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Pathological personality traits and externalizing behaviour

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ABSTRACT

*Previous research has identified general personality traits and personality disorders that are associated with externalizing behaviour (EB). There is a dearth of research, however, investigating the relations between pathological personality traits and EB. The current study examined pathological personality traits, as measured by the Schedule for Non-adaptive and Adaptive Functioning (SNAP) and the Dimensional Assessment of Personality Pathology-Basic Questionnaire (DAPP-BQ), in relation to EB. Undergraduates (n* = *228) com- pleted the SNAP, DAPP-BQ, and a measure of antisocial behaviour, substance use, gambling, intimate partner violence and risky sexual behaviour. Using confirmatory factor analysis, we identified the best fitting model as one that specified eight factors: five personality factors composed of constructs assessed by the DAPP and SNAP, one externalizing factor and two method factors corresponding to each of the measures. Consistent with the empirical literature using general personality traits, the current results suggest that pathological per- sonality traits related to impulse control (i.e. low conscientiousness), as well as more interpersonally focused traits (i.e. low agreeableness), were most strongly associated with EB. Copyright © 2009 John Wiley & Sons, Ltd.*

**Introduction**

Epidemiological studies have documented consid- erable rates of comorbidity amongst antisocial behaviour (ASB) disorders (e.g. antisocial personal- ity disorder (ASPD), conduct disorder) and sub- stance use (SU) disorders (e.g. Goldstein et al.,

2007a,b). The current classification system (i.e. Diagnostic and Statistical Manual of Mental Disorders-IV-TR (DSM-IV); APA, 2000) does not account for these high rates of comorbidity, in that

the categorical approach of the DSM-IV considers these disorders distinct clinical conditions. Recent research, however, has successfully challenged this approach. Krueger (1999) determined that a common pathological factor may make individuals vulnerable to several of these disorders. Specifically, Krueger identified a broad ‘externalizing’ factor that explains the comorbidity between ASPD, drug dependence and alcohol dependence. This externalizing construct was first identified in Achenbach’s research examining the structure of

childhood behaviour and emotional disorders (Achenbach & Edelbrock, 1978; 1984). Markon and Krueger (2005) further determined that this externalizing liability is better understood as exist- ing along a continuum. Conceptualizing the exter- nalizing construct as a continuum of severity may explain why some individuals meet criteria for mul- tiple externalizing disorders. For example, individu- als higher on the continuum may meet diagnostic criteria for multiple disorders (e.g. conduct disorder *and* substance abuse or dependence), whereas other individuals may just cross the diagnostic threshold for a single externalizing disorder.

One of the factors that might be involved in this latent externalizing continuum is individual differences in personality/temperament. Research identifying the common liability of these comor- bid externalizing disorders has addressed this explicitly (Krueger et al., 2002). Using an adoles- cent sample, Krueger et al. found that disinhibitory personality traits (i.e. low constraint), as measured by the Multidmensional Personality Questionnaire (MPQ; Tellegen, in press), fit into this hierarchical structure of externalizing problems. The heritabil- ity of the externalizing factor was also examined and results revealed that adolescent ASB, alcohol and drug dependence, conduct disorder and a dis- inhibitory personality style were all subsumed by a latent ‘externalizing’ factor, for which heritability was estimated to be 81%. In a similar study, Young, Stallings, Corley, Krauter, and Hewitt (2000) examined the common liability to disruptive child- hood disorders (e.g. attention deficit hyperactivity disorder, conduct disorder), SU, and the trait novelty seeking, as measured by Cloninger’s (1987) Tridimensional Personality Questionnaire. Similar to the aforementioned findings, a common latent factor (which Young et al. (2000) entitled ‘behav- ioural disinhibition’ rather than ‘externalizing’) was identified.

Although both Krueger et al. (2002) and Young et al. (2000) examined personality traits in rela- tion to externalizing behaviour (EB), they focused specifically on traits related to impulse control or behavioural disinhibition (i.e. constraint, novelty

seeking). However, a substantial body of research suggests that in addition to impulse-control related traits, more interpersonal traits (e.g. agreeableness) are also relevant to the study of EB (e.g. Lynam, Leukefeld, & Clayton, 2003; Miller & Lynam,

2001; Miller, Lynam, & Leukefeld, 2003). For instance, Miller and Lynam (2001) meta-analyzed the relations between ASB and personality dimen- sions from several comprehensive models of personality including the Five-Factor Model (FFM; McCrae & Costa, 1990), Eysenck’s (1977) Psychoticism, Extraversion, Neuroticism (PEN) model, Tellegen’s (1985) three-factor model, and Cloninger’s seven-factor temperament and charac- ter model (Cloninger, Svrakic, & Przybeck, 1993). Using the FFM to integrate findings from other models of general personality, Miller and Lynam suggested that traits related to conscientiousness *and* agreeableness were the strongest correlates of ASB. These same types of traits proved to be the most consistent correlates of sexual risk taking in a similar meta-analysis (Hoyle, Fejfar, & Miller,

2000). Further, a number of studies have docu- mented significant relations between SU and the domains of agreeableness and conscientiousness (Flory, Lynam, Milich, Leukefeld, & Clayton,

2002; Miller, Lynam, & Jones, 2008; Ruiz, Pincus,

& Dickinson, 2003). Collectively, these findings illustrate that individuals vulnerable to EBs are not only lower in impulse control but also tend to exhibit an antagonistic interpersonal style charac- terized by distrust, deceitfulness, non-compliance, and decreased altruism (i.e. low agreeableness).

In addition to more basic personality traits, there has been considerable empirical research investigating the relations between EB and PDs such as ASPD and borderline PD (BPD). For instance, ASPD has been linked to pathological gambling (GAMB; e.g. Cunningham-Williams, Cottler, Compton, & Spitznagel, 1998) and inti- mate partner violence (IPV; e.g. Mauricio, Tein, & Lopez, 2007). A recent epidemiological study also found that, after controlling for demographics and other psychiatric disorders, ASPD was the PD that most commonly co-occurred with drug use disor-

ders (Compton, Thomas, Stinson, & Grant, 2007). BPD has been shown to relate to IPV (Mauricio et al., 2007) as well as risky and impulsive sexual behaviour (Hull, Clarkin, & Yeomans, 1993; Zanarini et al., 2003). The most extensive research relating EB and PDs, however, has involved psy- chopathy. Although not currently in the DSM-IV, psychopathy is a well-validated disorder charac- terized by traits such as egocentricity, a lack of empathy and remorse, manipulativeness and impulsivity (see Hare, 2003). Psychopathic traits have been linked to aggressive behaviour in adult offenders, civil psychiatric patients, and antisocial children and adolescents (see Porter & Woodworth,

2006, for a review) and have been shown to predict violence and general recidivism (Salekin, Rogers,

& Sewell, 1996). Thus, there is an established association between PD constructs and EB.

Given these findings, it is surprising that more basic pathological personality traits have not been examined in relation to EB. There are currently two established dimensional models of pathologi- cal personality, the Schedule for Non-adaptive and Adaptive Personality (SNAP; Clark, 1993) and the Dimensional Assessment of Personality Pathology (DAPP; Livesley, 1990). These models of personal- ity pathology have grown in prominence due to the widespread dissatisfaction with the current diagnostic system for PDs (see Clark, 2007, for a review). Increasingly, several prominent research- ers have advocated for a replacement of the current categorical DSM-IV system with the use of a dimensional model of pathological personality traits. These models utilize a variety of more basic pathological traits (e.g. callousness; emotional dys- regulation), rather than the current system which uses a limited number of specific configurations of traits and symptoms (e.g. BPD) in an attempt to cover all (or most) of personality pathology.

In developing the SNAP and DAPP, both Clark and Livesley compiled PD criteria and characteris- tics based on DSM and non-DSM conceptualiza- tions of PDs (e.g. psychopathy). Clark’s analyses resulted in the SNAP, a self-report measure that assesses 12 lower order, primary trait scales and

three higher order, temperament scales (i.e. nega- tive temperament, positive temperament, and disinhibition vs. constraint). Livesley’s method resulted in the DAPP-Basic Questionnaire (DAPP- BQ), a self-report measure that assesses 18 traits relevant to personality pathology. The DAPP-BQ results in a 4-factor structure (e.g. Bagge & Trull,

2003; Pukrop, Gentil, & Steinmeyer, 2001), which includes emotional dysregulation, dissocial behav- iour, inhibition, and compulsivity. Despite some differences in the methodologies used to develop these measures, research has revealed considerable overlap in terms of their content and they appear to capture similar aspects of personality pathology (i.e. Clark & Livesley, 2002; Clark, Livesley, Schroeder, & Irish, 1996). Through principal- factors analysis, Clark, Livesley, Schroeder, and Irish identified five higher order factors that accounted for 89% of the variance in the SNAP and DAPP-BQ scales. These factors were: negative affect, introversion, (low) agreeableness, depen- dency, and (low) conscientiousness.

Although there is no research explicitly inves- tigating the SNAP and DAPP-BQ in relation to EB, studies have revealed associations between these models and PDs linked to EB. For example, Reynolds and Clark (2001) predicted DSM-IV PDs from SNAP scales that have been conceptually linked to these disorders in previous research. For example, they found that SNAP disinhibition, entitlement, manipulativeness, aggression, and impulsivity accounted for 30% of the variance in ASPD. Alternatively, Bagge and Trull (2003) found that DAPP-BQ scales exhibiting strong correla- tions (>0.40) with ASPD were oppositionality, stimulus seeking, callousness, and conduct prob- lems. Given these findings, one might expect that these models could be used effectively to examine the basic underlying pathological personality dimensions related to EB.

The current study aims to fill this gap. Based on recent discussions in the field, it does not seem optimal to adopt a single model of general person- ality (e.g. FFM) or personality pathology (e.g. SNAP) to be used as a diagnostic framework in

the next edition of the DSM (Krueger, Skodol, Livesley, Shrout, and Huang, 2007; Widiger & Simonsen, 2005). Rather, it may be helpful to take an integrative approach to identifying higher order constructs that are common across personality models when examining relations between these various models and external criteria. In line with this reasoning, the current study examines the relations between the SNAP and DAPP-BQ and EB using confirmatory factor analytic (CFA) methods. Using a wide variety of EBs that have been previously linked to pathological personality (i.e. ASB, GAMB, IPV, risky sexual behaviour and SU), we use CFA to examine the basic pathol- ogical personality dimensions related to EB. Specifically, we test a model that specifies one broad externalizing factor and five trait factors that were identified in the combined principal-factors analysis of the SNAP and DAPP-BQ (i.e. negative affect, introversion, low agreeableness, depen- dency, and low conscientiousness; Clark et al.,

1996). We expect that factors comprising both interpersonal traits (i.e. low agreeableness factor) and traits related to impulse control (i.e. low con- scientiousness factor) will be most strongly associ- ated with the broad externalizing factor. Given the small but significant association between neuroti- cism/negative emotionality and ASB (e.g. Miller

& Lynam, 2001), as well as the established link between BPD (a personality disorder characterized by high negative emotionality) and both IPV (Mauricio et al., 2007) and risky sex (Hull et al.,

1993; Zanarini et al., 2003), a more moderate asso- ciation is expected between the externalizing factor and the negative affect factor.

In addition to examining correlations between the higher order trait and externalizing factors, we also examine the unique relations between the five latent pathological trait factors and EB. In line with the previous hypotheses, we expect that both the low conscientiousness and low agreeableness factors will account for unique variance in EB. We also expect that the negative affect factor will account for a small, but significant amount of the variance in EB.

**Method**

*Participants*

Participants included 239 undergraduate students who volunteered in exchange for credit towards a class requirement. The data for 10 participants were excluded due to elevations on validity scales, and one participant did not have complete data. The final sample consisted of 228 participants (129 males, 99 females; mean age = 18.9). The majority of participants were White (83%); of the remain- ing participants, the largest percentage was African-American (8%) or Asian (8%). Written informed consent was obtained from each participant.

*Measures*

*SNAP.* The SNAP is a 375-item, true–false format, self-report inventory designed to assess traits associated with personality pathology. In the current study, coefficient alphas ranged from 0.78 (manipulativeness, dependency, impulsivity, propriety) to 0.90 (negative temperament, positive temperament).

*DAPP-BQ.* The DAPP-BQ is a 290-item self- report inventory that assesses 18 traits relevant to PD. Items are scored on a 1 (‘very unlike me’) to

5 (‘very like me’) scale. Coefficient alphas in the current sample ranged from 0.83 (intimacy problems) to 0.93 (anxiety).

*Crime and analogous behaviour scale (CAB).* The CAB is a self-report inventory that assesses a variety of EBs, including SU, sexual behaviour, ASB, GAMB and IPV. An SU count was created by giving participants a ‘1’ for every substance they endorsed using during their lifetime (5 items; M *=*

1.42; standard deviation (SD) *=* 1.14). Substances assessed included alcohol, marijuana/hashish, crack/cocaine, psychedelics (e.g. mushrooms), and

‘hard’ drugs (e.g. heroine, speed). A lifetime ASB count was created by giving participants a ‘1’ for every relevant act they endorsed (e.g. stealing; nine

items; M *=* 1.22; SD *=* 1.19). A lifetime GAMB count was created by giving participants a ‘1’ for every relevant act they endorsed (e.g. played card or other games for money; six items; M *=* 2.04; SD

*=* 1.54). A lifetime IPV count was created using this same approach (e.g. slapped my partner; six items; M *=* 0.67; SD *=* 1.20). The final variable is a sexual behaviour count where individuals received a ‘1’ if they endorsed having (1) sex, (2) a one-night stand, (3) an abortion and (4) a sexually transmitted disease. They were also given a ‘1’ if they were 15 or younger at the time they first had intercourse, had five or more sex partners in their lifetime, and if they endorsed using condoms only ‘sometimes’,

‘infrequently’ or ‘never’ when having sex with someone with whom they are not in a relationship (M *=* 1.03; SD *=* 1.1). The CAB has been used previously and its scales have demonstrated significant relations with expected constructs such as psychopathy (Miller & Lynam, 2003), reactive and proactive aggression (Miller & Lynam, 2006), and disagreeableness (Miller et al., 2008).

**Results**

We first examined whether there were sex differ- ences in the five EBs. Before conducting any analyses with the CAB, we transformed these five variables by taking the square root of the five scores, which resulted in a more normal distribution (i.e. skewness values <1.2; kurtosis values <1.4). For IPV, women reported more violence perpetration than men, *t*(226) = −4.81, *p* ≤ 0.01, *d* = 0.62. Conversely, men reported more GAMB than women, *t*(226) = 6.42, *p* ≤ 0.01, *d* = 0.85, more ASB, *t*(226) = 5.80, *p* ≤

0.01, *d* = 0.76, and more risky sex, *t*(226) = 2.78, *p*

≤ 0.01, *d* = 0.37. There were no significant sex dif- ferences for SU, *t*(226) = 1.29, *ns*, *d* = 0.17. In order to account for mean sex differences, all variables used in the following analyses were residualized by predicting each variable with sex and saving the residual, thus removing any effects due to sex.

To avoid inflated correlations between latent trait factors and the externalizing factor due to

predictor–criterion overlap, we removed items from the SNAP and DAPP-BQ that overlapped with items from the CAB (e.g. ‘I have often drunk too much’). For the SNAP, 6 of 20 items from the aggression subscale, 1 of 19 items from the Impulsivity subscale, and 2 of 16 items from the disinhibition scale were removed. For the DAPP- BQ, 1 of 16 items from the callousness subscale,

12 of 16 items from the conduct problems subscale, and 1 of 12 items from the self-harm subscale, were removed.

We fit two CFA models to test the structure of the SNAP and DAPP-BQ using LISREL 8.7 (Jöreskog & Sörbom, 2004). The evaluation of the appropriateness of the models focused on an evalu- ation of relevant fit indices. Specifically, model evaluation incorporated four overall fit indices including: χ2 test, Steiger’s (1990) root mean square error of approximation (RMSEA), standardized root mean square residual (SRMSR), and the Comparative Fit Index (CFI; Bentler, 1990). Browne and Cudeck (1989) suggest that RMSEA represents a measure of lack of fit per degree of freedom and that a value of 0.05 or less represents close fit whereas values up to 0.08 represent rea- sonable fit. SRMSR is a summary index of the percentage of variance unaccounted for by the fitted model; a SRMSR <0.08 is considered good fit (Browne & Cudeck, 1989). The CFI is a relative fit index that (1) evaluates model fit relative to a null model and (2) takes into account the overall number of model parameters estimated. General rules of thumb suggest that CFI values between

0.90 and 0.95 indicate acceptable model fit, and values above 0.95 indicate good fit (Marsh, Balla,

& McDonald, 1988).

The first model specified five latent factors formed from the SNAP and DAPP-BQ. Consistent with the principal-factors analysis presented by Clark et al. (1996), this model parameterizes the scales of the SNAP and DAPP-BQ as loading on one of five broad latent trait factors. Based on the Clark et al.’s analysis, many of the SNAP and DAPP-BQ scales cross load onto more than one of the five latent trait factors. Accordingly, we allowed

manifest indicators with factor loadings above 0.35 (based on the Exploratory Factor Analysis (EFA) presented by Clark et al. (1996)) to cross load. Together, this model specifies that (1) DAPP-BQ cognitive distortion, affective lability, anxiousness, self-harm, suspiciousness, and identity problems, as well as SNAP negative temperament, eccentric perceptions, self-harm, aggression, workaholism, and mistrust load on a *negative affect* factor, (2) DAPP-BQ suspiciousness, restricted expression, identity problems, intimacy problems, and social avoidance, and SNAP exhibitionism, self-harm, detachment, and positive temperament load on an *introversion* factor, (3) DAPP-BQ suspiciousness, rejection, callousness, conduct problems, narcis- sism, and stimulus seeking, and SNAP exhibition- ism, manipulativeness, entitlement, aggression, mistrust, and disinhibition load on a *low agreeable- ness* factor, (4) DAPP-BQ cognitive distortion, anxiousness, social avoidance, identity problems, submissiveness, oppositionality, narcissism, and insecure attachment, and SNAP negative tem- perament and dependency load on a *dependency* factor, and (5) DAPP-BQ conduct problems, oppo- sitionality, stimulus seeking, and compulsivity, and SNAP manipulativeness, impulsivity, disinhibi- tion, workaholism, and propriety load on a *low conscientiousness* factor. For all models tested, the latent factor variances were set to unity. This model failed to meet acceptable model fit stan- dards (Table 1).

The second model tested was a 7-factor model consisting of the same 5-trait factors as the pre- ceding model as well as 2-method factors (Model

2). This model was exactly the same as Model 1, with one important difference. Specifically, con- sistent with the multitrait-multimethod (MTMM) design of our data (Campbell & Fiske, 1959), this model parameterized two method factors, with all the subscales of the DAPP-BQ set to load on a DAPP-BQ latent method factor and all the sub- scales of the SNAP set to load on a SNAP latent method factor. Consistent with suggestions with respect to the application of CFA to the exami- nation of MTMM models, we followed the corre-

lated trait-correlated method approach to model estimation in which correlations between trait and method factors were fixed equal to zero, while trait/method factors are allowed to be correlated amongst themselves (Lance, Noble, & Scullen,

2002; Widaman, 1985). Model fit statistics indi- cate that Model 2 fit the data reasonably well and provided a substantially better fit than did Model

1 (∆χ2 (34) = 427.11, *p* < 0.01). Although in some

instances, the fit of Model 2 did not meet the recent, more stringent fit statistic criteria sug- gested by Hu and Bentler (1999), the fit of Model

2 is consistent with more traditional criteria for acceptable fit suggested by Marsh et al. (1988). Further, when considering the number of param- eters associated with testing a MTMM model that allows cross loadings, the frequent conver- gence and admissibility issues associated with MTMM models (Lance et al., 2002), and the fact that our model fully replicates the findings of Clark and colleagues, we believe the fit of Model

2 is adequate. Accordingly, Model 2 was adopted for subsequent analyses. The completely standard- ized factor loadings for Model 2 are presented in Table 2. Next, we examined the structure of the five EBs by specifying a single factor structure of externalizing (Model 3). As expected, this model provided an adequate fit to the data (Table 1). Completely standardized factor loadings for this model are presented in Table 3.

Based on support for the 7-factor DAPP/SNAP MTMM model and the single-factor externalizing models, these two models were incorporated into a single model for the remaining analyses (Model

4). To compare correlations amongst the external- izing factor and the five personality factors, the correlations between the externalizing factor and two of the trait factors were set to be equivalent (e.g. the latent factor correlations between exter- nalizing and negative affect and introversion were set to be equivalent). Since these tests proceeded in a parameter-nested sequence, a difference in χ2 test was conducted for each model to determine whether the relations between externalizing and each of the trait factors differed significantly from

Table 1: Model fit statistics, latent factor correlations, and significant differences in correlations with externalizing

(*n* = 228)

Model fit statistics

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| df χ2 RMSEA | | | | | | | | |  | SRMSR | CFI |
| Models tested | | | |  |  | |  |  |  |  |  |
| Model 1: 5 SNAP/DAPP traits | | | | 466 | 1926.44 | |  | .12 |  | .10 | .88 |
| Model 2: 5 SNAP/DAPP traits + 2 methods | | | | 432 | 1499.13 | |  | .10 |  | .08 | .91 |
| Model 3: 1 Externalizing factor | | | | 5 | 14.16 | |  | .09 |  | .05 | .93 |
| Model 4: Full model | | | | 595 | 1779.00 | |  | .09 |  | .08 | .91 |
| Correlations amongst latent factors | | | | | | | | | | | |
|  |  | 1 | 2 |  | 3 | 4 |  | 5 | 6 | 7 | 8 |
| 1. | Negative affect | 1.0 |  |  |  |  |  |  |  |  |  |
| 2. | Introversion | 0.57\*\* |  | 1.0 |  |  |  |  |  |  |  |
| 3. | Low agreeableness | 0.53\*\* |  | 0.49\*\* | 1.0 |  |  |  |  |  |  |
| 4. | Dependency | 0.66\*\* |  | 0.47\*\* | 0.40\*\* |  | 1.0 |  |  |  |  |
| 5. | Low conscientiousness | 0.32\* | −0.15\* | | 0.46\*\* | 0.06 | | 1.0 |  | | |
| 6. | Externalizing | 0.28\*\* | −0.08 | | 0.51\*\* | −0.03 | | 0.54\*\* | 1.0 | | |

*Note*: 1Latent factor correlations set to 0 on an a priori basis; \**p* < 0.05, \*\**p* < 0.01; ∆ χ2 value presented represents difference between Model 4 χ2 and the χ2 of a model where the correlation between the two latent factors represented in that element of the matrix and externalizing was set to equality; for ∆ χ2 tests, ∆df = 1 and baseline χ2 = 1779.00.

RMSEA, root mean square error of approximation; SRMSR, standardized root mean square residual; CFI, Comparative Fit Index; SNAP, schedule for non-adaptive and adaptive functioning; DAPP, dimensional assessment of personality pathology.

one another, resulting in 10 ∆χ2 tests. Each of the

10 ∆χ2 values are presented in the lower portion of Table 1, such that each element of the matrix represents the ∆χ2 for when the correlation between the two factors corresponding to that element and the externalizing factor is set to equality. In such analyses, it is preferable to accept the most

restricted model (the model with the largest degrees of freedom) that does not result in a significant reduction in fit over less restricted models (Bollen,

1989).

The latent factor correlation matrix for Model

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7.  8. | DAPP method  SNAP method | —1  — | —  — | —  — | —  — | —  — | 0.05  −0.12 | 1.0  −0.81\*\* | 1.0 |
| ∆ χ2 Values for significant differences in correlations with externalizing | | | | | | | | | |
|  |  |  | 1 | 2 |  | 3 | 4 | | 5 |
| 1. | Negative affect |  | — |  |  |  |  | |  |
| 2. | Introversion |  | 11.77\*\* | — |  |  |  | |  |
| 3. | Low agreeableness |  | 6.89 | 25.91\*\* |  | — |  | |  |
| 4. | Dependency |  | 14.95\*\* | 0.86 |  | 26.70\*\* | — | |  |
| 5. | Low conscientiousness |  | 4.46 | 19.74\*\* |  | 0.18 | 24.43\*\* | | — |

4 is presented in Table 1. For this set of analyses, the χ2 of Model 4 was used as the baseline χ2 value

Table 2: Completely standardized factor loadings for SNAP/DAPP MTMM model

Parameter loadings1

DAPP 1 2 3 4 5 DAPPm SNAPm Unique variance

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Submissiveness |  |  |  | 0.82\* |  | −0.03 |  | 0.33 |
| Cognitive dysregulation | 0.71\* |  |  | 0.15\* |  | −0.18\* |  | 0.30 |
| Identity problems | 0.57\* | 0.28\* |  | 0.19\* |  | 0.03 |  | 0.19 |
| Affective lability | 0.75\* |  |  |  |  | −0.47\* |  | 0.22 |
| Stimulus seeking |  |  | 0.03 |  | 0.76\* | −0.20\* |  | 0.36 |
| Compulsivity |  |  |  |  | −0.57\* | −0.55\* |  | 0.37 |
| Restricted expression |  | 0.74\* |  |  |  | 0.20\* |  | 0.42 |
| Callousness |  |  | 0.84\* |  |  | −0.27\* |  | 0.22 |
| Oppositionality |  |  |  | 0.69\* | 0.45\* | 0.01 |  | 0.30 |
| Intimacy problems |  | 0.42\* |  |  |  | 0.21\* |  | 0.78 |
| Rejection |  |  | 0.47\* |  |  | −0.63\* |  | 0.38 |
| Anxiousness | 0.42\* |  |  | 0.53\* |  | −0.26\* |  | 0.19 |
| Conduct problems |  |  | 0.47\* |  | 0.38\* | −0.12 |  | 0.46 |
| Suspiciousness | 0.40\* | 0.21\* | 0.24\* |  |  | −0.36\* |  | 0.37 |
| Social avoidance |  | 0.55\* |  | 0.50\* |  | 0.08 |  | 0.18 |
| Narcissism |  |  | 0.37\* | 0.23\* |  | −0.53\* |  | 0.45 |
| Insecure attachment |  |  |  | 0.66\* |  | −0.40\* |  | 0.40 |
| Self-Harm | 0.57 |  |  |  |  | 0.05 |  | 0.67 |
| SNAP |  |  |  |  |  |  |  |  |
| Negative temperament | 0.45\* |  |  | 0.30\* |  |  | 0.41\* | 0.37 |
| Mistrust | 0.52\* |  | 0.15\* |  |  |  | 0.30\* | 0.54 |
| Manipulativeness |  |  | 0.48\* |  | 0.38\* |  | 0.12 | 0.45 |
| Aggression | 0.31\* |  | 0.26\* |  |  |  | 0.25\* | 0.69 |
| Self-Harm | 0.63\* | 0.14 |  |  |  |  | −0.02 | 0.49 |
| Eccentric perceptions | 0.62\* |  |  |  |  |  | 0.29\* | 0.53 |
| Dependency |  |  |  | 0.59\* |  |  | 0.08 | 0.64 |
| Positive temperament |  | −0.49\* |  |  |  |  | 0.64\* | 0.36 |
| Exhibitionism |  | −0.67\* | 0.50\* |  |  |  | 0.48\* | 0.40 |
| Entitlement |  |  | 0.24\* |  |  |  | 0.60\* | 0.58 |
| Detachment |  | 0.81\* |  |  |  |  | −0.15\* | 0.32 |
| Impulsivity |  |  |  |  | 0.82\* |  | −0.18\* | 0.30 |
| Propriety |  |  |  |  | −0.48\* |  | 0.45\* | 0.57 |
| Workaholism | 0.12\* |  |  |  | −0.26\* |  | 0.67\* | 0.50 |
| Disinhibition |  |  | 0.17\* |  | 0.73\* |  | −0.02 | 0.33 |

*Note*: \**p* < 0.05; 1LISREL completely standardized parameter values; 1 = Negative affect, 2 = Introversion, 3 = Agreeableness

(low), 4 = Dependency, 5 = Conscientiousness (low).

DAPPm, DAPP method factor; SNAPm, SNAP method factor.

and ∆ df = 1 for each test. The results of this set of analyses are also presented in Table 1. Based on the difference in χ2 test, low conscientiousness (*r* = 0.54) and low agreeableness (*r* = 0.51) were significantly more strongly related to the external-

izing factor than were the remaining three person- ality factors, but they did not differ significantly from one another with respect to their correlations with the externalizing factor. Next, negative affect (*r* = 0.28) was significantly more strongly corre-

Table 3: Completely standardized loadings for externalizing

Parameter loadings

EXT Unique variance1

Substance use 0.67\* 0.55

Intimate partner violence 0.28\* 0.92

Gambling 0.33\* 0.89

Risky sexual behavior 0.55\* 0.69

Antisocial behavior 0.65\* 0.58

*Note*: \*Denotes a significant path loading; 1LISREL diagonal theta delta completely standardized parameter values.

EXT, externalizing factor.

lated with the externalizing factor than was depen- dency (*r* = −0.03) or introversion (*r* = −0.08). Finally, the correlations between introversion and dependency and the externalizing factor did not differ significantly. Together, these results suggest that low conscientiousness and low agreeableness are the strongest correlates of EB, followed by negative affect, whereas introversion and depen- dency are unrelated to EB.

Finally, we conducted a multiple regression analysis in which we regressed EB on to our three hypothesized (and empirically supported) corre- lates of EB: negative affect, low agreeableness and low conscientiousness. THE three latent variables accounted for a significant proportion of the vari- ance in EB (i.e. *R*2 = 0.38, *p* < 0.01). Both low agreeableness (b = 0.35, *p* < 0.01) and low consci- entiousness (b = 0.39, *p* < 0.01) were significant unique predictors of EB. However, negative affect was not a significant, unique predictor of EB (b =

−0.03, *ns*).

**Discussion**

Previous research has successfully identified both general personality traits, as well as PDs, that relate to EB such as crime, substance use, and risky sexual activities (e.g. Hoyle et al., 2000; Krueger et al.,

2002; Miller & Lynam, 2001). The current study sought to expand this research by investigating more basic pathological personality traits in rela-

tion to EB. Specifically, we examined the SNAP and DAPP-BQ, two prominent models of patho- logical personality, in relation to a variety of EBs including IPV, GAMB, SU, ASB, and risky sexual behaviour. Understanding these relations is impor- tant because personality, ‘normal’ and ‘pathol- ogical’, appears to be intimately tied to both internalizing and externalizing disorders. In addi- tion, there is reason to believe that a model that includes higher order constructs comprised by the DAPP-BQ and SNAP may be used to reconfigure the DSM conceptualization of PD. As such, it is important to test whether these pathological traits relate to various EBs that are common to many PDs.

*Pathological personality traits and EB*

Two meta-analytic reviews have demonstrated that impulsivity related traits are consistent correlates of EB including ASB (Miller & Lynam, 2001) and risky sex (Hoyle et al., 2000). Studies using behav- ioural genetics paradigms have demonstrated that genes underlie much of the relations between impulsivity related traits such as constraint (Krueger et al., 2002) and novelty seeking (Young et al., 2000) and EB. The current findings were consistent with this previous research linking EB with traits related to impulse control; specifically, the (low) conscientiousness factor, which consisted of scales such as DAPP-BQ conduct problems and stimulus seeking and SNAP impulsivity and disin- hibition, manifested a correlation of 0.54 with the externalizing factor. The low conscientiousness factor also provided significant, unique informa- tion regarding EB. This finding, however, lacks some specificity in that it is unclear what ‘type’ of impulsivity these scales are assessing. Several authors have noted that there is substantial het- erogeneity associated with the terms ‘impulsivity’ and disinhibition, which may make it more diffi- cult to discern the true nature of the relations between these constructs and EB (Depue & Collins, 1999; Whiteside & Lynam, 2001). For example, Whiteside and Lynam factor analysed 20

personality scales believed to reflect some variant of impulsivity (e.g. Zuckerman’s (1994) SSS- Disinhibition and Sensation Seeking Scales) and found four distinct factors. These include (1) urgency, which involves engaging in impulsive behaviour while experiencing negative affect, (2) lack of premeditation which refers to a tendency to act without prior consideration of potential con- sequences, (3) lack of perseverance, which involves difficulty sustaining attention during difficult or boring tasks and (4) sensation seeking, which encompasses both openness to new and poten- tially dangerous experiences, in addition to enjoy- ment and pursuit of exciting activities.

Differentiating between these various impulsiv- ity related traits and their relations to EB may be an important step as their relations may differ depending on the nature of the impulsivity scale used. For instance, Whiteside, Lynam, Miller, and Reynolds (2005) found that individuals engaging in pathological GAMB, alcohol abuse combined with ASB, and individuals with BPD features had higher scores on the urgency, premeditation, and sensation seeking subscales than a control group. Furthermore, these individuals reported more urgency, less premeditation, and less perseverance than an alcohol abuse group without antisocial features. These findings suggest that there may be multiple types (or traits) of impulsivity associated with externalizing variables such as SU, GAMB, sexual risk taking and IPV. The idea that there are different impulsivity related traits that may have distinctly different meanings (e.g. impulsivity due to negative affect vs. impulsivity due to reward seeking) is consistent with extant behaviour genet- ics studies indicating that different types of impulsivity related traits may work via different neurotransmitters (e.g. sensation/novelty seeking— dopamine; Ebstein et al., 1996; deliberation—sero- tonin; Manuck et al., 1998). Specifically, these findings provide evidence for a genetic link between EB and impulsivity related traits that may be mediated by dopaminergic functioning (e.g. novelty seeking; Young et al., 2000) *and* traits mediated by serotonergic functioning (e.g. delib-

eration/Constraint; Krueger et al., 2002). This sug- gests the importance of determining what types of impulsivity are most closely related to various EBs. Given the important differences that exist amongst these trait constructs, further clarification is needed regarding the nature of the SNAP and DAPP-BQ scales that relate to the constructs of impulsivity and disinhibition. That is, can these scales be more specifically characterized as fitting into one of these narrower descriptions of impulsivity?

In addition to impulse-control related traits, the current study revealed the expected relation between EB and pathological personality traits that are more interpersonally focused. Low agree- ableness manifested a strong correlation with EB and provided significant, unique information regarding EB above and beyond that provided by low conscientiousness and negative affect. This is not surprising as traits related to an antagonistic interpersonal approach (e.g. callousness, opposi- tionality, immodesty, deceitfulness) have proven to be some of the strongest personality correlates of EB (e.g. Flory et al., 2002; Hoyle et al., 2000; Miller & Lynam, 2001), as well as PDs that often result in EB such as psychopathy (e.g. Miller, Lynam, Widiger, & Leukefeld, 2001) and antiso- cial, borderline, and narcissistic PDs (e.g. Saulsman

& Page, 2004). Despite these findings, the shared aetiological role of these traits in composing the latent ‘externalizing’ continuum has received less attention than the impulsivity or disinhibition factor, perhaps due to the personality models used in the previous behavioural genetics work. Neither the Tridimensional Personality Questionnaire (Cloninger, 1987) nor the MPQ (Tellegen, in press) used in the aforementioned behavioural genetics studies (e.g. Young et al., 2002; Krueger et al., 2002, respectively) explicitly measure a construct analo- gous to Agreeableness/Antagonism—a measure of one’s typical interpersonal behaviours that is found in measures of the FFM/Big Five. It is noteworthy that while these two dimensions (i.e. conscien- tiousness/constraint and antagonism) form sepa- rate dimensions when examined at the five-factor

level of personality organization, they join together at the three-factor level of organization to form a dimension entitled ‘disinhibition’ (Markon, Krueger, & Watson, 2005). The need to include both types of traits in a model of EB was noted recently by Krueger, Markon, Patrick, Benning, & Kramer (2007) who included traits related to both constraint (e.g. irresponsibility, dependability, problematic impulsivity) and antagonism (e.g. empathy, aggression, fraud, honesty, blame exter- nalization) in testing a model and assessment instrument for this externalizing spectrum.

The current results provide further support for the idea that these interpersonal traits are impor- tant, consistent correlates of the various EBs. In particular, the (low) agreeableness factor, which included scales such as DAPP-BQ callousness and conduct problems and SNAP manipulativeness and aggression, manifested a correlation of 0.51 with the externalizing factor. It is worth noting that these lower-order traits are all negatively linked to FFM agreeableness (Reynolds & Clark,

2001; Schroeder, Wormworth, & Livesley, 2002). Furthermore, it is not surprising that these traits are linked to a variety of EBs as they are consid- ered core features of a number of PDs that are strongly related to these types of behaviours such as psychopathy (e.g. Hare, 2003) or ASPD (APA,

2000).

Consistent with our hypotheses, the negative affect factor was also significantly correlated with the latent externalizing factor (*r* = 0.28). This finding is supported by previous research finding significant relations between Neuroticism and ASB (Miller & Lynam, 2001). As with low consci- entiousness and agreeableness, negative affect/ neuroticism is also a core feature of many PDs, particularly BPD (Lynam & Widiger, 2001; Saulsman & Page, 2004), that are associated with some of these outcomes such as risky sexual prac- tices (APA, 1994). The larger correlation between negative affectivity and EB found here (i.e. *r* =

0.28) vs. studies of more limited forms of EB such as ASB (mean *r* for neuroticism = 0.09; Miller & Lynam, 2001) may be due to two factors. First, the

inclusion of IPV in the EB latent factor may ‘drive’ the larger correlation with negative affectivity. For example, Holtzworth-Munroe and Stuart’s (1994) empirically supported batterer typology (Holtzworth-Munroe, Meehan, Herron, Rehman,

& Stuart, 2000) includes a ‘borderline/dysphoric’ group of batterers characterized by insecure attach- ment, emotional labiality, depressive symptoms and moderate to high levels of violence perpetra- tion. Ultimately, negative affectivity may play a substantial role in the commission of IPV and the inclusion of this behaviour in our broader EB factor may have, in part, led to a greater correlation with this set of traits. Alternatively, it is important to note that our latent negative affectivity factor also includes secondary loadings of traits such as SNAP aggression and mistrust, which may increase the amount of ‘antagonism’ present in the negative affectivity factor and thus, increase its correlation with EB. This is consistent with past work. For instance, Tellegen’s negative emotionality factor includes an aggression subscale and, as a result, one finds larger correlations with this factor and ASB (i.e. mean *r* = 0.27; Miller & Lynam, 2001) than one sees with related measures such as FFM Neuroticism (i.e. mean *r* = 0.09; Miller & Lynam,

2001), Eysenck’s Neuroticism (i.e. mean *r* = 0.09; Miller & Lynam, 2001) or Cloninger’s Harm Avoidance dimension (i.e. mean *r* = −0.03; Miller

& Lynam, 2001). Clearly the traits that are included in one’s definition of negative emotionality/affec- tivity have an important effect on its relation with variables like EB. The inclusion of these antago- nistic traits in the negative affect factor may explain why this dimension was no longer signifi- cantly related to EB when included in a model including a low agreeableness factor.

*Limitations, future directions, and conclusions*

There are a few noteworthy limitations in the current study. First, the use of a college sample likely contributed to the limited variance found in EB, particularly with regard to IPV and ASB. In addition, the reliance on self-report for all three

measures may have resulted in inflated effect sizes as a result of shared method variance. However, this limitation is mitigated by the goals of the study as we were more interested in the pattern of relations between the pathological personality traits and EB rather than the size of the relations. In addition, by modelling method factors in the set of CFAs, the impact of common method variance on the correlations between the two personality measures was removed. There is also the possibil- ity, given the self-report methodology, that partici- pants withheld information about engaging in various EBs. This methodology may be preferred in the assessment of EB, however, given that infor- mants (e.g. significant others, friends and parents) may have limited awareness and access to this information. Self-reports are often a good source for this information, especially in non-forensic samples where there are no punitive consequences to disclosing information of this type. Finally, although it might be hypothesized that pathologi- cal personality traits (e.g. disinhibition, callous- ness) predispose individuals to engage in EB, we are unable to draw conclusions with regard to the direction of the relations between personality traits and EB given the use of cross-sectional data. Despite this limitation, there is support from extant research that personality traits do predict EB across time (e.g. Grekin, Sher, & Wood,

2006).

Ultimately, the pathological traits identified as being the strongest correlates of EB mirror the lit- erature with regard to the relations between general personality traits and PDs with EB, in that traits related to poor impulse control *and* antagonistic interpersonal behaviours were found to be the strongest correlates. Also consistent with the lit- erature, negative affect manifested significant rela- tions with EB, albeit to a lesser degree. We believe that an accurate understanding of the externaliz- ing spectrum must include these types of personal- ity traits. We would argue that individuals could be ‘unconstrained’ via a number of mechanisms such as the pursuit of reward/novelty, lack of inhi- bition, or the lack of concern for interpersonal

consequences. Unless a broader definition of ‘dis- inhibition’ or ‘constraint’ is used (referencing interpersonal disconstraint as well), it appears that the perceived contribution of personality to this externalizing band of behaviours will be underestimated.

Lastly, the current study’s integrative approach to examining relations between pathological per- sonality traits and EB has important implications for the field. When examining 18 various models of personality (both normal and pathological), Widiger and Simonsen (2005) identified four broad domains that existed in nearly all of the models: emotional dysregulation vs. emotional stability, constraint vs. impulsivity, extraversion vs. intro- version and antagonism vs. compliance. They further propose that these higher order dimensions could be used as an integrative diagnostic model in the DSM-V. Given that four of the five factors (excluding dependency) identified in this study conceptually match Widiger & Simonsen’s find- ings, the current results may be particularly useful in understanding how EB relates to personality constructs that may later be used for diagnostic purposes.

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