminated from analyses due to invalid response profiles on the MPQ-BF (see below), yielding a final sample size of 280. Of these, 73% were male and 75% were military veterans. Individuals self-reported their race and ethnicity as follows: 64% White, 26% Black or African American, 2% American Indian or Alaskan Native, 1% Asian, and 7% selected the “other” response option; in addition, 6% reported their ethnicity as Hispanic or Latino. The mean age of the sample was 47 (range: 19–65). As determined by administration of the Traumatic Life Events Questionnaire (Kubany et al., 2000), the most common criterion A event indexed to participants’ PTSD symptoms was combat trauma, occurring in 30.4% of the sample; 12.8% of the sample endorsed physical assault, 11.4% endorsed the sudden death of a friend or loved one, 11.1% endorsed childhood sexual trauma, 7.9% endorsed adult sexual trauma, and 6% endorsed non-sexual childhood trauma as the index trauma related to their PTSD symptoms. A number of other index Criterion A events (e.g., motor vehicle accident, natural disaster) were endorsed by the sample, each occurring in less than 5% of the sample. In addition to the index trauma associated with PTSD symptoms, participants reported experiencing multiple other traumatic events (mean = 11.73 different types of traumatic events).

The subsample of participants who were included in analyses examining the SNAP PD scales in comparison to the IPDE were 86 military veterans with valid MPQ-BF profiles

(90% male, mean age = 50, range 21–64) who participated in this study and a related second study involving diagnostic assessment with clinician-administered interviews. These participants provided written consent for data to be shared between the two studies. The screening process for the two studies was identical.

Procedure

Participants were recruited through an in house recruitment database, clinical referrals, and from recruitment flyers posted throughout the medical center. All participants screened positive for current (past-month) PTSD during a telephone administration of the PTSD Checklist (Weathers, Litz, Herman, Huska, & Keane, 1993), as determined by a *DSM-IV* scoring algorithm requiring participants to endorse at least 1 PTSD Criterion B symptom, 3 PTSD Criterion C symptoms, and 2 PTSD Criterion D symptoms at a level of at least “moderate” interference (i.e., a score of 3 or greater on the 1–5 scale; Keen, Kutter, Niles, & Krinsley, 2008; Weathers et al., 1993). All participants also completed a paper-and-pencil version of the PCL during the study protocol and this second administration of the measure was used to determine PTSD status, using the same scoring rule described above. Participants completed the paper-and-pencil inventories of demographics, trauma exposure, PTSD, personality, and PD during a single two-three hour study session.

The subsample of veterans who participated in both the self-report and interview-based studies were enrolled into either study first at random and then were offered the opportunity to participate in the second study. There was variability in the number of weeks between participation in the two studies (mean weeks between study participation = 11.4, range: 0 – 82), with 65% of the subsample participating in the self-report study first. Both studies were approved by the appropriate institutional review boards. Participants were compensated for their time and effort devoted to the projects.

Measures

The Schedule for Nonadaptive and Adaptive Personality (SNAP; Clark, 1996)

—The SNAP is a 371-item factor-analytically derived true-false inventory of personality. The measure includes 12 trait scales that assess maladaptive personality and 3 temperament scales that assess higher-order domains of normal range personality. In addition, the SNAP contains 6 validity scales. When administered with the 36-item SNAP Supplement (Clark, 2003), the SNAP also yields 10 PD scales with diagnostic and dimensional scores for the *DSM-IV* Axis II disorders. With the SNAP Supplement, the measure also includes scales reflecting Passive-Aggressive and Depressive PD; these scales were not included in this study given that they are not part of the standard *DSM* Axis II disorders. In this study, scoring on the SNAP was slightly modified from that described in the SNAP manual (Clark, 1996, 2003) to account for missing data. First we ensured that no participant was missing greater than 25% of the items on any single SNAP scale. One participant exceeded this threshold for items on the Dependent and Avoidant PD scales, thus that participant’s score was set to missing for those two scales. Then we computed pro-rated total scores for scales that had some missing responses (i.e. < 25%) by multiplying the total score for an individual by the ratio of the total number of items on that scale to the number of non-missing items on that scale for that participant. This scoring approach is analogous to that used on the MPQ-BF. We compared the pro-rated scores with those obtained using the standard SNAP scoring algorithm and determined that this approach did not affect the range of scores and only trivially affected mean scores, but this approach did allow us to include data from participants who would have otherwise been eliminated due to incomplete data.

Multidimensional Personality Questionnaire-Brief Form (MPQ-BF; Patrick et al., 2002)

—The MPQ-BF is a well-validated self-report, 155-item omnibus personality

inventory derived from the 276-item MPQ (Tellegen, in press; Tellegen & Waller, 2008). As with the development of the SNAP, the MPQ was developed through an iterative process of factor analysis and item selection to examine and refine the item content and factor structure. The primary trait scales of Stress Reaction, Alienation, and Aggression load on the higher-order factor NEM. The primary trait scales Control, Harm Avoidance, and Traditionalism load on the CON factor and the trait scales of Well Being, Social Potency, Achievement, and Social Closeness load on the PEM factor. In addition, the MPQ-BF contains response inconsistency scales (i.e., validity scales), that were used to screen out participants who produced an invalid profile as evidenced by their scores on the VRIN and TRIN scales. Specifically, following recommendations by Patrick et al. (2002), participants were eliminated from analyses if: “(a) the overall response pattern was excessively inconsistent with respect to item pair content (i.e., score on VRIN was 3.00 standard deviations above the normative mean VRIN score), (b) the response pattern was excessively polarized toward responding either true or false irrespective of item content (i.e., score on TRIN $> \pm 3.21$ standard deviations from the mean TRIN score), or (c) the response pattern was both inconsistent and polarized in direction (i.e., the score is 2.00 standard deviations above the mean for VRIN and ± 2.28 standard deviations from the mean for TRIN)” (Patrick et al., 2002, p. 156). As noted previously, eight participants were eliminated on the basis of these cut-offs.

PTSD Checklist-Civilian Version (PCL-C; Weathers et al., 1993)—The PCL is a 17-item measure designed to assess the *DSM-IV* criteria of PTSD. Respondents rated the extent to which they have been bothered by symptoms over the past month on a 5-point Likert-like scale ranging from 1 (“not at all”) to 5 (“extremely”). The PCL has excellent concurrent validity with interview-based measures of PTSD ($r = .79 - .93$; Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; Keen, et al., 2008) and test-retest reliability ($r = .96$; Keen et al., 2008; Weathers et al., 1993).

The Traumatic Life Events Questionnaire (TLEQ; Kubany et al., 2000)—The TLEQ is a self-report measure that assesses exposure to 21 different traumatic events that meet the *DSM-IV* PTSD Criterion A definition for a traumatic event. The TLEQ possesses good test-retest reliability over a two-week interval (mean kappa = .63, mean percent agreement = 86%), excellent content and convergent validity with interview-based measures of trauma exposure (mean percent agreement = 92%) and good predictive validity (higher scores on the TLEQ associated with PTSD status; Kubany et al., 2000).

International Personality Disorder Examination (IPDE; Loranger, 1999)—In the subsample of 86 military veterans, PDs were assessed with the IPDE, a gold standard, 99-item semi-structured interview that was developed during field trials sponsored by the World Health Organization and the National Institutes of Health. The IPDE assesses PDs according to *DSM-IV* and *International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10*; World Health Organization, 1992) diagnostic criteria. Each item on the IPDE is scored on a 0–2 scale. The measure yields both categorical diagnoses and dimensional summary scores for each PD.

For the purposes of this study, a subtle, yet conceptually important adjustment was made to the IPDE scoring rules. According to the IPDE scoring system, at least one feature of a given PD must be present before the age of 25 in order to include *any* current features of the PD in the diagnostic or dimensional scoring. This scoring rule may result in under-diagnosis of PDs in this sample if a traumatic event occurring after the age of 25 exerted a substantial and maladaptive effect on personality functioning and psychopathology. The possibility that trauma may effect change in personality and produce personality pathology is well described in the literature and reflected in constructs such as “complex PTSD” (Herman, 2002) and the

“enduring personality change after catastrophic experience” diagnostic category in the *ICD-10*. Given this, we decided it was important to capture current personality pathology regardless of age of onset so the IPDE was scored by applying a modified algorithm. Specifically, the diagnostic and dimensional scores for a given PD were calculated regardless of whether any of the features for a given diagnosis were present prior to the age of 25.

For the purposes of the larger interview-based study, all IPDE interviews were video recorded and a second, independent rater viewed a subset of 68 (approximately 30% of that sample) of the tapes in order to evaluate inter-rater reliability. Kappas reflecting the degree of agreement between the two raters ranged from 0.48 for obsessive-compulsive PD to 1.0 for borderline PD with a mean of .73. Intraclass correlation coefficients for dimensional scores ranged from .84 for dependent PD to .97 for antisocial and avoidant PDs with a mean of .93.

Statistical Analyses

We first evaluated the reliability of scores on the SNAP trait, temperament, and PD scales by computing Cronbach’s alpha coefficients and mean inter-item correlations for these scales. We then evaluated patterns of discriminant validity among the SNAP validity, trait, temperament, and PD scales by comparing their patterns of correlations with scores on MPQ-BF scales. We next examined the association between the SNAP temperament, trait, and PD scales and PTSD severity and trauma exposure by examining the pattern of correlations between scores on these SNAP scales and the PCL and with an index of trauma exposure; we also evaluated mean SNAP temperament profiles in the sample, for individuals with and without probable PTSD. Finally, in the subset of participants who participated in both studies, we evaluated the accuracy of the SNAP diagnostic scales by computing kappa coefficients between the categorical/diagnostic SNAP and IPDE scales. We also examined the convergent and discriminant validity of the dimensional SNAP PD scales by examining the patterns of bivariate correlations between the scores on the SNAP and IPDE dimensional scales. Where appropriate, we evaluated the statistical significance of the difference in the magnitude of pairs of correlations using tests of dependent correlations (Cohen & Cohen, 1983) for two correlation coefficients generated from this study and using Fisher’s Z-tests for independent correlation coefficients when comparing the results of this study to that of previously published work. All reported *p*-values associated with these tests are two-tailed.

Results

Internal Consistency

The mean Cronbach’s alpha coefficient for the temperament and trait scales was .86 (range: .77 – .92). These values should be interpreted in light of the fact that coefficient alpha is influenced positively by the number of items in a scale (Cortina, 1993) and some of the SNAP scales contain a large number of items (range: 7 items for Self-harm and Impulsivity to 28 items for Negative Temperament, mean = 20 items). The mean inter-item correlation for the scales was .24 (range: .13 – .35). The mean Cronbach’s alpha coefficient for the PD scales was .82 (range: .67 – .87) and the mean inter-item correlation was .17 (range: .11 – .26). On average, the PD scales contain 25 items per scale (range: 19–34).

Construct Validity

Relationship of the SNAP Validity, Trait, and Temperament Scales to the MPQ-BF—We evaluated the convergent and discriminant validity of scores on the SNAP validity, trait, and temperament scales by examining their pattern of associations with scores on the MPQ-BF scales (see Table 1). Overall, the SNAP validity scales showed expected patterns

of convergent association with the corresponding validity scales on the MPQ-BF. The SNAP Rare Virtue scale also showed evidence of good discriminant validity, such that it correlated more strongly with MPQ-BF Unlikely Virtues ($r = .53$) than with MPQ-BF Control ($r = .31$; $t [277] = 3.63, p < .001$), the next strongest association. In contrast, the SNAP VRIN and TRIN scales demonstrated poor discriminant validity in relationship to MPQ-BF scales. For example, SNAP VRIN showed a similar strength of association with MPQ-BF VRIN scale as it did with MPQ-BF Social Closeness ($r = .20$ vs. $.25, t [277] = .65, p = .52$), and scores on SNAP TRIN showed a comparable magnitude of association with scores on MPQ-BF TRIN and MPQ-BF NEM ($r = .27$ vs. $.30, t [277] = .42, p = .67$).

The SNAP temperament scales performed well in relation to the MPQ-BF higher-order scales. As shown in Table 1, the Negative Temperament, Positive Temperament, and Disconstraint SNAP scales showed the strongest associations with their corresponding scales on the MPQ-BF (i.e., NEM, PEM, and CON, respectively). SNAP Negative Temperament and Positive Temperament also showed weak associations with the non-corresponding MPQ-BF higher-order scales, providing evidence of good discriminant validity of the interpretation of these scales. The SNAP Disinhibition scale, however, evidenced an unexpectedly high correlation with MPQ-BF NEM ($r = .50$), though SNAP Disinhibition was significantly more strongly correlated with MPQ-BF Constraint ($r = -.64$) compared with MPQ-BF NEM ($t [277] = 20.27, p < .001$). An examination of the pattern of associations between the SNAP higher-order temperament scales and the MPQ-BF lower-order temperament scales revealed that scores on SNAP Negative Temperament shared the most variance with MPQ-BF Stress Reaction ($r = .84$), SNAP Positive Temperament scores shared the most variance with MPQ-BF Wellbeing scores ($r = .80$), and SNAP Disconstraint scores shared the most variance with MPQ-BF Control scores ($r = -.72$).

The trait scales of the SNAP generally showed strong associations with the relevant lower-order and higher-order temperament scales on the MPQ-BF. For example, SNAP Aggression correlated most strongly with the MPQ-BF scale of the same name ($r = .80$) and with MPQ-BF NEM ($r = .64$). The next strongest association was with Control ($r = -.37, t [277] = 13.45, p < .001$). SNAP Exhibitionism evidenced particularly strong associations with MPQ-BF PEM ($r = .62$) and with the PEM-based scales Wellbeing ($r = .52$), Social Potency ($r = .64$), and Social Closeness ($r = .49$). In addition, SNAP Impulsivity was more strongly related to MPQ-BF CON ($r = -.70$) and Control ($r = -.87$) than NEM ($r = .41$; smallest $t [277]$, comparing the association between CON versus NEM, $= 16.67, p < .001$).

Relationship of the SNAP PD Scales to the MPQ-BF—Overall, an evaluation of the correlations between scores on the SNAP PD scales and the MPQ-BF scales yielded expected patterns of association (shown in the bottom portion of Table 1). The Paranoid PD and Schizotypal PD scales showed the strongest association with MPQ-BF NEM ($r_s = .76$ and $.62$, respectively). In contrast, the Schizoid, Histrionic, and Narcissistic PD scales were most strongly related to PEM ($r_s = -.72, .56$, and $.50$, respectively). Antisocial PD showed equivalent strengths of association, albeit in opposite directions, with NEM and CON ($r_s = .54$ and $-.54$, respectively), and a similar pattern of associations was observed for scores on Borderline PD ($r_s = .74$ and $-.44$, for NEM and CON respectively). The absolute value of the association between scores on Avoidant PD and PEM ($r = -.50$) was not greater than that with NEM ($r = .41, t [276] = 1.38, p = .17$). Relative to the other PD scales, the Dependent PD scale evidenced the weakest overall pattern of association with the MPQ-BF scales: its strongest higher-order association was with NEM ($r = .35$), which was equivalent to the absolute value of its association with CON ($r = -.27, t [276] = .97, p = .33$). Finally, the Obsessive-Compulsive PD scale evidenced an equivalent strength of association with NEM ($r = .34$) as it did with PEM ($r = .20, t [277] = 1.73, p = .08$).

SNAP Relations to Measures of PTSD and Trauma Exposure—We next evaluated scale elevations for the full sample on the SNAP. On the SNAP, overall mean *T*-score elevations (i.e., $T \geq 60$) were evident on the Deviance validity scale, and the Negative Temperament, Mistrust, Aggression, Self-harm, Eccentric Perceptions, and Detachment scales. Overall *T*-score elevations on the SNAP PD scales were evident for Paranoid, Schizoid, Schizotypal, Antisocial, Borderline, and Avoidant PDs (mean scores for the full sample are available from the first author).

As noted above, 100% of the sample screened positive for PTSD on the PCL during the telephone eligibility screening; on re-administration of the PCL during the study protocol, however, only 88% ($n = 245$) met full criteria for current PTSD, using the same *DSM-IV* scoring rule on the PCL as applied to the study screen process. These individuals were then grouped into a “positive PTSD” group and those who did not meet criteria for PTSD on the paper and pencil administration of the PCL were grouped into a “negative PTSD” group for the purposes of group comparisons. Although the negative PTSD group failed to meet diagnostic criteria for the disorder on the paper and pencil administration of the PCL, they still endorsed subthreshold symptoms of PTSD (mean total PCL score in PTSD negative group = 40.40, $SD = 8.82$ versus mean in positive group = 62.78, $SD = 10.49$). This similarity between the two groups would be expected to make it more difficult to observe group differences on the SNAP. Figure 1 shows the mean SNAP *T*-score profiles separated by probable PTSD diagnosis. As shown in Figure 1, *t*-tests revealed that the positive PTSD group scored significantly higher than the PTSD negative group on the following SNAP scales: Deviance, Negative Temperament, Mistrust, Self-harm, Eccentric Perceptions, Detachment, and Workaholism. In contrast, the positive PTSD group scored significantly lower than the non-PTSD group on Exhibitionism. The positive PTSD group also scored higher on Paranoid, Schizoid, Schizotypal, Borderline, Avoidant, and Obsessive-Compulsive PD scales (exact *t* statistics and associated *p*-values are available from the first author). In comparison, on the MPQ-BF, the positive PTSD group scored significantly higher on Stress Reaction, Alienation, Absorption, and NEM and significantly lower on Well Being, Social Potency, Social Closeness, and PEM (mean values and *t* statistics available from first author).

Table 2 shows the associations between test scores on the SNAP and total PTSD severity, the PTSD symptom clusters (following the King, Leskin, King, & Weathers [1998] structural model of the disorder), and the number of different types of traumas to which an individual was exposed. As hypothesized, the SNAP scale showing the strongest association with total PTSD severity was Negative Temperament ($r = .54$). The SNAP Negative Temperament scale also evidenced its strongest association with the PTSD reexperiencing symptoms ($r = .40$), though this association was equivalent in magnitude to that of Eccentric Perceptions ($r = .35$, $t [277] = .87$, $p = .39$). Also of note, the Detachment scale correlated as strongly with emotional numbing symptoms ($r = .47$) as did the scale with the largest surface-level association with this symptom cluster, Negative Temperament ($r = .52$, $t [277] = .89$, $p = .37$). However, unlike Negative Temperament, which evidenced broad associations with all the PTSD variables, the Detachment scale showed relative specificity for the emotional numbing cluster (next strongest cluster association was with Avoidance, $r = .35$, $t [277] = 2.36$, $p = .02$). The SNAP Aggression scale also evidenced relative discrimination for the hyperarousal symptom cluster ($r = .35$), although the comparison between this correlation and the next strongest one (with emotional numbing, $r = .26$) just failed to reach statistical significance ($t [277] = 1.89$, $p = .06$). Finally, it is notable that the validity scale, Deviance, evidenced sizeable associations with the PCL ($r = .34$ with total severity, $r = .38$ with emotional numbing). Among the temperament and trait scales, scores on Mistrust, Self-harm, Negative Temperament, Eccentric Perceptions, and Aggression

evidenced equivalent associations with the number of different types of traumas to which a participant was exposed (r s ranged from .23 to .34).

Among the PD scales, scores on Paranoid, Schizotypal, Borderline, and Avoidant PDs evidenced equivalent strengths of association with overall PTSD (r s = .45, .50, .49, and .43, respectively, largest t [277] = 1.50, p = .13). Similarly, the Paranoid, Schizotypal, Antisocial, and Borderline PD scales showed the strongest (and equivalent) strengths of association with the number of different types of traumas to which a participant was exposed (r s = .32, .29, .31, and .37, respectively).

Diagnostic Prevalence and Agreement with the IPDE—We next examined rates of dichotomous diagnoses for the SNAP and IPDE as well as diagnostic agreement across the two measures. Both scales yield three-level categorical scores (e.g., negative, probable, and definite on the IPDE; negative, subthreshold, and positive on the SNAP). However, in order to evaluate diagnostic agreement, we collapsed across these categories according to established scoring rules for both measures (i.e., on the IPDE, probable and definite diagnoses were collapsed and on the SNAP, negative and subthreshold scores were collapsed). Rates of diagnoses are presented in Table 3 for each measure as is diagnostic agreement (kappa). Prevalence estimates of PDs tended to be greater on the SNAP than the IPDE for each diagnosis. Across all PD diagnoses, the SNAP yielded a higher mean number of positive diagnoses per participant (M = 1.87, SD = 1.77, range: 0–7) relative to the IPDE (M = .58, SD = .89, range: 0–3; paired sample t [85] = 7.48, p < .001) and diagnostic agreement was generally poor.

Convergent and Discriminant Validity of the SNAP PD Scales—We next computed the bivariate correlations between scores on the SNAP and IPDE PD scales (see Table 4). Across all 10 scales, the mean correlation between each SNAP PD scale and its complementary IPDE scale was .46 (range: .28 – .60). Most SNAP PD scales showed strong correlations with corresponding severity scores on the IPDE. Most notably, the SNAP Antisocial PD scale evidenced its strongest correlation with the IPDE Antisocial PD scale (r = .60) and this was greater than its next strongest association with the IPDE Histrionic PD scale (r = .26; t [83] = 3.43, p < .001). In addition, the SNAP Schizoid PD scale evidenced its strongest association with the comparable scale on the IPDE (r = .55) and this was significantly stronger in magnitude than its next strongest association with the IPDE Avoidant PD scale (r = .31; t [83] = 2.26, p = .03). Similarly, the SNAP Schizotypal PD scale correlated at r = .47 with the IPDE Schizotypal PD scale and this was nearly significantly stronger than the next strongest association (with the IPDE Paranoid PD scale, r = .28; t [83] = 1.91, p = .06).

Evidence for the discriminant validity of some PD scale test score interpretations was more mixed. For example, the SNAP Dependent PD scale showed the poorest discriminant validity of all the SNAP PD scales in that it correlated equivalently with the IPDE Dependent PD scale (r = .28) as it did with a range of other PD scales that it correlated significantly with, including IPDE Avoidant, Schizotypal, Antisocial, Borderline, and Paranoid PDs (r s = .41, .32, .30, .27, and .24, respectively, largest t [83] = 1.16, p = .25 for comparison with Avoidant PD). In addition, the SNAP Obsessive-Compulsive PD scale evidenced an equivalent strength of association with its complementary scale on the IPDE (r = .28) as compared with the IPDE Schizotypal and Narcissistic scales (r s = .31 and .23, largest t [83] = .39, p = .70 for comparison with Narcissistic PD).

The remaining SNAP PD scales demonstrated good convergent, but poor discriminant, validity of the test score interpretations. The SNAP Paranoid PD scale correlated most strongly with IPDE Paranoid PD (r = .43), but this was not significantly greater than the

scale's association with the IPDE Borderline PD scale ($r = .39$, $t [83] = .39$, $p = .70$). The SNAP Borderline PD scale correlated with the IPDE Antisocial PD scale ($r = .49$) to an extent that was equivalent to its association with the IPDE Borderline PD scale ($r = .42$, $t [83] = .70$, $p = .49$). The SNAP Histrionic PD scale evidenced its strongest correlation with the comparable scale on the IPDE ($r = .46$), but the magnitude of this relationship was not greater than that of the next strongest association, with the IPDE Narcissistic PD scale ($r = .37$, $t [83] = .97$, $p = .33$). The same was true for the association between the SNAP Narcissistic PD scale and its counterpoint on the IPDE ($r = .49$), as this correlation was not greater than the next strongest association, with the IPDE Histrionic PD scale ($r = .33$, $t [83] = 1.73$, $p = .09$). The SNAP Avoidant PD scale also showed evidence of good convergent, but relatively weaker discriminant, validity of test score interpretations: the association between scores on this scale and the IPDE Avoidant PD scale ($r = .57$) was not stronger than that with the IPDE Schizotypal PD scale ($r = .43$, $t [83] = 1.44$, $p = .15$).

Finally, although the SNAP *DSM-IV* PD scales contain item-overlap with the SNAP trait and temperament scales, we also evaluated the association between the SNAP validity, trait, and temperament scales and severity scores on the IPDE. These correlations are shown in Table 5. Of note, the strength of these associations was fairly weak overall. For example, the association between Negative Temperament and Borderline PD ($r = .37$) was weaker than what might be expected, particularly given that this was this scale's maximum association with any PD. Additional unexpected associations were as follows: the Aggression scale correlated as strongly with Antisocial PD ($r = .34$) as it did with Obsessive-Compulsive PD ($r = .28$) and the Propriety scale evidenced no association with Obsessive-Compulsive PD ($r = 0$) but did show associations with Dependent and Schizoid PD ($r_s = -.36$ and $-.29$, respectively). Further, the association between Workaholism and Schizotypal PD ($r = .24$) was unexpected. Other scales showed more expected patterns of association: for example, Self-harm and Borderline PD ($r = .51$), Disinhibition, Impulsivity and Antisocial PD ($r_s = .44$ and $.43$, respectively), and Mistrust and Paranoid PD scores ($r = .40$).

To summarize these associations, we also conducted 10 separate regressions in which all of the SNAP trait and temperament scales were entered into a regression model predicting dimensional scores on each of the IPDE scales. These results are considered preliminary given the small sample size. The SNAP scales together explained 29% of the variance in IPDE Paranoid PD severity, 46% of the variance in Schizoid PD, 38% of the variance in Schizotypal PD, 31% of the variance in Antisocial PD, 37% of the variance in Borderline PD, 30% of the variance in Histrionic PD, 37% of the variance in Narcissistic PD, 42% of the variance in Avoidant PD, 38% of the variance in Dependent PD, and 24% of the variance in Obsessive-Compulsive PD. This means that, on average, 64.8% of the variance in the IPDE PD dimensional scales went unexplained by the SNAP trait and temperament scales (range: 54%–76%).

Discussion

The aim of this study was to evaluate the psychometric properties of the SNAP as a measure of PD and personality assessment in a sample of individuals who screened positive for PTSD. High rates of personality pathology among individuals with PTSD make the SNAP a potentially attractive measure to use in assessments with this population, but to date, no study has evaluated this measure in a PTSD sample. This study is the first to do so and is also the first to evaluate the validity of score interpretations of the SNAP *DSM-IV* PD scales using a strong criterion measure, the IPDE. Specifically, we evaluated the reliability and construct validity of the score interpretations of the SNAP validity, trait, temperament, and PD scales in comparison to the MPQ-BF and IPDE; we also examined the association between these SNAP scales and PTSD severity and trauma exposure. Overall, in this

sample, the SNAP scales showed excellent internal consistency and convergent validity but evidence for discriminant validity was more mixed. For example, the SNAP Disinhibition and Impulsivity scales evidenced unexpectedly strong associations with MPQ-BF NEM. Additional work comparing the association between these scales and behavioral indicators of disconstraint, executive functioning, and NEM might help to further define the construct tapped by the scales. Dependency also showed poor discrimination among the NEM-, PEM-, and CON-based MPQ-BF scales. Given that the association between SNAP Dependency and MPQ-BF Control ($r = -.23$) was significantly greater than that reported by Clark (1996; $r = -.02$; $z = 2.45$, $p = .01$), one possible explanation is that the construct tapped by this SNAP scale is somewhat altered in the context of a clinical versus college student sample. It may be the case that a tendency towards dependence is generally a function of distress, demoralization, and poor interpersonal skills (as suggested by this scale's association with negative temperament as listed in the SNAP manual; Clark, 1996). However, in a clinical sample, dependence may also reflect a general abandonment of individual control and a tendency towards impulsivity, as suggested by the scale's association with disconstraint in this study. This finding has implications for the higher-order organization of personality dysfunction and PDs, suggesting that problems in the domain of dependence may reflect a form of externalizing (i.e., disinhibited) psychopathology. Further support for this hypothesis comes from our finding that the SNAP Dependent PD scale also evidenced a moderate association with disconstraint.

A similarly unpredicted association was observed between the SNAP Entitlement and Exhibitionism scales and the PEM-based MPQ-BF Wellbeing scale ($r_s = .50$ and $.52$, respectively) in that these associations were greater than that reported by Clark (1996) in the normative sample ($r_s = .36$ and $.38$, respectively; $z = 1.97$, $p = .05$ and $z = 2.02$, $p = .04$, respectively). The finding that these measures of psychopathology correlated positively with an indicator of psychological health may again reflect differences in the specific nature of these constructs when examined in college student versus clinical samples. For example, in a PTSD sample characterized by high levels of negative emotionality and low self-worth, perhaps a tendency towards exhibitionism and entitlement actually reflects the capacity to utilize positive, self-preserving psychological resources, rather than only reflecting a problematic tendency towards socially inappropriate behaviors. Taken together with the findings observed for the Dependency scale, this pattern of associations raises questions about the generalizability of these temperament-based scales from normal to clinical samples (e.g., to what extent might the construct underlying these scales differ in the two groups?). Further evaluation of the invariance of the constructs tapped by the scales across patient and non-patient groups is needed and could be examined using structural invariance models or item response theory analysis in a multi-group design.

The SNAP and PTSD: Implications for the Diagnosis

Given that PTSD is often associated with significant personality pathology (Miller, Grief, & Smith, 2003; Miller, Kaloupek, Dillon, & Keane, 2004) and comorbid PD (Bollinger et al., 2000; Dunn et al., 2004), we examined the sensitivity of the SNAP to index such pathology in individuals with PTSD and characterized the associations between this measure and PTSD and trauma exposure. With respect to SNAP trait and temperament scale associations with PTSD, this study demonstrated that negative temperament shares the most variance with overall PTSD severity, following prior work with other measures of personality (e.g., Clark, Watson, & Mineka, 1994; Clark & Watson, 1991; Miller, 2003; Wolf et al., 2008). The finding that this scale evidenced associations with all four PTSD symptom clusters highlights the contribution of non-specific distress to the disorder, a phenomenon which is not unique to the SNAP and replicates prior work showing associations between NEM and PTSD symptoms broadly (Marshall, Schell, & Miles, 2010; Wolf et al., 2008). Although

there is a conceptual appeal to attempts to remove NEM-related variance from the PTSD criteria so that only disorder-specific variance is retained (Simms, Watson, & Doebbeling, 2002; Watson, 2005, 2009), these results, in concert with prior work (e.g., Marshall et al., 2010), raise questions about whether this distinction is possible or clinically useful.

In contrast, other SNAP scales evidenced specificity for select PTSD symptom clusters. For example, Eccentric Perceptions, Detachment, and Aggression showed relatively unique associations with the reexperiencing, emotional numbing, and hyperarousal symptom clusters, respectively, suggesting good discrimination among these SNAP scales. The relationship between Eccentric Perceptions and the PTSD Criterion B symptoms suggests that this SNAP scale is sensitive to a broad array of unusual cognitive disturbances, such as dissociative flashbacks, and is not limited to the odd and eccentric features that underlie the Cluster A PDs. The Detachment scale showed specificity for emotional numbing and this also bears on the construct validity of this model of the structure of PTSD (i.e., King et al., 1998). Specifically, these results suggest that meaningful conceptual differences exist between the King et al. (1998) emotional numbing cluster versus the three other PTSD symptom clusters in the model as the former construct captures the interpersonal and emotional detachment that is frequently salient and problematic for individuals with PTSD. While the Detachment scale showed relative specificity for the emotional numbing symptom cluster, other PEM-related SNAP scales were less sensitive to the low positive affect and social isolation common to the disorder. Specifically, no PTSD group differences emerged on the SNAP Positive Temperament scale whereas individuals with PTSD scored lower on MPQ-BF PEM relative to those without the disorder. It is possible that the SNAP Positive Temperament scale may tap a narrower slice of this construct, relative to its counterpart on the MPQ-BF.

Finally, the association between the Deviance validity scale and PTSD severity suggests that elevations on this scale in clinical samples require careful evaluation to determine if the elevation truly suggests an invalid profile or if it more accurately reflects high levels of psychiatric symptoms. This scale appears to function similarly to the MMPI-2 F scale, which is sensitive to valid endorsement of unusual symptoms, and which is frequently elevated in the PTSD population (e.g., Frueh, Hamner, Cahill, Gold, & Hamlin, 2000).

The SNAP PD Scales: Associations with Temperament and Personality

As with the trait and temperament scales, the SNAP PD scales tended to evidence expected patterns of association with the MPQ-BF scales. Among the higher order scales, the Paranoid, Schizotypal, and Borderline PD scales evidenced their strongest association with NEM, while the Schizoid, Histrionic, and Narcissistic PD scales showed their strongest associations with PEM. Other PD scales shared equivalent amounts of variance with more than one MPQ-BF higher-order scale; for example, Antisocial PD did so with NEM and CON, in keeping with prior work about the role of both these traits and externalizing psychopathology (Krueger, McGue, & Iacono, 2001; Miller et al., 2003, 2004; Miller & Resick, 2007). In addition, Avoidant PD shared equal variance with PEM and NEM, Dependent PD did so with NEM and CON, and Obsessive-Compulsive did so with NEM and PEM.

The SNAP Histrionic and Narcissistic PD scales evidenced their strongest associations with MPQ-BF PEM (driven primarily by elevations in Wellbeing and Social Potency, as well as Social Closeness to a lesser extent), along with relatively weaker associations with MPQ-BF NEM. The association between these disorders and Wellbeing was surprising given that PDs are defined by maladaptive behavior, inflexibility, and dysfunction (APA, 1994), characteristics not likely to be associated with a sense of well-being. To our knowledge, no prior work has evaluated the association between these SNAP PD scales and external

measures of well-being, so it is unclear if this finding is specific to a trauma population or if it might generalize to college students and other non-clinical groups. The positive associations between PEM and the Histrionic and Narcissistic scales are also novel in that prior work evaluating the association between temperament and psychopathology has focused on the role of *low* PEM among the internalizing disorders (e.g., Brown, Chorpita, & Barlow, 1998; Miller et al., 2003, 2004; Miller & Resick, 2007). Thus, the notion that some forms of psychopathology may be strongly influenced by *high* PEM expands the conceptualization of the relationship between temperament and psychopathology. Histrionic and narcissistic PD are thought to be manifestations of externalizing, disinhibited psychopathology (Blackburn, Logan, Renwick, & Donnelly, 2005; Markon, 2010; Miller & Resick, 2007) and are often shown to be structurally related to disorders like antisocial and borderline PD (Moldin, Rice, Erlenmeyer-Kimling, & Squires-Wheeler, 1994; Mulder & Joyce, 1997). Externalizing psychopathology is conceptualized as arising out of temperament-based tendencies towards disinhibition and, to a lesser extent, negative emotionality (Krueger et al., 2001; Miller et al., 2003, 2004; Miller & Resick, 2007), thus the strong contribution of PEM to histrionic and narcissistic PD in this study may reflect a need to broaden the conceptualization of externalizing to include the role of PEM.

The SNAP PD and Trait Scales for the Assessment of *DSM-IV* PDs

We also evaluated the validity of score interpretations on the *DSM-IV* SNAP PD scales for the assessment of *DSM-IV* PDs in a subsample of veterans who participated in a PD diagnostic interview. Dichotomous (i.e., diagnostic) and dimensional (i.e., severity) scores on the SNAP were compared to those on the IPDE. Results revealed that the dichotomous approach to scoring the SNAP tended to inflate the number of PD diagnoses and yielded poor agreement with the IPDE dichotomous scales. This finding argues against the use of the SNAP for the purposes of diagnostic classification. However, the dimensional scoring approach to the SNAP fared much better than did the dichotomous scoring algorithm, with most SNAP scales tending to evidence good convergent validity with severity scores on the IPDE. Like the trait and temperament scales, however, the SNAP PD scales tended to show less evidence for discriminant validity. In many instances, a given SNAP scale correlated with its corresponding IPDE scale to an extent that was equivalent to its association with other IPDE scales. This is a very stringent test of discriminant validity, particularly when the *DSM-IV* Axis II criteria have poor discriminant validity themselves. Thus, the relatively weak discrimination of the SNAP scales may be more a reflection of the PD criteria than a property that is specific to this measure. However, it should be noted that one related limitation of the SNAP PD scales is that of item overlap across the scales. On the *DSM-IV* PD scales 16% (39/249) of the items contribute to more than one PD scale. Although this may be a valid reflection of criterion overlap across Axis II disorders, the use of identical items on multiple scales inflates correlations across the scales and reduces their discriminant validity.

When evaluated at a broader level, some SNAP PD scales do show evidence of discriminant validity. For example, the SNAP Schizoid scale correlated positively with the IPDE Schizoid scale but negatively with the IPDE Histrionic scale, which would be expected given that the former construct is associated with asocial characteristics and the latter with pro-social ones. Together, these results suggest that the SNAP PD dimensional scales may be most useful in studies and clinical settings in which the primary focus is not on PD, but where the assessment of PD would still provide useful auxiliary information in terms of case conceptualization, treatment planning, and sample characterization.

Finally, we also evaluated the association between the SNAP trait and temperament scales and severity scores on the PD diagnostic interview, as these SNAP scales were created as alternative representations of PD and were designed to measure unidimensional constructs

that underlie the PDs. In these associations, the SNAP scales evidenced surprisingly weak associations with the IPDE and left much of the variance in each PD unexplained. Although to some extent the weak strength of association may be influenced by the small sample size and the highly select (i.e., clinical) sample (which would be expected to decrease the variance in the measures, thereby limiting the magnitude of the associations), it is noteworthy that so much variance in each PD went unexplained. This raises questions about the extent to which the SNAP has captured all of the necessary constructs underlying the PDs. This, in turn, has implications for work using the SNAP to help identify the latent structure of the PDs (e.g., Clark et al., 1996), with the aim of informing the revision of Axis II in the *DSM-V*. This concern about the ability of the SNAP to adequately cover the PD domain is not limited to this instrument but instead reflects a broader point regarding the limitations of personality trait-only models of Axis II (Gunderson, 2010; Livesley and Jang, 2005; Krueger et al., 2007; Shedler et al., 2010).

Study Strengths and Limitations

This study is the first to comprehensively evaluate the psychometric properties of the SNAP scales in a trauma-exposed sample who screened positive for PTSD. It is also the first study to evaluate the *DSM-IV* version of the SNAP PD scales and to compare scores on these PD scales with those on a clinician administered PD interview. Major strengths of this work included (a) the utility of investigating the SNAP in a well assessed clinical sample and (b) the examination of the convergent and discriminant validity of the SNAP validity, temperament, trait, and PD scales in relation to a well-validated self-report, personality inventory (the MPQ-BF) and a semi-structured interview of personality disorders (the IPDE).

Limitations of the current study included the use of a self-report instrument for the assessment of PTSD and the small sample size available for the subset of analyses examining the association between the SNAP and the IPDE. In addition, the time interval between the administration of the SNAP and IPDE was variable across participants, potentially influencing the rates of agreement and magnitude of the correlations for the two measures. Finally, given that a majority of study participants were male military veterans, caution should be used in generalizing the current findings to women and civilian samples.

Conclusion

The results of this study provide evidence of good internal consistency and convergent validity of the SNAP validity, trait, temperament, and PD scales, with respect to relevant scales on the MPQ-BF in a PTSD sample. Most SNAP PD scales also showed evidence of convergent validity with corresponding severity scores on the IPDE, though the SNAP inflated the number of PD diagnoses and agreement for PD diagnoses was generally poor across the measures. Evidence of discriminant validity of SNAP score interpretations in this sample was less consistently found in relation to the MPQ-BF and IPDE, which may be attributable in part to the more general problem of criterion overlap across *DSM-IV* Axis II. The SNAP trait scales left much variance in the *DSM-IV* PDs unexplained, raising questions about the extent to which these scales fully capture the PDs. Following previous investigations of personality measures in PTSD samples, this study also demonstrated that the SNAP Negative Temperament scale shared the most variance with PTSD severity and with all four PTSD symptom clusters. Overall, our findings provide support for the utility of the SNAP in assessing personality pathology in the PTSD population and expand our conceptualization of personality pathology associated with PTSD.

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References

- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed.. Washington, DC: Author; 1994.
- Blackburn R, Logan C, Renwick SJD, Donnelly JP. Higher-order dimensions of personality disorder: Hierarchical structure and relationships with the Five-Factor Model, the Interpersonal Circle, and psychopathy. *Journal of Personality Disorders*. 2005; 19:597–623. [PubMed: 16535558]
- Blanchard EB, Jones-Alexander J, Buckley TC, Forneris CA. Psychometric properties of the PTSD Checklist. *Behaviour Research and Therapy*. 1996; 34:669–673. [PubMed: 8870294]
- Bock RD, Gibbons R, Muraki E. Full-information item factor analysis. *Applied Psychological Measurement*. 1988; 21:261–280.
- Bollinger AR, Riggs DS, Blake DD, Ruzek JI. Prevalence of personality disorders among combat veterans with posttraumatic stress disorder. *Journal of Traumatic Stress*. 2000; 13:255–270. [PubMed: 10838674]
- Brown TA, Chorpita BF, Barlow DH. Structural relationships among dimensions of the DSM-IV anxiety and mood disorders and dimensions of negative affect, positive affect, and autonomic arousal. *Journal of Abnormal Psychology*. 1998; 107:179–192. [PubMed: 9604548]
- Clark, LA. Schedule for Nonadaptive and Adaptive Personality. Manual for administration, scoring, and interpretation. Minneapolis: University of Minnesota Press; 1996.
- Clark, LA. Schedule for Nonadaptive and Adaptive Personality-2TM (SNAP-2)TM. Unpublished Test Booklet; 2003. Copyright © 2003 the Regents of the University of Minnesota. All rights reserved. Used by permission of the University of Minnesota Press
- Clark LA, Livesley WJ, Schroeder ML, Irish SL. Convergence of two systems for assessing specific traits of personality disorders. *Psychological Assessment*. 1996; 8:294–303.
- Clark LA, McEwen JL, Collard LM, Hickok LG. Symptoms and traits of personality disorder: Two new methods of their assessment. *Psychological Assessment*. 1993; 5:81–91.
- Clark LA, Watson D. Tripartite model of anxiety and depression: psychometric evidence and taxonomic implications. *Journal of Abnormal Psychology*. 1991; 100:316–336. [PubMed: 1918611]
- Clark LA, Watson D, Mineka S. Temperament, personality, and the mood and anxiety disorders. *Journal of Abnormal Psychology*. 1994; 103:103–116. [PubMed: 8040472]
- Cohen, J.; Cohen, P. Applied multiple regression/correlation analysis for the behavioral sciences. 2nd ed.. Hillsdale, NJ: Erlbaum; 1983. Bivariate correlation and regression; p. 25-78.
- Cortina J. What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology*. 1993; 78:98–104.
- Dunn NJ, Yanasak E, Schillaci J, Simotas S, Rehm L, Soucek J, Menke T, Ashton C, Hamilton JD. Personality disorders in veterans with posttraumatic stress disorder and depression. *Journal of Traumatic Stress*. 2004; 17:75–82. [PubMed: 15027797]
- Frueh BC, Hamner MB, Cahill SP, Gold PB, Hamlin KL. Apparent symptom overreporting in combat veterans evaluated for PTSD. *Clinical Psychology Review*. 2000; 20:853–885. [PubMed: 11057375]
- Gunderson JG. Commentary on “Personality traits and the classification of mental disorders: Toward a more complete integration in DSM-5 and an empirical model of psychopathology.”. *Personality Disorders: Theory, Research, and Treatment*. 2010; 1:119–122.
- Haigler ED, Widiger TA. Experimental manipulation of NEO-PI-R items. *Journal of Personality Assessment*. 2001; 77:339–358. [PubMed: 11693863]
- Herman, J. Trauma and recovery. New York: Basic Books; 1992.

- Huprich SK, Bornstein RF. An overview of issues related to categorical and dimensional models of personality disorder assessment. *Journal of Personality Assessment*. 2007; 89:3–15. [PubMed: 17604530]
- Hurt S, Oltmanns TF. Personality traits and pathology in older and younger incarcerated women. *Journal of Clinical Psychology*. 2002; 58:457–464. [PubMed: 11920697]
- Keen SM, Kutter CJ, Niles BL, Krinsley KE. Psychometric properties of PTSD Checklist in sample of male veterans. *Journal of Rehabilitation Research and Development*. 2008; 45:465–474. [PubMed: 18629754]
- King DW, Leskin GA, King LA. Confirmatory factor analysis of the clinician-administered PTSD Scale: Evidence for the dimensionality of posttraumatic stress disorder. *Psychological Assessment*. 1998; 10:90–96.
- Krueger RF, McGue M, Iacono WG. The higher-order structure of common DSM mental disorders: Internalization, externalization, and their connections to personality. *Personality and Individual Differences*. 2001; 30:1245–1259.
- Krueger RF, Skodol AE, Livesley WJ, Shrout PE, Huang Y. Synthesizing dimensional and categorical approaches to personality disorders: Refining the research agenda for DSM-V Axis II. *International Journal of Methods in Psychiatric Research*. 2007; 16:S65–S73. [PubMed: 17623397]
- Kubany ES, Haynes SN, Leisen MB, Owens JA, Kaplan AS, Watson SB, et al. Development and preliminary validation of a brief-broad-spectrum measure of trauma exposure: The Traumatic Events Life Questionnaire. *Psychological Assessment*. 2000; 12:210–224. [PubMed: 10887767]
- Livesley WJ.; Jackson, DN. *Manual for the Dimensional Assessment of Personality Problems - Basic Questionnaire*. London: Research Psychologists' Press; 2002.
- Livesley WJ, Jang KL. Differentiating normal, abnormal, and disordered personality. *European Journal of Personality*. 2005; 19:257–268.
- Loranger, AW. *International Personality Disorder Examination: DSM-IV and ICD-10 Interviews*. Lutz, FL: Psychological Assessment Resources, Inc; 1999.
- Markon KE. Modeling psychopathology structure: A symptom-level analysis of Axis I and II disorders. *Psychological Medicine*. 2010; 11:1–16.
- Markon KE, Krueger RF, Watson D. Delineating the structure of normal and abnormal personality: An integrative hierarchical approach. *Journal of Personality and Social Psychology*. 2005; 88:139–157. [PubMed: 15631580]
- Marshall GN, Schell TL, Miles JNV. All PTSD symptoms are highly associated with general distress: Ramifications for the dysphoria symptom cluster. *Journal of Abnormal Psychology*. 2010; 119:126–135. [PubMed: 20141249]
- Melley AH, Oltmanns TF, Turkheimer E. The Schedule for Nonadaptive and Adaptive Personality (SNAP) Temporal stability and predictive validity of the diagnostic scales. *Assessment*. 2002; 9:181–187. [PubMed: 12066833]
- Miller MW. Personality and the etiology and expression of PTSD: A three-factor model perspective. *Clinical Psychology: Science & Practice*. 2003; 10:373–393.
- Miller MW, Greif JL, Smith AA. Multidimensional Personality Questionnaire profiles of veterans with traumatic combat exposure: Externalizing and internalizing subtypes. *Psychological Assessment*. 2003; 15:205–215. [PubMed: 12847781]
- Miller MW, Kaloupek DG, Dillon AL, Keane TM. Externalizing and internalizing subtypes of combat-related PTSD: A replication and extension using the PSY-5 scales. *Journal of Abnormal Psychology*. 2004; 113:636–645. [PubMed: 15535795]
- Miller MW, Resick PA. Internalizing and externalizing subtypes of female sexual assault survivors: Implications for the understanding of complex PTSD. *Behavior Therapy*. 2007; 38:58–71. [PubMed: 17292695]
- Moldin SO, Rice JP, Erlenmeyer-Kimling L, Squires-Wheeler E. Latent structure of DSM-III-R Axis II psychopathology in a normal sample. *Journal of Abnormal Psychology*. 1994; 103:259–266. [PubMed: 8040495]

- Morey LC, Hopwood CJ, Gunderson JG, Skokdol AE, Shea MT, Yen S, et al. Comparison of alternative models for personality disorders. *Psychological Medicine*. 2007; 37:983–994. [PubMed: 17121690]
- Morey LC, Warner MB, Shea MT, Gunderson JG, Sanislow CA, Grilo C, et al. The representation of four personality disorders by the Schedule for Nonadaptive and Adaptive Personality dimensional model of personality. *Psychological Assessment*. 2003; 15:326–332. [PubMed: 14593832]
- Mulder RT, Joyce PR. Temperament and the structure of personality disorder symptoms. *Psychological Medicine*. 1997; 27:99–106. [PubMed: 9122314]
- Muthén BO. Contributions to factor analysis of dichotomous variables. *Psychometrika*. 1978; 43:551–560.
- Muthén BO. A general structural equation model with dichotomous, ordered categorical, and continuous latent variable indicators. *Psychometrika*. 1984; 49:115–132.
- Patrick CJ, Curtin JJ, Tellegen A. Development and validation of a brief form of the Multidimensional Personality Questionnaire. *Psychological Assessment*. 2002; 14:150–163. [PubMed: 12056077]
- Reynolds SK, Clark LA. Predicting dimensions of personality disorder from domains and facets of the Five-Factor Model. *Journal of Personality*. 2001; 69:199–222. [PubMed: 11339796]
- Rottman BM, Ahn W-K, Sanislow CA, Kim NS. Can clinicians recognize *DSM-IV* personality disorders from Five-Factor Model descriptions of patient cases? *American Journal of Psychiatry*. 2009; 166:427–433. [PubMed: 19289453]
- Samuel DB, Simms LJ, Clark LA, Livesley WJ, Widiger TA. An item response theory integration of normal and abnormal personality scales. *Personality Disorders: Theory, Research, and Treatment*. 2010; 1:5–21.
- Shedler J, Beck A, Fonagy P, Gabbard GO, Gunderson J, Kernberg O, et al. Personality disorders in *DSM-5*. *American Journal of Psychiatry*. 2010; 167:1026–1028. [PubMed: 20826853]
- Shedler J, Westen D. Dimension of personality pathology: An alternative to the Five-Factor Model. *American Journal of Psychiatry*. 2004; 161:1743–1754. [PubMed: 15465966]
- Simms LJ, Watson D, Doebbeling BN. Confirmatory factor analyses of posttraumatic stress symptoms in deployed and nondeployed veterans of the Gulf War. *Journal of Abnormal Psychology*. 2002; 111:637–647. [PubMed: 12428777]
- Southwick SM, Yehuda R, Giller EL. Personality disorders in treatment-seeking combat veterans with posttraumatic stress disorder. *American Journal of Psychiatry*. 1993; 150:1020–1023. [PubMed: 8317570]
- Tellegen, A. Manual for the Multidimensional Personality Questionnaire. Minneapolis, MN: University of Minnesota Press; in press
- Tellegen, A.; Waller, NC. Exploring personality through test construction: Development of the Multidimensional Personality Questionnaire. In: Boyle, GJ.; Matthews, G.; Saklofska, DH., editors. *Personality measurement and testing*. Thousand Oaks, CA: Sage Publications; 2008. p. 261–292. *The SAGE handbook of personality theory and assessment: Vol 2*.
- Watson D. Rethinking the mood and anxiety disorders: A quantitative hierarchical model for DSM-V. *Journal of Abnormal Psychology*. 2005; 114:522–536. [PubMed: 16351375]
- Watson D. Differentiating the mood and anxiety disorders: A quadripartite model. *The Annual Review of Clinical Psychology*. 2009; 5:221–247.
- Weathers, FW.; Litz, BT.; Herman, DS.; Huska, JA.; Keane, TM. The PTSD Checklist: Reliability, validity, and diagnostic utility; Paper presented at the annual meeting of the International Society for Traumatic Stress Studies; 1993, October; San Antonio, TX.
- Widiger TA, Simonsen E. Alternative dimensional models of personality disorder: Finding a common ground. *Journal of Personality Disorders*. 2005; 19:110–130. [PubMed: 15899712]
- Wolf EJ, Miller MW, Orazem RJ, Weierich MR, Castillo DT, Milford J, et al. The MMPI-2 restructured clinical scales in the assessment of posttraumatic stress disorder and comorbid disorders. *Psychological Assessment*. 2008; 20:327–340. [PubMed: 19086756]
- Woods CM. Factor analysis of scales composed of binary items: Illustration with the Maudsley Obsessional Compulsive Inventory. *Journal of Psychopathology and Behavioral Assessment*. 2002; 21:215–223.

World Health Organization. International statistical classification of diseases and related health problems 10th revision, vol 1. Geneva, Switzerland: World Health Organization; 1992.

SNAP Profiles by PTSD Status

Figure 1.

Asterisks indicate statistically significant differences between the PTSD and no PTSD subgroups at the $p < .05$ level, based on independent sample t -tests. SNAP = Schedule for Nonadaptive and Adaptive Personality; PTSD = posttraumatic stress disorder; PD = personality disorder; VRIN = Variable Response Inconsistency; TRIN = True Response Inconsistency; DRIN = Desirable Response Inconsistency; RV = Rare Virtues; DEV = Deviance; INV = Invalidity Index; NT = Negative Temperament; MST = Mistrust; MAN = Manipulativeness; AGG = Aggression; SFH = Self Harm; EP = Eccentric Perceptions; DEP = Dependency; PT = Positive Temperament; EXH = Exhibitionism; ENT = Entitlement; DET = Detachment; DIS = Disinhibition; IMP = Impulsivity; PRO = Propriety; WOR = Workaholism; PAR = paranoid; SZD = schizoid; SZTP = schizotypal; BPD = borderline personality disorder; HPD = histrionic personality disorder; NPD = narcissistic personality disorder; AVD = avoidant; DEP = dependent; OCPD = obsessive-compulsive personality disorder.

Table 1
Correlations Between the SNAP Validity, Trait, Temperament, and PD Scales and the MPQ-BF

SNAP Scale	MPQ-BF Scale																
	VRIN	TRIN	UV	WB	SP	AC	SC	SR	AL	AG	CL	HA	TD	AB	PEM	NEM	CON
Validity																	
VRIN	.20	-.02	-.03	.19	.05	-.13	.25	-.08	-.03	-.08	-.03	.03	.06	-.01	.13	-.06	.01
TRIN	.00	.27	.01	.03	-.04	.02	-.13	.12	.25	.27	-.13	-.24	.18	.03	-.02	.30	-.13
DRIN	-.04	-.07	.07	.18	.15	.04	.23	-.14	-.17	-.21	.13	.04	.04	.06	.20	-.23	.10
RV	.06	.04	.53	.11	-.04	.25	-.03	-.11	.01	-.26	.35	.10	.12	.12	.09	-.16	.31
DEV	.01	.02	-.21	-.42	-.25	-.18	-.46	.34	.34	.44	-.37	-.15	-.24	-.04	-.45	.47	-.37
INV	.19	.01	.10	.01	-.12	-.08	-.07	.06	.14	.07	-.01	.01	-.10	.06	-.09	.12	-.04
Trait & Temp.																	
NT	-.05	.25	-.23	-.35	-.06	-.04	-.32	.84	.45	.32	-.39	-.08	-.01	.24	-.25	.64	-.28
MST	-.03	.17	-.01	-.23	-.09	.07	-.43	.42	.76	.31	-.17	-.10	.14	.13	-.20	.71	-.12
MAN	-.03	.14	-.39	.00	.22	-.25	-.01	.24	.24	.50	-.43	-.15	-.07	.07	.01	.46	-.36
AGG	-.06	-.03	-.21	-.22	.17	-.03	-.20	.32	.26	.80	-.37	-.19	-.08	-.01	-.08	.64	-.31
SFH	-.03	.15	-.24	-.49	-.26	-.20	-.33	.47	.45	.22	-.33	-.16	-.06	.07	-.44	.47	-.32
EP	.10	.21	.03	.02	.00	.12	-.19	.33	.36	.19	-.15	-.15	.05	.55	.00	.39	-.16
DEP	.08	.17	-.16	-.04	-.13	-.24	.10	.26	.23	-.01	-.23	.02	-.09	.12	-.10	.20	-.18
PT	.01	.17	.17	.80	.56	.51	.40	-.17	-.10	-.04	.13	-.08	.08	.34	.82	-.07	.07
EXH	.03	.02	.03	.52	.64	.08	.49	-.14	-.11	.09	.00	-.04	.06	.17	.62	-.01	.00
ENT	.05	.08	.17	.50	.45	.25	.26	-.11	.02	.11	.11	-.05	.15	.25	.54	.07	.09
DET	-.07	.02	-.09	-.53	-.42	.01	-.87	.28	.24	.19	-.07	-.11	.01	-.05	-.65	.25	-.07
DIS	-.06	.14	-.40	-.09	.15	-.35	.01	.32	.25	.54	-.72	-.30	-.13	.04	-.08	.50	-.64
IMP	-.09	.13	-.32	-.20	.05	-.27	-.06	.39	.23	.37	-.87	-.27	-.08	.01	-.16	.41	-.70
PRO	-.01	.18	.29	.13	.07	.30	-.06	.03	.16	-.21	.31	.03	.55	.20	.17	.01	.40
WRK	-.13	.20	.26	.05	.13	.76	-.29	.21	.23	.08	.08	-.20	.18	.26	.24	.24	.04
PD																	
Paranoid	-.07	.16	-.09	-.32	-.11	.03	-.51	.47	.70	.48	-.23	-.12	.11	.08	-.29	.76	-.16
Schizoid	-.02	.03	-.07	-.65	-.49	-.08	-.79	.29	.30	.21	-.14	-.15	-.01	-.12	-.72	.30	-.15
Schizotypal	.05	.21	-.02	-.22	-.17	.07	-.46	.47	.63	.28	-.19	-.14	.08	.37	-.25	.62	-.17
Antisocial	-.02	.12	-.38	-.14	.14	-.25	-.12	.29	.29	.60	-.64	-.29	-.02	.02	-.11	.54	-.54

SNAP Scale	MPQ-BF Scale													
	VRIN	TRIN	UV	WB	SP	AC	SC	SR	AL	AG	CL	HA	TD	AB
Borderline	.00	.24	-.26	-.25	.02	-.05	-.31	.61	.55	.53	-.49	-.25	-.04	.25
Histrionic	.06	.21	-.04	.48	.55	.07	.41	.20	.09	.15	-.17	-.10	.06	.35
Narcissistic	.02	.18	.02	.44	.53	.17	.20	.06	.17	.28	-.05	-.14	.12	.27
Avoidant	-.05	.30	-.16	-.38	-.41	-.09	-.57	.51	.42	.13	-.16	-.04	.04	.07
Dependent	.07	.28	-.17	-.11	-.13	-.24	.01	.36	.38	.06	-.31	-.07	-.02	.12
OCPD	-.08	.21	.17	.08	.14	.56	-.26	.24	.33	.15	.17	-.15	.23	.31

Note. SNAP = Schedule for Nonadaptive and Adaptive Personality; MPQ-BF = Multidimensional Personality Questionnaire-Brief Form; PD = personality disorder; VRIN = Variable Response Inconsistency; TRIN = True Response Inconsistency; DRIN = Desirable Response Inconsistency; RV = Rare Virtues; DEV = Deviance; INV = Invalidity Index; Temp = temperament; NT = Negative Temperament; MST = Mistrust; MAN = Manipulativeness; AGG = Aggression; SFH = Self Harm; EP = Eccentric Perceptions; DEP = Dependency =; PT = Positive Temperament; EXH = Exhibitionism; ENT = Entitlement; DET = Detachment; DIS = Disinhibition; IMP = Impulsivity; PRO = Propriety; WRK = Workaholism; OCPD = obsessive-compulsive personality disorder; UV = Unlikely Virtues; WB = Wellbeing; SP = Social Potency; AC = Achievement; SC = Social Closeness; SR = Stress Reaction; AL = Alienation; AG = Aggression; CL = Control; HA = Harm Avoidance; TD = Traditionalism; AB = Absorption; PEM = Positive Emotionality; NEM = Negative Emotionality; CON = Constraint.

Coefficients $\geq .12$ are significant at the $p < .05$ level. Coefficients $\geq .16$ are significant at the $p < .01$ level. Coefficients $\geq .20$ are significant at the $p < .001$ level.

Table 2
Correlations Between the SNAP Validity, Trait, Temperament, and PD Scales and PTSD Severity and Trauma

SNAP Scale	PTSD Severity	Reexp.	Avd.	Emo. Numb.	Hyp.	# of Traumas
Validity						
VRIN	-.15	-.06	-.11	-.18	-.16	-.10
TRIN	.16	.10	.08	.15	.17	.07
DRIN	-.24	-.12	-.23	-.22	-.24	-.09
RV	.01	.04	-.08	.02	.00	-.05
DEV	.34	.16	.31	.38	.30	.18
INV	.07	.06	.03	.08	.03	-.03
Trait & Temp.						
NT	.54	.40	.35	.52	.51	.26
MST	.42	.31	.30	.41	.37	.34
MAN	.12	.05	.12	.12	.11	.10
AGG	.29	.18	.17	.26	.35	.23
SFH	.31	.17	.25	.39	.22	.27
EP	.37	.35	.16	.38	.27	.23
DEP	.10	.08	.07	.09	.09	.06
PT	-.13	.00	-.11	-.25	-.07	.00
EXH	-.23	-.12	-.22	-.28	-.15	.05
ENT	-.05	.05	-.07	-.10	-.06	.01
DET	.38	.18	.35	.47	.27	.08
DIS	.11	.04	.09	.12	.12	.16
IMP	.13	.04	.10	.14	.14	.20
PRO	.05	.08	-.02	.04	.04	.04
WOR	.28	.22	.22	.24	.24	.17
PD						
Paranoid	.45	.30	.32	.45	.41	.32
Schizoid	.37	.17	.29	.47	.27	.10
Schizotypal	.50	.39	.26	.53	.42	.29

SNAP Scale	PTSD Severity	Reexp.	Avd.	Emo. Numb.	Hyp.	# of Traumas
Antisocial	.13	.05	.12	.13	.13	.31
Borderline	.49	.35	.30	.48	.45	.37
Histrionic	-.03	.05	-.11	-.10	.04	.08
Narcissistic	.06	.10	.01	.01	.06	.07
Avoidant	.43	.24	.33	.47	.37	.15
Dependent	.23	.19	.13	.19	.22	.14
OCPD	.33	.26	.27	.29	.29	.22

Note. SNAP = Schedule for Nonadaptive and Adaptive Personality; PD = personality disorder; PTSD = posttraumatic stress disorder; Reexp. = reexperiencing; Avd. = avoidance; Emo. Numb. = emotional numbing; Hyp. = hyperarousal; VRIN = Variable Response Inconsistency; TRIN = True Response Inconsistency; DRIN = Desirable Response Inconsistency; RV = Rare Virtues; DEV = Deviance; INV = Invalidity Index; NT = Negative Temperament; MST = Mistrust; MAN = Manipulativeness; AGG = Aggression; SFH = Self Harm; EP = Eccentric Perceptions; DEP = Dependency =; PT = Positive Temperament; EXH = Exhibitionism; ENT = Entitlement; DET = Detachment; DIS = Disinhibition; IMP = Impulsivity; PRO = Propriety; WRK = Workaholism; OCPD = obsessive-compulsive personality disorder.

Coefficients $\geq .12$ are significant at the $p < .05$ level. Coefficients $\geq .16$ are significant at the $p < .01$ level. Coefficients $\geq .20$ are significant at the $p < .001$ level.

Table 3

Rates of PD Diagnoses and Cross-Measure Agreement (n = 86)

PD	SNAP: n (%)	IPDE: n (%)	Kappa
Paranoid	19 (22.1)	10 (11.6)	.31
Schizoid	28 (32.6)	5 (5.8)	.16
Schizotypal	14 (16.3)	1 (1.2)	.11
Antisocial	30 (34.9)	8 (9.3)	.08
Borderline	27 (31.4)	5 (5.8)	.10
Histrionic	1 (1.2)	1 (1.2)	-.01
Narcissistic	2 (2.3)	3 (3.5)	-.03
Avoidant	22 (25.6)	9 (10.5)	.36
Dependent	3 (3.5)	0	N/A
Obsessive-Compulsive	15 (17.4)	8 (9.3)	.16

Note. PD = personality disorder; SNAP = Schedule for Nonadaptive and Adaptive Personality; IPDE = International Personality Disorder Exam; N/A = not applicable. Kappa statistic for the dependent PD scales cannot be computed as the prevalence of this disorder on the IPDE was 0.

Table 4

Correlations Between SNAP and IPDE PD Scales

SNAP	IPDE									
	PPD	SZD	SZTPL	ASPD	BPD	HPD	NPD	AVD	DEP	OCPD
PPD	.43	.24	.34	.29	.39	.06	.07	.27	.31	.20
SZD	.10	.55	.20	-.01	.14	-.27	-.16	.31	.06	.16
SZTPL	.28	.20	.47	.20	.23	.08	.10	.16	.16	.15
ASPD	.14	-.02	.11	.60	.23	.26	.17	.10	.09	.12
BPD	.30	.17	.32	.49	.42	.23	.17	.21	.27	.25
HPD	-.01	-.29	-.02	.16	.13	.46	.37	-.21	.11	.01
NPD	.11	-.13	.12	.19	.10	.33	.49	-.20	.15	.01
AVD	.26	.33	.43	.08	.33	.00	-.08	.57	.09	.09
DEP	.24	.15	.32	.30	.27	.17	-.01	.41	.28	.01
OCPD	.17	.05	.31	.09	.06	.02	.23	-.13	-.06	.28

Note. PD = personality disorder; SNAP = Schedule for Nonadaptive and Adaptive Personality; IPDE = International Personality Disorder Exam; PPD = paranoid personality disorder; SZD = schizoid personality disorder; SZTPL = schizotypal personality disorder; ASPD = antisocial personality disorder; BPD = borderline personality disorder; HPD = histrionic personality disorder; NPD = narcissistic personality disorder; AVD = avoidant personality disorder; DEP = dependent personality disorder; OCPD = obsessive-compulsive personality disorder.

Correlations between corresponding scales on the SNAP and IPDE are shown in bold font. Correlations $\geq .22$ are significant at the $p < .05$ level; correlations $\geq .28$ are significant at the $p < .01$ level; correlations $\geq .35$ are significant at the $p < .001$ level.

Table 5
Correlations Between the SNAP Validity, Trait, and Temperament Scales and IPDE Severity Scores

SNAP	IPDE										DEP	OCPD
	PPD	SZD	SZTPL	ASPD	BPD	HPD	NPD	AVD				
Validity												
VRIN	.02	-.15	.12	.15	.01	.06	.04	-.04	-.12	-.26		
TRIN	-.19	.07	-.09	.01	-.04	-.05	-.12	-.11	.10	-.02		
DRIN	.04	-.27	-.06	.11	.05	.25	.24	-.10	-.10	-.15		
RV	-.10	.04	.06	-.26	-.14	-.09	-.05	-.10	-.07	.06		
DEV	.22	.44	.23	.17	.31	-.10	-.03	.40	.24	.19		
INV	.14	.19	.23	.03	.19	-.04	.02	.17	-.01	.05		
Trait & Temp.												
NT	.23	.10	.20	.20	.37	.11	.21	.18	.23	.21		
MST	.40	.16	.34	.24	.33	.16	.06	.24	.28	.09		
MAN	.02	.04	-.03	.37	.22	.28	.21	.13	.22	-.02		
AGG	.20	.06	.07	.34	.19	.05	.17	-.04	.14	.28		
SFH	.13	.31	.34	.21	.51	.16	-.05	.46	.27	.25		
EP	.13	.07	.36	.16	.14	.17	.18	-.03	.13	.14		
DEP	.11	.18	.32	.22	.20	.14	.00	.35	.29	-.06		
PT	.04	-.30	.00	.05	-.13	.21	.30	-.27	-.15	-.08		
EXH	-.09	-.35	-.20	.06	.00	.34	.33	-.26	-.02	-.02		
ENT	.02	-.21	.01	.12	-.01	.27	.45	-.40	.06	-.02		
DET	.09	.52	.15	-.10	.01	-.35	-.10	.27	-.06	.14		
DIS	.07	.00	-.02	.44	.26	.30	.14	.10	.28	-.02		
IMP	.16	.06	.01	.43	.24	.24	.16	.14	.30	.08		
PRO	-.05	-.29	.03	-.14	-.12	-.07	.03	-.22	-.36	.00		
WOR	.15	.03	.24	.05	.03	-.11	.17	-.04	.04	.23		

Note. SNAP = Schedule for Nonadaptive and Adaptive Personality; IPDE = International Personality Disorder Exam; PPD = paranoid personality disorder; SZD = schizoid personality disorder, SZTPL = schizotypal personality disorder; ASPD = antisocial personality disorder; BPD = borderline personality disorder; HPD = histrionic personality disorder; NPD = narcissistic personality disorder; AVD = avoidant personality disorder; DEP = dependent personality disorder; OCPD = obsessive-compulsive personality disorder; VRIN = Variable Response Inconsistency; TRIN = True Response Inconsistency; DRIN = Desirable Response Inconsistency; RV = Rare Virtues; DEV = Deviance; INV = Invalidity Index; NT = Negative Temperament; MST = Mistrust; MAN = Manipulativeness; AGG = Aggression; SFH = Self Harm; EP = Eccentric Perceptions; DEP = Dependency =; PT = Positive Temperament; EXH = Exhibitionism; ENT = Entitlement; DET = Detachment; DIS = Disinhibition; IMP = Impulsivity; PRO = Propriety; WRK = Workaholism.

Correlations $\geq .22$ are significant at the $p < .05$ level; correlations $\geq .28$ are significant at the $p < .01$ level; correlations $\geq .35$ are significant at the $p < .001$ level.