

Validity of the DSM-IV and the Four A's Personality Disorder Clusters Among an Adult Male Prisoner Sample

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ABSTRACT

The structure of personality disorder traits among adult male prisoners is considered using confirmatory and exploratory analyses with two independent samples ($n = 280$ and 339). All completed the International Personality Disorder Examination Screening Questionnaire (IPDE-SQ). It was predicted that: 1) personality disorder traits would be represented via a multidimensional structure; 2) the DSM-IV-TR independent three-cluster structure of personality disorder would not be replicated; and 3) there would be some convergence for the Four A's published factor model of personality disorder. Evidence of clusters were found but these did not support a straightforward replication of the DSM-IV-TR cluster model or support the Four A's model. A two-cluster model with narcissistic and paranoid traits removed and a DSM-IV-TR three-factor model with correlating factors fitted the data to an acceptable level. The only good model fit though was for an adapted DSM-IV-TR three-factor model with correlating factors, where the "dramatic" cluster B was characterised by the removal of narcissistic and antisocial. The results highlight the lack of validity for the DSM-IV-TR and the Four A's published clusters, arguing for a more parsimonious cluster model for prison samples. The importance of validating personality clusters across samples is discussed and the implications highlighted.

INTRODUCTION

Personality disturbances are not uncommon in prison samples (Hart, 2001; McMurrin, 2003), making this a topic worthy of empirical enquiry (Ireland, Brown & Ballarini, 2006). Indeed, personality disorder and its associated traits are considered of particular importance within prison and psychiatric samples, where their incidence is arguably higher than in community samples. Alwin et al (2006) report, for example, that 10% of community samples would meet the criteria for personality disorder, compared to 80% for psychiatric patients and 50% to 78% for adult prisoners, in some studies. Aside from issues concerning prevalence, further areas of debated interest within this field have focused on the methods and approaches to "diagnosis," including that on the use of a dimensional versus a categorical system (Blackburn, 2007; Bernstein, Iscan & Maser, 2007), the appropriate use of diagnosis across all samples (Alwin et al, 2006), the validity of the DSM-IV criteria for personality disorder (Livesley, 1995), and the problems in applying DSM-IV criteria to forensic samples in the absence of well conducted field studies with this population

(e.g., Hare, 1996). An area that has received limited attention within prisoner samples has been the actual structure of personality disorder traits, most notably with regard to the DSM-IV-TR (APA, 2000) three-cluster model where the full range of personality disorders are grouped into: Cluster A "odd-eccentric"; Cluster B "dramatic"; and Cluster C "anxious" – with DSM-IV suggesting that this cluster system has potential for offering a dimensional re-conceptualisation of the Axis II disorders (APA, 1994).

These clusters have been applied to research exploring a range of variables such as violence and co-morbidity among prisoners, with conclusions drawn, but this has been based on an assumption that the three-cluster model outlined in

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DSM-IV-TR, a) correctly represents how the disorders cluster together, and b) has reliability and validity across samples. The three-factor structure, however, was a result of a themed and theoretical analysis and not a product of careful statistical enquiry using exploratory and confirmatory models, with its validity and reliability across samples not routinely tested (Ireland et al, 2006) and even questioned by the original authors (APA, 1994). This issue has been explored within non-forensic psychiatric and clinical samples (e.g., Yang et al, 2002; Fossati et al, 2006), general samples (e.g., Moldin, Rice, Erlenmeyer-Kimling & Squires-Wheeler, 1994) and among student samples (Chabrol et al, 2007), although the focus in a number of papers has been on the DSM-III or DSM-III-R classification as opposed to DSM-IV. Only a single study to date has explored the validity of these clusters with a prison sample (Ireland et al, 2006).

Research conducted in non-forensic samples, has questioned the validity of the DSM-IV clusters, indicating that examinations of the three-cluster conceptualizations has produced mixed results, with some studies reporting support for the DSM-IV three-cluster model (e.g., Bagby et al, 1993), some reporting three factors but not comprised of the same personality disorders (Moldin et al, 1994), some reporting five factors (Nestadt et al, 1994), and some preferring a four-factor structure (Chabrol et al, 2007; Mulder & Joyce, 1997). Indeed, the four-factor structure has been supported by a number of studies, and has been referred to as the Four A's (i.e., 'Antisocial' - antisocial, borderline, histrionic and narcissistic; 'Asocial' - schizoid; 'Asthenic' - avoidant and dependent and; 'Anankastic' - obsessive-compulsive; Mulder & Joyce, 1997; Austin & Deary, 2000). Further research exploring the existence of the DSM-IV three-factor model has questioned its applicability if self-report measures are employed, finding more evidence of convergence with clinician rated diagnoses, but only if the factors were allowed to correlate (e.g., Yang et al, 2002).

In a study examining adult male prisoners, the structure of personality disorder traits was not found to correspond to the DSM-IV-TR model, with some convergence with the Four A's model (Ireland et al, 2006). In this study, three factors were extracted using the International Personality Disorder Examination Screening Questionnaire. Factor 1 (termed 'Asocial') and Factor 2 (termed 'Antisocial') corresponded broadly to the Antisocial and Asocial factors referred to as part of the Four A's model, with the third factor termed 'Anxious-Dramatic' appearing to be a combination of the DSM-IV-TR Cluster B ('dramatic') and Cluster C ('anxious'), further corresponding in part to the Asthenic and Anankastic factors of the Four A's (Mulder & Joyce, 1997). This study overall suggested some validity for the Asocial and Antisocial factors described as part of the Four A's (Mulder & Joyce, 1997), as opposed to the DSM-IV-TR cluster structure.

The current study aimed to explore the structure of personality disorder traits using two adult male prisoner samples, and to advance the research field by examining both the existence of factors and the nature of how these are represented. The study employed two independent samples, with the first used to attempt to explore and confirm published structures of personality disorder traits, and the second to confirm a revised structure. All participants completed the International Personality Disorder Examination Screening Questionnaire (IPDE-SQ). There were three predictions, as follows: 1) in keeping with previous research indicating clusters across personality disorders and their traits (e.g., Mulder & Joyce, 1997; Ireland et al, 2006; Austin & Deary, 2000), it is predicted that the IPDE-SQ would be represented best by a multidimensional (i.e., clustered) than a one-dimensional solution; 2) the DSM-IV-TR three-cluster structure would not be replicated with the current sample, accounting for previous research with non-forensic (e.g., Mulder & Joyce, 1997; Nestadt et al, 1994) and forensic samples (Ireland et al, 2006) which has questioned the reliability of these clusters; and 3) that the Four A's cluster model of Mulder & Joyce (1997) would fit the data to a greater extent than the DSM-IV-TR model, based on previous research with prisoners (Ireland et al, 2006).

METHOD

Two independent samples were employed as follows:

- *Study 1:* Participants were taken from two adult male prisons, both of which were medium-to-high security establishments. A total of 371 prisoners were provided with questionnaires of which 280 were returned fully completed, producing a 75% response rate. [AUTHORS' NOTE: It was not possible to collect information on the 25% who declined; no information was obtained due to ethical constraints which requested total anonymity.] The mean age of the sample was 33 years (SD = 10.4). Eighty-eight percent were of White ethnic origin, 4% Asian, 4% Black British, 3% Mixed, and 1% "other." The average sentence length was 46.0 months (SD 42.9) and the average total length of time served in penal institutions throughout their lives 48.9 months (SD 48.2). Thirty-six percent were serving for violent offenses, 20% for acquisitive offences, 20% for other indictable offenses, 15% for drug possession/sale offenses, and 9% for sex offenses.
- *Study 2:* Participants were taken from two adult male prisons, again, two medium-to-high risk establishments. A total of 413 prisoners were provided with questionnaires of which 339 were returned fully completed, pro-

ducing an 82% response rate. The mean age of the sample was 30 years (SD = 9.1). Eighty-four percent were of White ethnic origin, 6% Asian, 6% Black British, 3% Mixed, and 1% "other." The average sentence length was 39.2 months (SD 26.4) and the average total length of time served in penal institutions, throughout their lives 59.5 months (SD 58.9). Forty-two percent were serving for violent offenses, 30% for acquisitive offenses, 10% for other indictable offences, 16% for drug possession/sale offenses, and 2% for sex offences.

Measures

All completed the International Personality Disorder Examination Screening Questionnaire (IPDE-SQ; Loranger, Janca, Sartorius, 1997). The IPDE-SQ is as a 77-item self-report screening measure with the purpose of detecting maladaptive personality traits evidenced over the last five years. It is used to screen for all 10 DSM-IV-defined personality disorders. Participants were asked to answer either true or false to each item (12 items reversed). Examples of items included, "I discover hidden threats in what some people tell me," and "I daydream about being famous." Internal consistency reliability statistics for the IPDE-SQ for prison samples has ranged from reduced to

good, although this is a likely function of its dichotomous nature and small number of items, which limits reliability methods to a use of Kuder-Richardson-20. In Ireland et al (2006), Kuder-Richardson averaged at .55, with compulsive producing the lowest (.40) and anti-social the highest (.75). The current study will examine this more thoroughly, and appropriately, as part of the confirmatory models.

Procedure

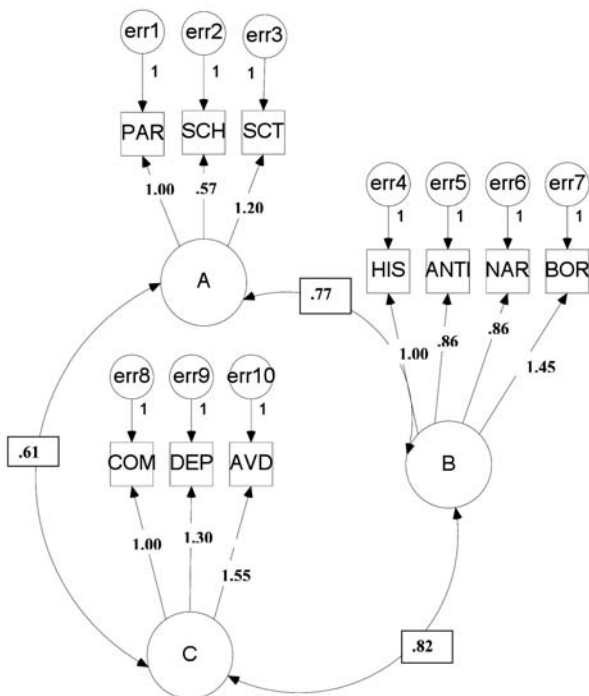
Ethical approval for the study was obtained from the University Ethics Committee and from each prison. All questionnaires were administered during a lunchtime period when prisoners were in their cells on their own. They were given to each prisoner personally. There were no differences in the sampling methods utilized across establishments. All participants were informed of the nature, purpose and anonymity of the study. Analysis was conducted using SPSS.

RESULTS

Initially the structure of the IPDE-SQ was examined with regard to its unidimensional structure, followed by an attempt to confirm the published three factor personality disorder

FIGURE 1

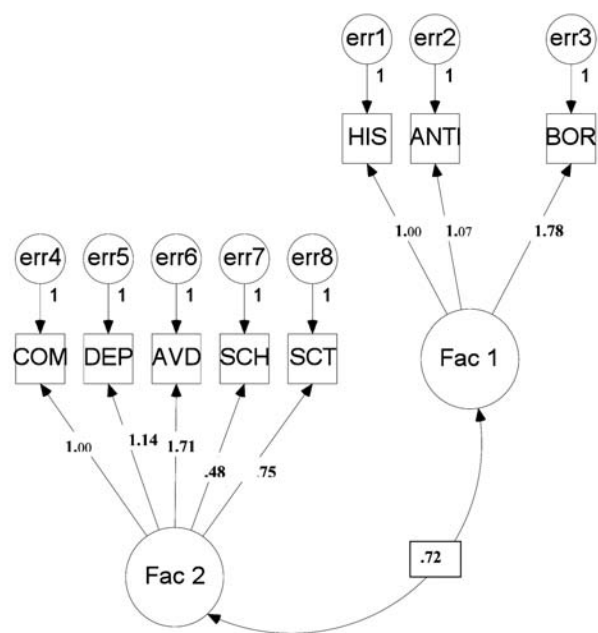
Confirming the DSM-IV-TR three-factor personality structure using the IPDE-SQ with an adult male prisoner sample (n = 280). RMSEA = .07; GFI = .94. Regression estimates are illustrated*.



*A: 'odd-eccentric' cluster; B: 'dramatic' cluster; C: 'anxious' cluster.

FIGURE 2

Confirming the revised two-factor personality structure using the IPDE-SQ with an adult male prisoner sample (n = 339). RMSEA = .08; GFI = .96. Regression estimates are illustrated.



structure according to DSM-IV-TR and also the Four A's structure (Mulder & Joyce, 1997). Following this are exploratory and confirmatory stages examining a proposed revised factor structure for the IPDE-SQ. All confirmation models were recursive, identified and standardized with variances set to 1.00 and employing Maximum Likelihood estimation.

STEP 1: Overall Structure of the IPDE-SQ. Is It unidimensional? The unidimensional nature of the data was explored with the Study 1 sample (n = 280). Although the GFI was over .90, the RMSEA was above .08 and the χ^2/df ratio higher than 2.00 ($X^2 = 3.43$), suggesting a less than adequate model fit (Hu, Bentler, 1999) ($\chi^2 (35) = 120.3 [P = .00]$; RMSEA = .09 [.07 to .11]; GFI = .92; ECVI = .57 [.47 to .71]). This indicated a multidimensional structure to the data. The nature of this structure was thus explored, first with regards to the three cluster structure indicated by DSM-IV-TR, and then by the suggested Four A's model structure.

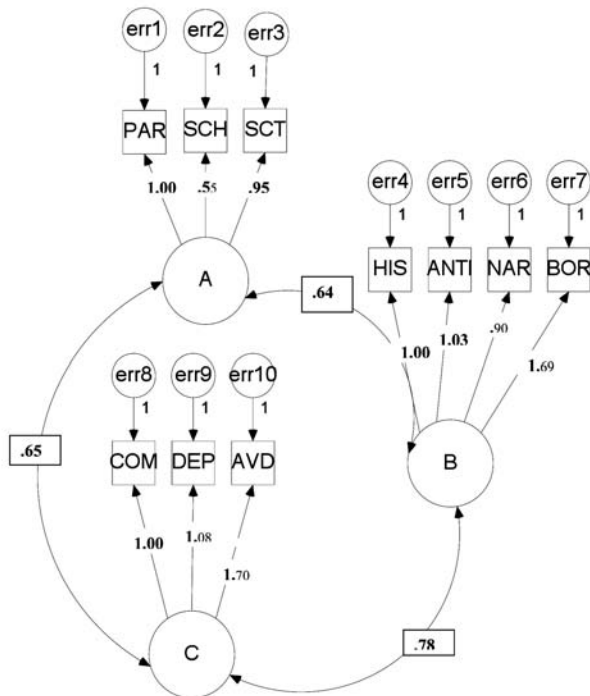
STEP 2: Confirming the DSM-IV or Four A's Multidimensional Structure of Personality Disorder Traits. Following demonstration of a non-unidimensional structure, the next step was to attempt to confirm the structure proposed by DSM-IV-TR for

maladaptive personality (Axis II), namely [A] 'odd-eccentric' (paranoid, schizoid and schizotypal); [B] 'dramatic' (antisocial, borderline, histrionic and narcissistic); and [C] 'anxious' (obsessive-compulsive, avoidant and dependent). Confirmation was attempted using the Study 1 sample, commencing with an uncorrelated model. The model fitted the data poorly ($\chi^2 (35) = 335.8 [P = .00]$; χ^2/df ratio = 9.59; RMSEA = .18 [.16 to .19]; GFI = .81; ECVI = .135 [1.15 to 1.57]). Correlating the factors greatly improved model fit, bringing it to an acceptable level with regards to RMSEA and GFI ($\chi^2 (32) = 85.2 [P = .00]$; RMSEA = .07 [.06 to .09]; GFI = .94; ECVI = .47 [.39 to .58]), with the χ^2/df ratio = 2.66, suggesting an acceptable fit. A model with correlated factors was clearly greatly improving model fit. The model is presented in Figure 1.

The Four A's cluster model was also examined with the data; *Antisocial* - antisocial, borderline, histrionic and narcissistic; *Asocial* - schizoid; *Asthenic* - avoidant and dependent; and *Anankastic* - obsessive-compulsive (Mulder, Joyce, 1997; Austin, Deary, 2000). Confirmation was attempted using the Study 1 sample. The model fitted the data poorly (RMSEA = .27 [.25 to .29]; GFI = .52; ECVI = .25 [.25 to .26]), with correlation of factors failing to improve model fit (RMSEA = .28 [.26 to .30]; GFI = .52; ECVI = .26 [.25 to .26]).

FIGURE 3

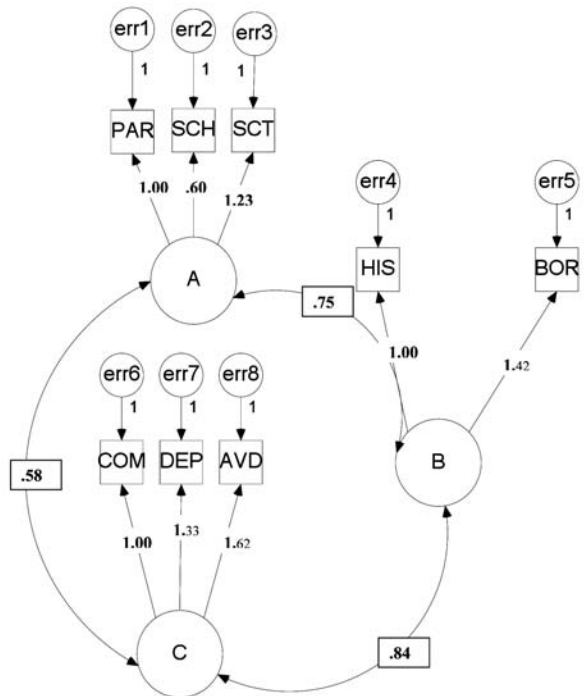
Confirming the three-factor DSM-IV-TR structure using the IPDE-SQ with Study 2 (adult male prisoners, n = 339). RMSEA = .07; GFI = .94. Regression estimates are illustrated*.



*A: 'odd-eccentric' cluster; B: 'dramatic' cluster; C: 'anxious' cluster.

FIGURE 4

Confirming the adapted DSM-IV-TR three-factor personality structure using the IPDE-SQ with Study 2 (adult male prisoners, n = 339). RMSEA = .04; GFI = .98. Regression estimates are illustrated*.



*A: 'odd-eccentric' cluster; B: 'dramatic' cluster; C: 'anxious' cluster.

STEP 3: Exploring the Factor Structure of the Personality Disorder Traits. Following demonstration of a multidimensional structure for the IPDE-SQ but difficulties in producing a model with good fit to the data when applied to pre-existing clusters (i.e., DSM-IV-TR and the Four A's model), the next step focused on exploring the structure of personality disorder traits. This was completed using Study 1. In order to more strictly identify the number of factors evident, Parallel Analysis (PA), was employed since this is recommended as the best method to assess the true number of factors (Velicer, Eaton & Fava, 2000; Lance, Butts & Michels, 2006). This indicated two factors and was also confirmed via a scree plot. The factor analysis therefore proceeded, restricting analysis to two factors using Principle Components Analysis with Varimax Rotation. Results are indicated in Table 1. A cut-off of .40 is used to display all factor loadings. The model produced explained 52% of the variance. Factor 1 explained 27.3% of the variance and appeared to correspond largely to the original DSM-IV-TR 'dramatic' cluster; with Factor 2 explaining 25.2% of the variance and best described as a mixture of the 'avoidant-odd-eccentric' clusters (A and C of DSM-IV-TR).

STEP 4: Confirming This Revised Structure on an Independent Sample. The next stage was to attempt to confirm this two-factor structure with an independent sample, specifically Study 2, comprising of 339 adult male prisoners. The first model indicated a very poor fit to the data ($\chi^2 (35) = 311.5$ [$p = .001$]; χ^2/df ratio = 8.9; RMSEA = .15 [.13 to .16]; GFI = .86; ECVI = 1.04 [.88 to 1.22]). When factors were allowed to correlate there was an improved fit but not a good fit when accounting for RMSEA and the χ^2/df ratio ($\chi^2 (34) = 160.8$ [$p = .001$]; χ^2/df

ratio = 4.73; RMSEA = .10 [.08 to .12]; GFI = .91; ECVI = .60 [.49 to .72]). The model was then recalculated, removing the two factors which had cross-loaded on both factors, namely narcissistic and paranoid (see Table 1), with covariances retained. Their removal greatly improved model fit, bringing this to an acceptable level with regards to RMSEA and GFI ($\chi^2 (19) = 61.6$ [$p = .001$]; χ^2/df ratio = 3.24; RMSEA = .08 [.05 to .10]; GFI = .96; ECVI = .28 [.22 to .37]).

To assess whether the original DSM-IV-TR three-factor solution produced a better fit with this independent sample, a further confirmatory factor analysis was conducted. The model fit was not good with the RMSEA close to .10, and the χ^2/df ratio well above 2.00 ($\chi^2 (32) = 125.5$ [$p = .001$]; χ^2/df ratio = 3.92; RMSEA = .09 [.07 to .11]; GFI = .93; ECVI = .51 [.42 to .62]). However, the model fit was greatly improved by allowing factors to correlate, bringing it to an acceptable level ($\chi^2 (32) = 85.2$ [$p = .001$]; χ^2/df ratio = 2.66 RMSEA = .07 [.05 to .10]; GFI = .94; ECVI = .47 [.38 to .58])

STEP 5: Identifying the Best Fitting Model. Thus, there appeared two "best" fitting models, a three- and adapted two-factor model with factors that were not independent of one another (i.e., were allowed to correlate – the models are illustrated in Figures 2 and 3). However, due to the failure to find a model which fitted the data well, it was explored if the three-factor DSM-IV-TR model could be improved further by the removal of the factors with elevated Modification Indexes (MIs). Elevated MIs were noted for narcissistic (10.98) and antisocial (7.68) indicating that their presence was not assisting with producing a cohesive factor. Removal of these factors greatly improved model fit, indicating a very good fit to the data ($\chi^2 (17) = 24.7$ [$p = .10$];

TABLE 1 | Exploratory factor structure of the IPDE-SQ using adult male prisoners (n = 280)

IPDE-SQ personality disorder	Factor 1 27.3% variance Loading	Factor 2 25.2% variance Loading	Original DSM-IV-TR cluster	Original Four A's cluster
Antisocial	.84	-	B/DRAMATIC	ANTISOCIAL
Borderline	.77	-	B/DRAMATIC	ANTISOCIAL
Histrionic	.68	-	B/DRAMATIC	ANTISOCIAL
Paranoid*	.50	-	A/ODD-ECCENTRIC	-
Narcissistic*	.46	-	B/DRAMATIC	ANTISOCIAL
Schizoid	-	.73	A/ODD-ECCENTRIC	-
Compulsive	-	.63	C/ANXIOUS	ANANKASTIC
Avoidant	-	.61	C/ANXIOUS	ASTHENIC
Schizotypal	-	.60	A/ODD-ECCENTRIC	ASOCIAL
Dependent	-	.52	C/ANXIOUS	ASTHENIC

*NB: These factors loaded above .40 onto Factor 2 also although the higher loading was on Factor 1.

χ^2/df ratio = 1.45; RMSEA = .04 [.001 to .07]; GFI = .98; ECVI = .47 [.38 to .58]). The model is shown in Figure 4. When the model confirmed with the previous sample (Study 1) it also produced a good fit to the data ($\chi^2(17) = 38.9$ [$p = .002$]; χ^2/df ratio = 2.28; RMSEA = .06 [.04 to .08]; GFI = .97; ECVI = .23 [.19 to .29]). There was no attempt made to improve the model fit for the Four A's model owing to its overall very poor fit, even with covariances added (i.e., RMSEA = .25 and .26).

DISCUSSION

The current study supported the existence of clusters within personality disorder trait structures, and in doing so supported the prediction made that clusters would be evident. This was consistent with previous research indicating personality disorder and its traits are best represented via a number of factors (e.g., Austin & Dreary, 2000; Mulder & Joyce, 1997). Neither the DSM-IV-TR three-factor structure nor the Four A's factor structure were replicated. This supported the prediction that there would not be a straightforward application of the three-factor structure to a prison sample (Ireland et al, 2006), but did not support the prediction that the Four A's model would fit prisoner data better than the DSM-IV-TR clusters. This latter finding is inconsistent with previous research that has reported more convergence in prisoner samples for the Four A's than the DSM-IV-TR model (Ireland et al, 2006). The results highlight the difficulties in attempting to apply a factor model derived originally for non-forensic samples, to a prisoner sample.

Indeed, what the current study suggests is value in the DSM-IV-TR three-cluster model *only* if the three clusters were not independent of one another, with the best model one which removed two of the original "dramatic" cluster traits – antisocial and narcissistic. This finding is particularly interesting in that it suggests that antisocial and narcissistic do not adequately fit the dramatic cluster. This is a suggestion that has been made by previous researchers who have asserted that these two sets of traits are not well represented conceptually by the dramatic cluster (Widiger & Costa, 1994). The separation of narcissistic and antisocial from the "dramatic" cluster has also been found in adolescent samples (Durrett & Westen, 2005). The current study appears to lend support for their removal from Cluster B (dramatic).

The current study also proposed a two-factor model which also indicated the removal of traits – namely narcissistic and paranoid - with Factor 1 of this model closely resembling the original cluster B (Dramatic) of DSM-IV and the "Antisocial" cluster of the Four A's (Austin & Dreary, 2000; Mulder & Joyce, 1997), and Factor 2 representing a combination of DSM-IV-TR cluster A (odd-eccentric) and C (anxious) and the Four A's Anankastic, Asthenic and Asocial "clusters." Taken collectively, what the results suggest here is more evidence supportive of the

use of the DSM-IV-TR three-cluster model if this is adapted to allow clusters to correlate and if groups of traits are removed. The adapted three-cluster model (Figure 4) was by far fitting the data better than the other suggested models, fitting across two samples. This suggests a revision of the three-factor cluster structure and the development of a more parsimonious model with forensic samples. The finding that the model fitted best if factors were allowed to correlate is consistent with research exploring general psychiatric samples (e.g., Yang et al, 2002), and indicated the lack of independence across clusters.

The current results highlight the importance of exploring personality structures as opposed to simply assuming their validity. The futility of assuming that published structures will apply to all samples, including forensic samples, is highlighted (e.g., Ireland & Archer, 2008). Assumption of replication without considered testing can lead to clinical decisions being made on what is in fact poorly fitting data. Further significant implications of the current study are also indicated. For example, the current DSM-IV three-cluster model has been used to examine issues of co-morbidity across Axis I and Axis II disorders (see Livesley, 2001), with the current study now questioning the validity of such research and the conclusions that can be drawn from this. Furthermore, questions can be raised on the use of personality measures in prison settings, where the constraints of the environment may serve to either under or over emphasise potentially problematic traits. Thus although the current study focuses on the problems in applying personality cluster models to prisoners, it actually begins to question the whole concept of personality measurement with such populations. How, for example, can we be sure that what has been measured is stable personality as opposed to more transient, environmentally-induced, changes? Indeed, the damaging impact of incarceration on health and presentation is well argued (e.g., Dorpat, 2007; Neiland et al, 2001). Deterioration models, for example, posit that long-term incarceration causes deterioration of a prisoner's personality, emotional and mental wellbeing (e.g., John Howard Society, 1999). Although challenged by some (e.g., Zamble & Porporino, 1988), there does appear evidence for at least a transient change in prisoner functioning (John Howard Society, 1999), further questioning the validity of making a non-transient DSM-IV diagnosis (such as personality) within such a context. Furthermore, the field trials for DSM-IV in relation to Anti-Social Personality Disorder-produced criteria which have been heavily criticized for their ambiguity and inadequate specificity of the diagnostic criteria in prison settings (Hare, 1996), with the remaining field trials failing to include incarcerated populations. For this latter reason, a failure for convergent validity in the current study is thus perhaps unsurprising. Indeed, overall, there have been recurrent concerns noted about the validity of the DSM-IV criteria for per-

sonality disorder (see Livesley, 1995); with the current study suggesting that this applies equally to incarcerated populations.

There are also further questions which personality researchers should perhaps be raising, namely why are we focusing on maladaptive personality and not neutral or adaptive personality? What, for example, are the positive and adaptive traits of our forensic populations and why do we not routinely measure them? This would certainly be of great assistance when exploring therapeutic approaches and focusing on raising an individual's reliance on adaptive as opposed to maladaptive traits. There is, however, an absence of adaptive personality measures, with a focus on personality as a construct closely aligned with negative pathology. This is undoubtedly influenced by medical models (i.e., DSM) that focus on the concept of "illness" as opposed to "well-ness." Thus, a recommendation would be to use assessments of personality with caution in forensic settings, acknowledging the caveats, and seeking to combine them with assessments of neutral and adaptive personality so that assessments are well-balanced and likely to assist treatment recommendations in the future.

The current study is not, however, without its limitations. It was based on prisoner self-report and thus the extent to which this is consistent with the perception of others and/or collateral information remains unclear. Indeed, the lack of convergence with the DSM-IV-TR three-factor model could be a result of the self-report method used, with clinician's ratings known to produce clusters closer to DSM-IV-TR (e.g., Yang et al, 2002). Finally, the IPDE-SQ, although a potentially useful measure to screen for maladaptive personality, is not without its criticisms. This has included its arbitrary use of cut-offs, and its questioned use by some as a clinical tool (e.g., Rogers, 2001). However, the IPDE-SQ has been utilised in an increasing number of studies over recent years, including prison samples (e.g., Ireland et al, 2006), where the ease of administration allows for large samples to be collected which then allow confirmatory analyses to be conducted. The current study also applied the IPDE-SQ as a continuous and not categorical measure, thus avoiding problems of arbitrary cut-offs. It was also *not* being used in the current study to diagnose disorder. Rather it was being used to explore the structure of the maladaptive traits that it purports to assess. Thus, if anything, the current study forms part of a developing literature exploring the validity and reliability of this measure.

What is clear from the current study is the absence of support for *empirically* derived clusters that have been developed on non-forensic samples (i.e., the Four A's), and for the *theoretically* derived DSM-IV three-cluster system. The latter is illustrated aptly by the finding that only models which allowed for correlations between factors were improved. This lack of independence across the clusters queries the validity of the theoretical structure suggested in DSM and highlights the need to develop more

exploratory models. The current study has also illustrated how queries concerning the validity of the three-factor model extend beyond general and psychiatric samples to prison samples, lending more support to the difficulties with such models. In fact, the implications of the current research are potentially significant since they question the entire utility of currently available measures of personality for prisoner populations. The current study has essentially attempted to "fit" prisoner personality into existing factor models and noted considerable difficulty; both with regard to individual personality factors and also in trying to determine the distinct nature of clusters. Indeed, the study suggests value in the development of personality measures which capture more fully a prisoner population as opposed to simply trying to "fit" existing measures. This raises a number of additional research questions such as the true validity of personality measures to prisoners, not just the IPDE-SQ; determining if the current findings translate to clinician-rated methods of measurement; exploring the differences in personality structure between women and adolescent prisoners; exploring adaptive as well as maladaptive measures of personality; and exploring the extent to which personality is influenced by the effects of the prison environment, and thus its' stability. There does, however, need to be more acceptance of the possibility that a cluster model will not have validity across all samples. Rather, focus should be on the heterogeneity of personality clusters across samples as opposed to attempts to seek a generic homogeneous model.

DECLARATION OF CONFLICTING INTERESTS

The authors declared no conflicts of interest with respect to the authorship and/or publication of this manuscript.

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