

Personality Disorders as Extreme Variants of Common Personality Dimensions: Can the Five-Factor Model Adequately Represent Psychopathy?

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ABSTRACT The present study examined Widiger and Lynam's (1998) hypothesis that psychopathy can be represented using the Five-Factor Model (FFM) of personality. Participants in the study consisted of 481 21–22-year-old men and women who are part of an ongoing longitudinal study. Psychopathy was assessed by the degree of similarity between an individual's NEO-PI-R and an expert-generated FFM psychopathy prototype. The expert-based prototype supported the account of Widiger and Lynam (1998), as did the correlations between the NEO-PI-R Psychopathy Resemblance Index (PRI) and the individual personality dimensions. The PRI was also related in predicted ways to measures of antisocial behavior, drug use, and psychopathology. The results support the contention that psychopathy can be understood as an extreme variant

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of common dimensions of personality, and underscore the utility of a dimensional model of personality disorders.

Psychopathy, as described by Cleckley (1941/1988), is characterized by traits such as manipulativeness, superficial charm, lack of remorse, egocentricity, exploitation, deceitfulness, irresponsibility, arrogance, and shallow affect. Although psychopathy has not been officially recognized as a personality disorder in the last three editions of the American Psychiatric Association's *Diagnostic and Statistical Manual (DSM-III, DSM-III-R, DSM-IV; APA, 1980, 1987, 1994, respectively)*, it has a long history in clinical psychology and psychiatry and "is perhaps the most reliable and well-validated diagnostic category in the field of personality disorders" (Harpur, Hart, & Hare, 1994, p. 169). Correlates of psychopathy include prolific, versatile, and violent offending, frequent and violent recidivism, substance use disorders, and deficits in a variety of laboratory measures of hypothesized pathologies of the disorder. Psychopathic offenders commit more types of crimes, as well as more crimes of any type, than the average criminal offender (Hare, McPherson, & Forth, 1988); this is especially true for violent crimes (Kosson, Smith & Newman, 1990). Psychopathic offenders are more likely to recidivate when released from prison (Hart, Kropp & Hare, 1988), and benefit less from psychiatric treatment than nonpsychopathic offenders (Ogloff, Wong, & Greenwood, 1990). In a recent meta-analysis, Salekin, Rogers, and Sewell (1996) found substantial effect sizes in studies utilizing the Hare Psychopathy Checklist-Revised (PCL-R; Hare, 1991) to predict violent ($mdn d = .79$) and general recidivism ($mdn d = .55$). Psychopathic individuals also use substances at high rates; several studies have found elevated rates of alcohol and drug use, abuse, and dependence among psychopathic offenders (Hemphill, Hart, & Hare, 1994; Smith & Newman, 1990). Finally, psychopathic offenders have been found to show deficient passive-avoidance learning (Lykken, 1995), electrodermal hyporeactivity (Fowles, 1993), poor response modulation (Newman, 1987), and deficient defensive emotional response (Patrick, 1994).

It should be noted that the conception of psychopathy is distinct from, but related to, the more behaviorally based description of Antisocial Personality Disorder (APD) in the *DSM-IV* (APA, 1994) which consists of "a pervasive pattern of disregard for and violation of the rights of others." APD is based almost solely on behavioral descriptors and is almost synonymous with persistent criminal offending;

in fact, from 50% to 85% of convicted felons are eligible for diagnoses of APD (Hare, 1985). The PCL-R (Hare, 1991) which is the best current operationalization of psychopathy (Lilienfeld, 1998) includes inferences about personality traits (e.g., pathological lying, lack of remorse, lack of empathy, impulsivity, and irresponsibility), as well as assessment of antisocial behaviors (e.g., early behavior problems and criminal versatility). Empirically, the relation between psychopathy and APD is asymmetric; about 90% of psychopathic offenders meet APD criteria, but only about 25% of those diagnosed as APD meet the PCL-R criteria for psychopathy (Hare, 1985).

Widiger and Lynam (1998) have recently argued that psychopathy can be understood from the perspective of the Five-Factor Model of personality (FFM; McCrae & Costa, 1990). Working from descriptions of constructs from the PCL-R (Hare, 1991), Widiger and Lynam (1998) translated psychopathy into the language of the FFM on an item-by-item basis (see also Lynam, *in press*). For example, a grandiose sense of self-worth (PCL-R item 2) was translated into low Modesty (a facet of Agreeableness); a callous lack of empathy (PCL-R item 8) into low Tender-Mindedness (a facet of Agreeableness); and poor behavioral controls (PCL-R item 10) into high Angry Hostility (a facet of Neuroticism), low Compliance (a facet of Agreeableness), and low Deliberation (a facet of Conscientiousness). A full translation is provided in Table 1. In the end, the 20 items of the PCL-R were translated into 16 facets of the FFM. The final FFM profile of psychopathy included facets from the domains of low Agreeableness (low Altruism, low Straightforwardness, low Compliance, low Modesty, and low Tender-Mindedness), low Conscientiousness (primarily low Dutifulness, low Self-Discipline, and low Deliberation), low (low Self-Conscientiousness) and high Neuroticism (Angry Hostility and Impulsiveness), and low (low Positive Emotions, low Warmth) and high Extraversion (high Excitement Seeking). The facets of Agreeableness and Conscientiousness noted above were the most well-represented FFM facets on the PCL-R, appearing in at least six different PCL-R items.

Widiger and Lynam (1998) and Lynam (*in press*) also argued that the FFM account of psychopathy may resolve several issues in the field, including the two-factor structure of the PCL-R, the litany of psychopathic deficits, and the comorbidity of psychopathy with other personality disorders. Although the interpretation of the factors has been somewhat unclear, several factor analyses of the PCL-R and its predecessor have

Table 1
FFM Translation of the Hare Psychopathy Checklist-Revised (1991)^a

PCL-R item	FFM Facets
1. Glibness/superficial charm	low Self-Consciousness
2. Grandiose sense of self-worth	low Modesty
3. Need for stimulation	high Excitement-Seeking, low Self-Discipline
4. Pathological lying	low Straightforwardness
5. Conning/manipulative	low Straightforwardness, low Altruism, low Tender-Mindedness
6. Lack of remorse or guilt	low Tender-Mindedness
7. Shallow affect	low Warmth, low Positive Emotionality, low Altruism, low Tender-Mindedness
8. Callous/lack of empathy	low Tender-Mindedness
9. Parasitic lifestyle	low Straightforwardness, low Altruism, low Modesty, low Tender-Mindedness, low Achievement Striving, low Self-Discipline
10. Poor behavioral controls	high Angry Hostility, low Compliance, low Deliberation
11. Promiscuous sexual behavior	low Straightforwardness, low Altruism, low Compliance, low Modesty, low Tender-Mindedness, low Dutifulness, low Self-Discipline, low Deliberation
12. Early behavior problems	low Straightforwardness, low Altruism, low Compliance, low Modesty, low Tender-Mindedness, low Dutifulness, low Self-Discipline, low Deliberation
13. Lack of realistic, long-term goals	low Achievement Striving, low Self-Discipline
14. Impulsivity	high Impulsiveness, low Deliberation
15. Irresponsibility	low Competence, low Dutifulness
16. Failure to accept responsibility	low Straightforwardness, low Tender-Mindedness, low Dutifulness
17. Many short marital relationships	low Dutifulness
18. Juvenile delinquency	low Straightforwardness, low Altruism, low Compliance, low Modesty, low Tender-Mindedness, low Dutifulness, low Self-Discipline, low Deliberation
19. Revocation of conditional release	low Straightforwardness, low Altruism, low Compliance, low Modesty, low Tender-Mindedness, low Competence, low Dutifulness, low Self-Discipline, low Deliberation
20. Criminal versatility	low Straightforwardness, low Altruism, low Compliance, low Modesty, low Tender-Mindedness, low Dutifulness, low Self-Discipline, low Deliberation

^aBased on Widiger and Lynam (1998).

identified a two-factor solution (Harpur, Hakstian, & Hare, 1988; Harpur, Hare, & Hakstian, 1989). One interpretation is that the two factors are method factors with Factor 1 items scored on the basis of clinical judgment and inference from interview impressions, and Factor 2 items scored on the basis of file information (Harpur et al., 1988). A second interpretation is that the first factor represents the “a constellation of interpersonal and affective traits commonly considered to be fundamental to the construct of psychopathy,” whereas the second reflects a “chronically unstable, antisocial, and socially deviant lifestyle” (Hare, 1991, p. 38). Although the latter interpretation is more substantive, it has several shortcomings. First, it raises, but leaves unanswered, the question of what psychopathy is. Is the individual with high scores on the first factor but low scores on the second a psychopath (Lilienfeld, 1994)? Second, the personality/behavior dichotomy into which this interpretation frequently slips is simplistic, overlooking the fact that Factor 2 explicitly includes personality dimensions such as impulsivity, irresponsibility, and sensation seeking (Rogers & Bagby, 1994). Widiger and Lynam (1998) suggest that clarity is provided by the FFM interpretation. When the PCL-R factor structure is examined according to the FFM re-interpretation, a distinction between factors emerges. “Factor 1 appears to be confined largely to facets of (low) Agreeableness (with a minimal representation of Neuroticism and Extraversion), and Factor 2 is predominated by the items that are a mixture of low Conscientiousness and Agreeableness” (Widiger & Lynam, 1998, p. 181). Additionally, the factors are correlated (typically about .50; Hare, 1991) because both factors include facets of antagonism.

Much of the effort in psychopathy research has been directed at identifying a specific pathology that is unique to persons with psychopathy. This effort, however, has identified a litany of diverse candidates rather than a single psychopathic deficit. The FFM conceptualization of psychopathy posits that the litany of deficits is due to the fact that different investigators are examining different domains of the FFM.

Finally, the FFM conceptualization provides an understanding of the relations between psychopathy and other personality disorders. Psychopathy covaries with other disorders to the extent that they share FFM elements. For example, psychopathy is highly positively correlated with antisocial personality disorder (APD) and strongly negatively correlated with dependent personality disorder (DPD; Hare, 1991). From an FFM perspective (Trull, 1992; Widiger & Trull, 1992), APD consists of slightly elevated scores on Neuroticism and low scores on Conscientiousness and

Agreeableness; the positive correlation with psychopathy is driven by the shared aspects of low Agreeableness and low Conscientiousness, but this correlation is somewhat attenuated by the divergence of Neuroticism across the two disorders. In contrast, DPD is comprised of very high scores on Neuroticism and Agreeableness, and slightly low scores on Conscientiousness; the divergence in relation to Agreeableness and Neuroticism for DPD and psychopathy accounts for the negative relation between the two disorders.

Despite the potential of the FFM account, little evidence is available with which to evaluate it. The few studies on the relation of psychopathy to the FFM are supportive, but not without their problems. Harpur et al. (1994) obtained FFM and psychopathy data from 47 college students and 28 prison inmates. They confirmed the expected relations of psychopathy with low Agreeableness and low Conscientiousness but were limited in their ability to study the facets within the broader domains. In another study, Hart and Hare (1994) had students score videotaped administrations of the PCL-R (Hare, 1991) to 12 prison inmates and 12 undergraduate students on the Interpersonal Adjective Scales–Big Five (Trapnell & Wiggins, 1990). They found negative correlations of psychopathy with Neuroticism and Conscientiousness, along with predicted correlations with Love versus Hate and Dominance versus Submission. Recently, Lynam, Whiteside, and Jones (1999) administered a five-factor inventory and Levenson's Self-Report Psychopathy Scale (LSRP; Levenson, Kiehl, & Fitzpatrick, 1995) to over 700 undergraduates. They found that the two factors of the LSRP bore differential relations to the personality scales. Scale 1, which conceptually relates to PCL-R Factor 1, was moderately negatively correlated with Agreeableness and slightly negatively correlated with Conscientiousness and Extraversion, whereas Scale 2, which conceptually relates to PCL-R Factor 2, was negatively correlated with both Agreeableness and Conscientiousness, slightly negatively correlated with extraversion, and positively correlated with Neuroticism.

The current project explicitly examines the account of Widiger and Lynam (1998) and assesses empirically the ability of the FFM to represent psychopathy. We first develop an expert-based prototypic FFM description of psychopathy and compare it to the predictions of Widiger and Lynam. Next, we examine the relations between an FFM assessment of psychopathy and other validation measures in a community sample of 481 males and females aged 21 to 22 years. Specifically, we examine the empirical relations between psychopathy assessed as the degree of

resemblance to the FFM-based prototype and: (1) the specific facets of the FFM (which provides another test of the account of Widiger and Lynam); (2) a self-report measure of psychopathy; (3) measures of antisocial behavior; (4) reports of substance use, abuse, and dependence; (5) symptoms of APD; and (6) symptoms of various internalizing disorders (e.g., depression and anxiety). In line with previous research using the PCL-R (Hare, 1991), we predict that FFM-psychopathy will be positively related to the variety and severity of substance use and delinquency, and symptoms of externalizing disorders such as APD and alcohol dependence. We also predict that our measure of psychopathy will be negatively related to the age of onset of substance use and delinquency, as well as symptoms of internalizing disorders such as depression and anxiety.

METHOD

Participants

Participants were 242 males and 239 females aged 21 to 22 years who are part of an ongoing longitudinal study (the Lexington Longitudinal Study) that was designed to assess the causes and correlates of substance use. The study began in 1987 when participants were in the 6th grade; a comprehensive account of the initial recruitment techniques can be found in Clayton, Cattarello, and Johnstone (1996). Participants were assessed via yearly surveys from 6th through 10th grade and at age 20–21. Most recently, 481 of our young adults participated in an intensive, laboratory interview that included personality assessments, detailed histories of substance use and delinquency, and a diagnostic interview. The 481 who participated were selected from a larger sample to overrepresent individuals with histories of substance use in order to compensate for previous sample attrition.

Procedure

Before the subjects were brought into the laboratory, they were asked to complete a packet of questionnaires mailed to them a week earlier. The mailed packet consisted of several self-report measures including, the NEO-PI-R (Costa & McCrae, 1992) and the LSRP (Levenson et al., 1995). The laboratory protocol was approximately three to four hours in duration. During this time period, the participants completed two Life History Calendars (LHCs), one for delinquency and one for substance use, as well as segments of the Diagnostic Interview Schedule (DIS; Robins, Cottler, Bucholz, & Compton, 1997).

Measures

NEO-PI-R. The Revised NEO-Personality Inventory is a self-report questionnaire, developed by Costa and McCrae (1992) to assess normal personality dimensions based on the FFM. It consists of 240 items, which are rated on a 5-point scale, anchored by *Strongly Disagree* and *Strongly Agree*. This personality inventory gives a score for all five domains based on 48 questions per domain, as well as assessing six facets within each domain using 8 items per facet. Many studies have been conducted using the NEO-PI-R, and it has consistently shown good reliability and validity. Internal consistency for the facets ranged from .56 to .81 and from .86 to .92 for the five broader domains (Costa, McCrae, & Dye, 1991).

Psychopathy. To assess psychopathy, we sent a questionnaire, consisting of 30 bipolar statements, each representing one facet of the NEO-PI-R, to 21 psychopathy experts. These experts were selected on the basis of having published extensively on psychopathy. Two separate questionnaires were provided to each expert so that separate profiles for the female and male psychopath could be developed. The representative items for each facet of the FFM were obtained from the adjective descriptors provided in the NEO-PI-R test manual (Costa & McCrae, 1992). The experts were asked to rate the prototypical psychopath on each facet by using a 5-point Likert scale with the anchor of 1 signifying that the psychopath was *extremely low* on this facet and the anchor of 5 signifying that the psychopath was *extremely high* on this facet. For example, to assess the facet of modesty we asked "To what extent is the male psychopath modest and unassuming versus arrogant and grandiose?" Once the expert ratings were returned, a prototypic psychopathy profile was created by calculating across expert the mean rating for each item. This prototypic profile was then compared to each study participant's own NEO-PI-R profile to yield an index of psychopathy.

Diagnostic Interview Schedule. The DIS (Robins et al., 1997) is a structured interview used by lay interviewers to assess the presence or absence of *DSM-IV* mental disorders. This tool was used extensively in the Epidemiological Catchment Area studies of Axis I and II disorders (Leaf, Myers, & McEvoy, 1991). For the current study, only selected sections of the DIS were administered, including antisocial personality, anxiety disorders, depression, and substance related disorders, such as alcohol, tobacco, and illegal drugs.

Life History Calendars for drug use and delinquency. The LHC is a retrospective method for collecting data on a wide range of life events and behaviors (Caspi et al., 1996). It is a large grid that is used to document the occurrence of certain events in the subject's life. The rows represent different activities and events of interest, while the columns partition the grid into different blocks of

time. In our LHC, we asked about the occurrence of these events (delinquent acts and substance use) since 1986, when the participants were in the 5th grade. Each year was broken into three 4-month segments during which participants were asked about the occurrence and frequency of acts at this time interval. Previous studies (Caspi et al., 1996; Freedman et al., 1988) and data from the project document the reliability and validity of the LHC. For example, agreement between prospective survey reports of ever having used a substance (in 7th, 8th, 9th, and 10th grades and at age 20–21) and the retrospective LHC was quite good, with average kappas of .47, .46, and .57 for cigarettes, alcohol, and marijuana respectively.

For the present study, we counted the number of 4-month periods in which an individual reported engaging in certain behaviors. For delinquency, we created four variables: (1) the number of periods during which a participant reported engaging in any delinquent act; (2) the number of periods in which a participant manifested probable conduct disorder defined as committing at least two different acts in the same period; (3) the total number of different delinquent acts that a participant reported across the course of the calendar; and (4) age at first onset of probable conduct disorder. For drug use, we created variables that represented the number of periods in which a participant reported regular use of cigarettes, alcohol use, marijuana use, and hard drug use. We also determined whether or not participants had used marijuana or alcohol by the 10th grade, and how much tobacco, alcohol, and marijuana a participant had used in the previous 12 months.

Levenson Self-Report Psychopathy Scale. Unlike previous self-report measures of psychopathy, which relate to the social deviance component of psychopathy (Harpur et al., 1989), the LSRP (Levenson et al., 1995; Lynam et al., 1999) was created specifically to assess the two factors found within the PCL-R. The scale consists of 26 items, which are scored on a 4-point scale ranging from *disagree strongly* to *agree strongly*. Exploratory and confirmatory factor analyses of the LSRP have shown that the items load on two factors consistent with its conceptualization (Levenson et al., 1995; Lynam et al., 1999). Scores on these dimensions have been found to relate in predicted directions to serious antisocial behavior; personality dimensions of disinhibition, neuroticism, agreeableness, conscientiousness, and boredom susceptibility; and performance on tasks measuring response modulation. In this study, coefficient alpha for the first factor (16 items) was .82 and .63 for the second factor (10 items); the correlation between the two factors was moderate, $r = .46$.

RESULTS

In this section, the nature and reliability of the NEO-PI-R psychopathy prototype is reviewed as is the evidence for the adequacy of our prototypic representation of psychopathy. After discussing the construction of the prototype, correlations between the psychopathy score and the NEO-PI-R domains and facet scores are presented. Next, the relations between psychopathy and psychopathology, delinquency, and substance use are reviewed. The correlations are reported for all participants, men and women combined, except for variables on which there is a statistically significant difference for men and women. Additionally, because of the large number of comparisons conducted, we have adjusted our alpha to 0.01.

Fifteen nationally recognized experts provided descriptions of the prototypic male and female psychopaths in terms of the 30 facets of the FFM; for each facet, expert ratings were averaged.¹ Table 2 provides the mean and standard deviation for each facet. Agreement was quite good for the male prototype. Fifty-three percent of items had standard deviations less than 0.70, and only 17% had standard deviations greater than one. The average inter-rater reliability for each rater for the male prototype (i.e., the average correlation of one rater's profile with every other rater's profile) ranged from 0.61 to 0.84 with a mean of 0.75, which can be taken as the reliability of the composite profile. For the female prototype, only 33% of items had standard deviations less than 0.70, and the average interrater reliability for each rater ranged from 0.44 to 0.71 with a mean of 0.55. Because of the higher consensus on the NEO-PI-R description for the male psychopath, this description was used in subsequent analyses. However, it is important to note that the correlation between the NEO-PI-R prototypes for males and females was 0.98,² suggesting that there were few differences in the consensual descriptions. In general, the psychopath is described as low (mean scores less than 2)

1. We would like to thank one expert who did not reveal his or her name and the following individuals for completing the FFM-ratings of the prototypical psychopath: Peter Arnett, Catherine Cormier, Adelle Forth, Grant Harris, Michael Levenson, Scott Lilienfeld, Joseph Newman, Christopher Patrick, Herbert Quay, Adrian Raine, Marnie Rice, Richard Rogers, Randall Salekin, Ralph Serin, and Patricia Sutker.

2. Similar results were obtained by correlating each rater's male ratings with their female ratings. The average of these correlations was 0.83, suggesting agreement in the profiles at the level of the individual raters.

Table 2
Expert-Generated FFM Psychopathy Prototype

	Men		Women	
	Mean	SD	Mean	SD
<i>Neuroticism</i>				
Anxiety	1.47	.52	1.77	.58
Angry Hostility	3.87	.64	3.71	.83
Depression	1.40	.51	1.86	.77
Self-Consciousness	1.07	.26	1.71	.83
Impulsiveness	4.53	.74	4.00	1.2
Vulnerability	1.47	.52	2.43	.94
<i>Extraversion</i>				
Warmth	1.73	1.1	1.93	.92
Gregariousness	3.67	.62	3.71	.47
Assertiveness	4.47	.52	3.79	.80
Activity	3.67	.98	3.50	.86
Excitement Seeking	4.73	.46	4.21	.70
Positive Emotions	2.53	.92	2.71	.99
<i>Agreeableness</i>				
Trust	1.73	.80	1.86	.77
Straightforwardness	1.13	.35	1.29	.47
Altruism	1.33	.62	1.57	.65
Compliance	1.33	.49	1.71	.73
Modesty	1.00	.00	1.50	.65
Tender-Mindedness	1.27	.46	1.50	.52
<i>Conscientiousness</i>				
Competence	4.20	1.0	3.79	.98
Order	2.60	.51	2.50	.76
Dutifulness	1.20	.78	1.28	.47
Achievement Striving	3.07	1.2	3.07	.92
Self-Discipline	1.87	.83	1.79	.58
Deliberation	1.60	1.1	1.86	1.0
<i>Openness to Experience</i>				
Fantasy	3.07	.88	3.29	.83
Aesthetics	2.33	.62	2.64	.50
Feelings	1.80	.86	2.00	.88
Actions	4.27	.59	4.21	.58
Ideas	3.53	1.1	3.64	.75
Values	2.87	.99	3.14	.86

in all facets of Agreeableness, several facets of Conscientiousness (Dutifulness, Self-Discipline, and Deliberation), many facets of Neuroticism (Anxiety, Depression, Self-Consciousness, and Vulnerability), Warmth (a facet of Extraversion) and Openness to Feelings (a facet of Openness to Experience). The psychopath is described as high (mean scores greater than 4) in selected facets of Neuroticism (Impulsiveness), Extraversion (Assertiveness, Excitement Seeking), Openness (Actions), and, surprisingly, Conscientiousness (Competence).

The prototype obtained from the psychopathy researchers matches well the description of Widiger and Lynam (1998). To quantitatively assess the match, we created a prototype based on Widiger and Lynam's description by scoring facets hypothesized to be negatively related to psychopathy (e.g., Straightforwardness) as 1 and facets hypothesized to be positively related to psychopathy (e.g., Angry Hostility) as 5; facets not used in the Widiger and Lynam description were scored as 3. Despite the fact that Widiger and Lynam restricted themselves to the description inherent in the PCL-R, whereas our expert raters were not so constrained, the two descriptions were strongly correlated, $r = .64$.³ Disagreements occurred when the experts did not describe the psychopath as low in Positive Emotions, Competence, and Achievement Striving, and high in Angry Hostility, and in their inclusion of facets without explicit representations in the PCL-R (Lilienfeld, 1994): low Anxiety, Depression, and Vulnerability from the domain of Neuroticism; high Assertiveness from the domain of Extraversion; low Trust from the domain of Agreeableness; low Openness to Feelings and high Openness to Actions from the domain of Openness to Experience.

The degree to which the subjects' self-reported NEO-PI-R profile matched our expert-based prototype was assessed through the use of an intraclass Q-correlation in which subjects were treated as variables (Block, 1957; Westen, Muderrisoglu, Shedler, Fowler, & Koren, 1997) and the absolute level of agreement between the prototype and each subject's full NEO-PI-R profile was examined (McGraw & Wong, 1996). This intraclass Q-correlation yields a single number, the NEO-PI-R Psychopathy Resemblance Index (PRI), that reflects the degree to which an individual's NEO-PI-R profile resembles the NEO-PI-R profile of the

3. The correlation was .77 if the analysis was restricted to the 16 facets used by Widiger and Lynam (1998).

prototypic psychopath; higher scores indicate greater resemblance. For men, PRI ranged from $-.57$ to $.42$, with a mean of $.08$, and a standard deviation of $.17$. For women, PRI ranged from $-.67$ to $.37$, with a mean of $-.21$, and a standard deviation of $.18$.

The five domain and thirty facet scores of the NEO-PI-R were correlated with the PRI scores in order to examine which personality traits were most closely associated with psychopathy.⁴ As can be seen in Table 3, the correlations between the PRI and the NEO-PI-R were consistent with predictions by Widiger and Lynam (1998). Neuroticism, at the domain level, was not significantly correlated with psychopathy. However, as predicted by Widiger and Lynam, the correlations with the facets of neuroticism were complex. For both men and women, all facets with the exception of Angry Hostility and Impulsiveness were significantly, negatively related to psychopathy, whereas Angry Hostility and Impulsivity were significantly, positively correlated with the psychopathy score.

At the Extraversion domain level, the correlation for men and women was moderate and positive. For men and women, the PRI was positively correlated with the facets of Gregariousness, Assertiveness, Activity, and Excitement Seeking. The domain of Agreeableness and all its facets were moderately negatively correlated with PRI scores for both men and women. Additionally, the domain of Openness to Experience was not significantly correlated with FFM psychopathy scores for either sex. For women, Openness to Actions and Ideas were significantly correlated with the PRI.

Finally, the results for the domain of Conscientiousness were the least consistent across sex. For women, four of the facets of Conscientiousness were significantly, negatively correlated with the PRI score. However, the domain of Conscientiousness was not significantly correlated with the PRI score for men; only the facets of Dutifulness and Deliberation were significantly, negatively correlated with the psychopathy score.

4. Results were similar if a given facet (e.g., Angry Hostility) was removed from the prototype, and hence the PRI, before correlating the PRI with that facet (e.g., Angry Hostility), suggesting that the reported correlations were not artificially inflated due to predictor-criterion overlap.

Table 3
Correlations Between the Psychopathy Resemblance Index
and NEO-PI-R Scores

	Male	Female	<i>t</i> -value for test of difference ^a
<i>Neuroticism</i>	-.14	-.16	< 1
Anxiety	-.28**	-.36**	-1.2
Angry Hostility	.31**	.19*	-1.2
Depression	-.27**	-.26**	< 1
Self-Consciousness	-.40**	-.38**	< 1
Impulsivity	.22**	.29**	1.3
Vulnerability	-.21**	-.22**	< 1
<i>Extraversion</i>	.38**	.34**	< 1
Warmth	-.13	-.12	< 1
Gregariousness	.28**	.23**	< 1
Assertiveness	.48**	.42**	< 1
Activity	.46**	.17*	-4.0**
Excitement Seeking	.49**	.56**	1.6
Positive Emotions	.10	.08	< 1
<i>Openness to Experience</i>	-.03	.15	1.9
Fantasy	-.03	.15	2.0
Aesthetics	-.16	.03	2.2
Feelings	-.08	.01	1.1
Actions	.17	.20*	< 1
Ideas	.03	.18*	1.5
Values	.00	.01	< 1
<i>Agreeableness</i>	-.67**	-.70**	< 1
Trust	-.24**	-.29*	< 1
Straightforwardness	-.60**	-.65**	< 1
Altruism	-.37**	-.40**	< 1
Compliance	-.57**	-.57**	< 1
Modesty	-.46**	-.52**	< 1
Tender-Mindedness	-.34**	-.27**	1.7
<i>Conscientiousness</i>	-.05	-.29**	-2.8*
Competence	.12	-.02	-1.5
Order	.09	-.26**	-3.9**
Dutifulness	-.25**	-.36**	< 1
Achievement Striving	.06	-.07	-1.4
Self-Discipline	.09	-.23**	-3.5**
Deliberation	-.33**	-.41**	-1.4

* $p < .01$ ** $p < .001$.

^aSex differences were examined using regressions in which gender, psychopathy, and their interaction were used to predict the facet score. The values are *t*-values are for the interaction term.

Self-Reported Psychopathy

The NEO-PI-R PRI was positively correlated with all three scales of the LSRP. The correlations between the LSRP scales and the PRI did not differ for men and women; therefore, the correlations reported include both genders. The correlation between the LSRP total score and the PRI was moderate, $r = .46, p < .001$. The correlation between scores on factor 1 of the LSRP and the PRI was strong, $r = .52, p < .001$. Finally, the correlation between scores on factor 2 of the LSRP and the PRI was also significant, $r = .22, p < .001$.

Diagnostic Interview Schedule

Correlations were computed between the NEO-PI-R PRI and DIS-assessed symptoms of APD, anxiety, depression, social phobia, specific phobia, and substance abuse; results are presented in Table 3. As predicted, the PRI was positively correlated with the total number of symptoms of APD, symptoms of alcohol abuse and dependence, and symptoms of hard drug abuse and dependence (composite of cocaine, amphetamine, PCP, hallucinogens, inhalants, sedatives, and others) for both men and women. For marijuana abuse and dependence, symptoms were positively correlated with the PRI only for women. Importantly, the PRI was negatively correlated with most internalizing disorder symptoms, including the number of generalized anxiety disorder (GAD) worries and symptoms, depressive symptoms from the worst episode, and symptoms of social phobia. Divergent validity is evident in the significant difference between the smallest whole sample positive correlation (for marijuana abuse symptoms) and the smallest whole sample negative correlation (for GAD symptoms), $t(475) = 4.06, p < .001$.

Further evidence for the discriminant validity of the PRI in relation to the DIS comes from the results of a hierarchical regression analysis in which the PRI was predicted first by the internalizing disorders, second by the non-APD externalizing disorders, and finally by APD.⁵ At the first step, scores for the internalizing disorders were significantly related to the PRI, $R^2 = .06, F(4, 470) = 7.39, p < .001$. At the second step, the scores for the externalizing disorders were entered, resulting in a significant increment in the variance account for, change in $R^2 = .13$,

5. We would like to thank an anonymous reviewer for suggesting this analysis.

$F(6, 464) = 12.36, p < .001$. Finally, in the last step, APD symptoms were entered, which also resulted in a significant increment in the variance accounted for: change in $R^2 = .09, F(1, 463) = 56.45$. These results suggest that PRI manifests significant discriminant validity in relation to psychopathology.

Life History Calendar

The relation between our NEO-PI-R PRI and antisocial behavior (ASB) was examined using the LHC; results are presented in Table 4. The PRI was positively correlated with the number of periods in which an individual committed any delinquent act, as well as the total variety of acts committed across the years for both men and women. The PRI was also positively correlated with the number of periods in which individuals met criteria for probable conduct disorder, defined as two or more different symptoms during a single 4-month period. Although the correlations were not significant when examined separately, the correlation between the age of onset of probable conduct disorder and PRI scores in the combined sample was significant, $r = -.26, p < .001$. This suggests that psychopathic individuals manifested probable conduct disorder symptoms earlier than nonpsychopathic individuals.

Information on substance use was also collected using the LHC. As seen in Table 4, the NEO-PI-R PRI was positively correlated with lifetime use of cigarettes, alcohol, marijuana, and hard drugs. In addition, psychopathic males were more likely to use these substances earlier; the PRI was positively correlated with having used marijuana and alcohol by the 10th grade for men. Finally, the amount of cigarette, alcohol, and marijuana use in the prior twelve months was also positively correlated with the PRI for women, while the amount of alcohol use was significantly correlated with the PRI for men.

DISCUSSION

This study examined whether psychopathy could be assessed and represented using common dimensions of personality as theorized by Widiger and Lynam (1998). First, an expert-based NEO-PI-R description of the prototypical psychopath was generated. Importantly, none of our experts were FFM theorists or researchers; all were recruited on the basis of their work in psychopathy. Overall, there was substantial agreement between

Table 4
Correlations Between the Psychopathy Resemblance Index
and Validation Measures

	Male	Female	<i>t</i> -value for test of difference
Internalizing Disorders			
Depressive Symptoms–Lifetime	-.18*	-.09	< 1
Generalized Anxiety Disorder			
Symptoms	-.07	-.04	< 1
Number of Generalized Anxiety			
Worries	-.06	-.17*	-1.3
Social Phobia	-.16	-.22**	< 1
Externalizing Disorders			
Antisocial Personality Disorder			
Symptoms	.35**	.33**	< 1
Alcohol Abuse	.24**	.22**	< 1
Alcohol Dependence	.26**	.19*	< 1
Marijuana Abuse	.07	.18*	< 1
Marijuana Dependence	.11	.18*	< 1
Hard Drug Abuse	.20*	.19*	-1.4
Hard Drug Dependence	.22*	.20*	-1.4
<i>Delinquency and Substance Use</i>			
Number of periods of the LHC during which the participant:			
engaged in any delinquent act	.34**	.28**	-1.5
showed probable conduct disorder			
(2 symptoms during 1 period):	.39**	.32**	-3.2**
smoked cigarettes	.18*	.18*	< 1
smoked marijuana	.29**	.34**	< 1
drank alcohol	.33**	.25**	-1.3
used hard drugs	.28**	.25**	-2.03
Age at first onset of PCD	-.17	-.16	< 1
Total lifetime variety of delinquency	.34**	.28**	-1.7
Past year average cigarette use	.14	.20*	< 1
Past year average marijuana use	.14	.23**	1.3
Past year average alcohol use	.28**	.24**	-1.5
Ever used marijuana by 10th grade	.21**	.06	-2.3
Ever used alcohol by 10th grade	.21**	.12	-1.6

* $p < .01$; ** $p < .001$. As before, gender differences in the correlations were tested using regression.

the FFM description of psychopathy by Widiger and Lynam (1998), based on their rendering of the PCL-R, and the FFM descriptions of psychopathy by the experts. More specifically, both FFM descriptions emphasized the presence of low Self-Consciousness and high Impulsiveness from Neuroticism; high Excitement Seeking and low Warmth from Extraversion; low Straightforwardness, Altruism, Compliance, Modesty, and Tender-Mindedness from Agreeableness; and low Dutifulness, Self-Discipline, and Deliberation from Conscientiousness.

Nevertheless, there were also points of disagreement. First, the experts included facets not included by Widiger and Lynam: low Anxiety, Depression, and Vulnerability from the domain of Neuroticism; high Assertiveness from the domain of Extraversion; low Trust from the domain of Agreeableness; low Openness to Feelings and high Openness to Actions from the domain of Openness to Experience. The primary explanation for these differences is that Widiger and Lynam restricted themselves to the description of psychopathy inherent in the PCL-R, whereas the expert raters were not so constrained. For example, the PCL-R has been criticized for its omission of an explicit assessment of Anxiety, despite the emphasis on low Anxiousness by Cleckley (1941/1988) in his original description (e.g., Lilienfeld, 1994). The additional Neuroticism facet of low Vulnerability included by the experts also captures the fearlessness of psychopathy emphasized by Lykken (1995) that is largely ignored by the PCL-R (Hare, 1991). In the end, the expert FFM description of psychopathy appears to be more complete and comprehensive than the PCL-R description.

In addition, there were four FFM facets found in the PCL-R description but not recognized by the experts: low Positive Emotions, low Competence, low Achievement Striving, and high Angry Hostility. These facets concern components of psychopathy represented by the fewest number of PCL-R items (typically only one item). In fact, some of these components were among the most disagreed upon by psychopathy researchers. For example, ratings for both Positive Emotions and Achievement Striving had standard deviations above 0.90, and the 1.2 standard deviation for Achievement Striving was the highest for all items. Additionally, Widiger and Lynam (1998) predicted that low Warmth and low Positive Emotions make up the PCL-R shallow affect item, which is the most difficult PCL-R item to understand and least reliably assessed (Hare, 1991). Finally, Widiger and Lynam (1998) described the psychopath as being low in Competence, to reflect the lack of motivation or

interest in being or becoming competent (i.e., irresponsibility). The expert raters, however, likely responded to the emphasis within the NEO-PI-R on the self-assessment of competence; in our single item description, we asked raters “to what degree does the psychopath feel capable, sensible and effective versus feeling unsure, unprepared, and inept?” In general, it seems that the expert-based FFM description of psychopathy will provide a more accurate description, as it is not confined to the description of psychopathy inherent in any single instrument.

According to our experts, psychopathy consists of very low scores on all facets of Agreeableness, which showed the strongest and most consistent relations of the five domains. This domain of the FFM describes the fundamental psychopathic traits of lying, manipulation, callousness, and arrogance. Prototypic psychopathy also consists of low scores on several aspects of Conscientiousness (i.e., Dutifulness, Self-Discipline, and Deliberation), which capture the aspects of psychopathy associated with impulsivity, lack of long-term goals, a failure to accept responsibility, and irresponsibility. Relations with Extraversion and Neuroticism are more complex, but still of fundamental importance to understanding prototypic psychopathy. For Extraversion, prototypic psychopathy consists of high scores on Assertiveness and Excitement Seeking, and low scores on Warmth. These facets contribute to the psychopathic traits of need for stimulation and shallow affect. The complex relations of psychopathy with Extraversion are consistent with work by Church and Burke (1994), who demonstrated that there are two components of NEO-PI-R Extraversion: agency, which is composed of activity and assertiveness, and affiliation, which is made up of warmth and positive emotions. In terms of the facets of Neuroticism, psychopathy appears to consist of high levels of Angry Hostility and Impulsivity and low levels of Anxiety, Depression, Self-Consciousness, and Vulnerability, which contribute to psychopathic glibness, superficial charm, fearlessness, and poor behavioral controls. These components of prototypic psychopathy are among the most intriguing, as they concern aspects of psychopathy that are not represented in the *DSM-IV* conceptualization of APD but that Hare, Hart, and Harpur (1991) and Lykken (1995) have argued are necessary for a comprehensive assessment of psychopathy.

After our examination of the expert prototype, we tested the account of Widiger and Lynam (1998) by examining the empirical relations between psychopathy scores, based on the degree of resemblance to the prototype, and scores on the NEO-PI-R facets. Again, we found strong

support for the hypotheses. For men, 12 of the 16 facets used by Widiger and Lynam were significantly correlated with the NEO-PI-R PRI in the predicted directions. For women, 14 of the 16 facets were significantly correlated with the PRI in the predicted direction.

A second aspect of the research involved validating our NEO-PI-R psychopathy index with commonly used external validators (Hare, 1991; Lynam, 1997; Widiger et al., 1996). NEO-PI-R psychopathy showed evidence for both convergent and divergent validity. First, NEO-PI-R psychopathy correlated with scores on a self-report psychopathy scale. Next, we found that NEO-PI-R psychopathy was related to antisocial behavior and symptoms of APD. In fact, the correlation of 0.40 between NEO-PI-R psychopathy and symptoms of APD was comparable to the unweighted average correlation of 0.46 between APD and scores on the PCL-R reported in previous research (see Hare, 1991). This finding is especially interesting, given the lack of explicitly antisocial items in the NEO-PI-R psychopathy index, in contrast to the PCL-R which explicitly assesses antisocial behavior with a number of items (e.g., juvenile delinquency, revocation of conditional release, and criminal versatility). Additionally, the relations obtained in the current study between NEO-PI-R psychopathy and substance use and abuse were also similar to results obtained using the PCL-R in prison samples (Smith & Newman, 1990). Finally, as in previous studies using the PCL-R in incarcerated samples (Hare, 1991), NEO-PI-R psychopathy was negatively related to symptoms of a variety of internalizing disorders (i.e., anxiety and depression).

The representation of psychopathy using common dimensions of personality has important specific and general implications. Specifically, understanding psychopathy as a combination of personality traits may bring clarity to several issues in the field. First, the FFM understanding of psychopathy clarifies the factor structure of the PCL-R: Factor 1 items are primarily measures of low Agreeableness and low Neuroticism, whereas Factor 2 items represent blends of low agreeableness and conscientiousness, and high neuroticism (Widiger & Lynam, 1998). Second, the FFM understanding of psychopathy explains why the search for the fundamental psychopathic deficit has turned up a variety of diverse candidates; different investigators are examining different domains of the FFM representation of psychopathy. Some may be focusing on the low Agreeableness component (e.g., callous temperament), whereas others may be examining the low Conscientiousness aspect (e.g.,

deficient response modulation), and still others may be targeting the low Neuroticism element (e.g. fearlessness). These hypotheses could be examined in future research by including FFM measures within more traditional laboratory-based designs. For example, one might assess individuals on the FFM and then test these individuals using laboratory tasks or measures that are purported to assess each of these deficits.

Finally, the FFM understanding of psychopathy can explain the relations that psychopathy has with other disorders (e.g., antisocial personality disorder); to the extent that psychopathy and APD share common traits, they should overlap. This idea gains some support through a comparison of our results on psychopathy with those obtained by Trull (1992) on APD. Both disorders are characterized by low levels of Agreeableness and Conscientiousness, but Neuroticism and Extraversion appear to relate differently to the two disorders.

Understanding personality disorders as extreme variants of common dimensions of personality also has general implications. Personality disorders have typically been conceptualized in a categorical fashion; that is, as either present or absent. Although categorical diagnoses allow for easier communication and conceptualization of an individual's personality (Widiger, 1993), the categorical system loses important information in the description of individuals who are not prototypic cases. This is not the case for dimensional representations which allow more information to be retained. Additionally, a dimensional conceptualization of personality disorders may provide more flexibility in addressing problematic and excessive diagnostic comorbidity.

The present results may also have general implications for the assessment of personality disorders. The present study used a prototype-matching approach to assess psychopathy; after collecting and averaging experts' ratings of the prototypical psychopath on the 30 facets of the FFM, psychopathy was determined as the degree of resemblance between an individual's NEO-PI-R profile and the psychopathy profile. Other disorders might be assessed in similar fashion. This would allow examination of the FFM underpinnings of each disorder, as well as a means of assessing, at a screening level, various personality disorders. Although we do advocate a dimensional understanding of the personality disorders, we see no conflict in assessing the personality disorders in this way. We do acknowledge that the *DSM-IV* personality disorders contain configural information that may be usefully preserved and that may aid communication. Nevertheless, the FFM will provide a

more precise description of the personality structure of any particular individual patient, while also providing a quantitative means by which to indicate the degree to which an individual's personality resembles a prototypic instance of a particular personality disorder.

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