

Development and Preliminary Validation of a Self-Report Measure of Psychopathic Personality Traits in Noncriminal Populations

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Research on psychopathy has been hindered by persisting difficulties and controversies regarding its assessment. The primary goals of this set of studies were to (a) develop, and initiate the construct validation of, a self-report measure that assesses the major personality traits of psychopathy in noncriminal populations and (b) clarify the nature of these traits via an exploratory approach to test construction. This measure, the Psychopathic Personality Inventory (PPI), was developed by writing items to assess a large number of personality domains relevant to psychopathy and performing successive item-level factor analyses and revisions on three undergraduate samples. The PPI total score and its eight subscales were found to possess satisfactory internal consistency and test-retest reliability. In four studies with undergraduates, the PPI and its subscales exhibited a promising pattern of convergent and discriminant validity with self-report, psychiatric interview, observer rating, and family history data. In addition, the PPI total score demonstrated incremental validity relative to several commonly used self-report psychopathy-related measures. Future construct validation studies, unresolved conceptual issues regarding the assessment of psychopathy, and potential research uses of the PPI are outlined.

The assessment of psychopathic personality (psychopathy) has been beset by a plethora of difficulties that have hindered research on its etiology and treatment (Hare & Cox, 1978; Lilienfeld, 1994). The correlations among most indices of psychopathy tend to be low (Hare, 1985; Hundleby & Ross, 1977; Widom &

Newman, 1985), suggesting that they are assessing only partly overlapping aspects of the same construct. Moreover, most self-report psychopathy measures appear primarily to assess antisocial acts, rather than the personality traits traditionally deemed central to the syndrome (Harpur, Hare, & Hakstian, 1989). Consequently, much of the research on psychopathy is of questionable generalizability to the traditional conception of psychopathy delineated by Cleckley (1941/1982) and others.

In addition, the relevance of certain personality traits to psychopathy remains in dispute. For example, although Cleckley (1941/1982) contended that low anxiety is one of the cardinal features of psychopathy, probably the best validated measure of psychopathy, Hare's (1991) Psychopathy Checklist-Revised (PCL-R), contains no items assessing the absence of anxiety. Moreover, although Cleckley denied that psychopaths were impulsive, a number of psychopathy measures, including the PCL-R, contain items explicitly assessing impulsivity. Thus, the boundaries of the psychopathy construct appear to require clarification.

Many of the problems concerning the assessment of psychopathy can be traced to a lack of consensus regarding its conceptualization. Specifically, two competing conceptions of psychopathy have emerged: the personality-based approach and the behavior-based approach (Lilienfeld, 1994; Widiger & Corbitt, 1993). The personality-based approach (e.g., Cleckley, 1941/1982; Karpman, 1948; McCord & McCord, 1964) emphasizes such traits as guiltlessness, dishonesty, failure to form close attachments, fearlessness, callousness, and lack of forethought. In contrast, the behavior-based approach, which is exemplified by the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed. [DSM-III], American Psychiatric Association [APA], 1980), *DSM-III-R* (APA, 1987), and *DSM-IV* (APA, 1994) diagnoses of (ASPD), emphasizes a history of antisocial behaviors and criminal behaviors, such as physical aggressiveness, theft, and vandalism. These two approaches bear substantially different implications for the assessment of psychopathy. For example, individuals who possess psychopathy personality features but do not engage in repeated antisocial acts (i.e., subclinical psychopaths; Sutker & Allain, 1983; Widom, 1977), would be considered to be psychopaths according to the personality-based approach, but would remain undiagnosed by the behavior-based approach.

As a means of comparing these alternative conceptions, Harpur et al. (1989) proposed an oblique two-factor model of psychopathy based on factor analyses of the PCL-R. Factor 1, which comprises such features as narcissism, lack of guilt, and shallow affect, embodies many of the core personality traits of psychopathy. Factor 2, which comprises such characteristics as early conduct problems, promiscuous sexuality, and criminal versatility, assesses the chronic antisocial behaviors typical of ASPD. Harpur et al. reported that most commonly used self-report psychopathy measures, including the Minnesota Multiphasic Personality Inventory

(MMPI) Psychopathic Deviate (*Pd*) scale (McKinley & Hathaway, 1944) and the California Psychological Inventory (CPI) Socialization (*So*) scale (Gough, 1960), are correlated negligibly with Factor 1 but moderately with Factor 2. Thus, these measures appear to assess antisocial and criminal behaviors, rather than the major personality features of psychopathy. Harpur et al.'s findings are consistent with other reports (e.g., Hare & Cox, 1978) indicating that most self-report psychopathy measures are weakly related to the personality features described by Cleckley.

A further limitation with the psychopathy assessment literature is that many psychopathy measures have been developed on criminal or delinquent populations. For example, the two most commonly used self-report measures of psychopathy, the MMPI *Pd* scale and the CPI *So* scale, were developed by contrasting the responses of individuals with histories of antisocial behavior against those without such histories. In addition, the PCL-R was designed for settings in which researchers have access to file data, particularly prisons. Although the PCL-R has been adapted for use with nonincarcerated populations, its validity outside of prison settings remains questionable (Alterman, Cacciola, & Rutherford, 1993). Thus, the generalizability of many psychopathy measures to noncriminal populations is unclear. This issue is of considerable importance, because many individuals with psychopathic traits may function successfully outside of prison settings (Levenson, Kiehl, & Fitzpatrick, 1995).

In view of the preceding considerations, we elected to develop a measure of psychopathic traits using an exploratory approach to test construction (Loevinger, 1957; Tellegen & Waller, in press). In such an approach, test construction is performed not only as a means of arriving at a pool of items to assess the constructs of interest, but also as a vehicle for clarifying these constructs. This method of test construction is iterative, and proceeds until both a well-formulated set of constructs and an adequate pool of items to assess them is achieved. An exploratory approach is self-correcting, in that the data from successive analyses are used to revise and clarify the relevant constructs (Grove & Tellegen, 1991). Thus, the test developer proceeds from constructs to data, and then from data to constructs, using what Cattell (1950) termed the *inductive-hypothetico-deductive spiral*. The self-correcting nature of this approach renders it well suited for clarifying the boundaries of psychopathy.

Because most or all self-report measures of psychopathy primarily assess antisocial behaviors, rather than the personality traits characteristic of psychopathy, test construction focused on personality constructs. Moreover, the paucity of uncontaminated measures of the personality-based approach makes it difficult to compare the validities of the personality- and behavior-based approaches (Lilienfeld, 1994). In other words, because most self-report psychopathy measures contain items assessing both personality traits and antisocial behaviors, they cannot be used to provide tests of the capacity of each approach to predict external validating criteria, such as course, family history, and performance on laboratory tests (Robins

& Guze, 1970). By developing a relatively "pure" measure of the personality-based approach, we hoped to facilitate research aimed at comparing the validity of this approach with that of the behavior-based approach.

Because we intended to develop a measure that would be useful for large-scale research purposes outside of prison settings, we elected to construct a self-report instrument. Although self-report measures have several potential shortcomings, such as possible contamination by response styles, they have the advantage of being able to assess response styles systematically (Widiger & Frances, 1987). In addition, self-report measures permit the assessment of subjective dispositions (e.g., guiltlessness, absence of empathy) that may be difficult to assess reliably and validly by outside observers.

In the remainder of this article, we (a) outlined the construction of the measure, called the Psychopathic Personality Inventory (PPI), and its subscales, (b) reported on the PPI's basic psychometric properties (e.g., internal consistency, test-retest reliability), and (c) described four studies offering preliminary support for the construct validity of the PPI. The development and validation studies we report are based on undergraduates. Unlike incarcerated or hospitalized samples, undergraduate samples have the advantage of being relatively free from the effects of institutionalization and high rates of substance abuse, both of which may influence the assessment of a number of traits relevant to psychopathy (e.g., risk-taking, alienation). In addition, because research on psychopathy has generally been conducted on incarcerated samples, we aimed to design a measure that would be useful among noncriminal samples. The examination of psychopathic traits in such samples is necessary for a better understanding of subclinical psychopathy (Widom, 1977).

In using undergraduates to develop and initiate the validation of the PPI, we have made two assumptions. First, we have assumed that the personality traits underlying psychopathy are dimensional, rather than taxonic (see Meehl & Golden, 1982). Although Harris, Rice, and Quinsey (1994) reported that the antisocial behaviors associated with psychopathy are underpinned by a latent taxon (i.e., an underlying natural class), they found that the core personality features of psychopathy (i.e., PCL Factor 1) appear to be dimensional in nature. We should note, however, that even if psychopathic personality traits were produced by a latent taxon, this taxon could lead to substantial covariance among its indicators if its base rate were sufficiently high (Meehl & Golden, 1982). Second, we have assumed that psychopathic personality traits and many of the behaviors often accompanying them, such as illegal acts, exhibit sufficient variance among undergraduates to render validation efforts meaningful. This assumption seems reasonable in light of studies documenting substantial covariation among psychopathy measures in high-functioning individuals (e.g., Sutker & Allain, 1983) and high rates of mild antisocial behaviors among college-age individuals (e.g., Moffitt, 1993).

STUDY 1: TEST DEVELOPMENT AND PRELIMINARY PSYCHOMETRIC PROPERTIES

Method

Participants

Test construction spanned three rounds of item writing, data collection, and factor analysis. The first sample consisted of 241 men with a mean age of 20.4 years ($SD = 3.5$), the second consisted of 253 men with a mean age of 20.8 years ($SD = 4.2$), and the third consisted of 610 participants (249 men and 361 women) with a mean age of 21.7 years ($SD = 5.1$) for men and a mean age of 22.1 years ($SD = 7.0$) for women. All participants were introductory psychology students at colleges in Minnesota who either received course credit for their participation or, in a few cases, participated without receiving course credit.

Procedure

The initial step in test construction was the delineation of focal constructs deemed relevant to psychopathy. The selection of these constructs was informed by a comprehensive review of the theoretical and empirical literature on psychopathy (e.g., Albert, Brigante, & Chase, 1959; Cleckley, 1941/1982; Gray & Hutchinson, 1964; Hare, 1991). Following the recommendations of Loewinger (1957), an effort was made to be overinclusive in the selection of constructs so that the boundaries of psychopathy could be more clearly delineated. Table 1 lists the principal focal constructs targeted during test construction.

Following the delineation of focal constructs, a number of items using a four-option (*False, Mostly False, Mostly True, True*) Likert-type format were written to assess each construct. This format was selected because (a) an even-numbered response format avoids the error of central tendency (Guilford, 1954), that is, the propensity of participants to choose the neutral response, and (b) multiple response formats, compared with True-False formats, may permit finer discriminations among participants and result in more reliable scales (e.g., Oswald & Velicer, 1980).

Several guidelines were followed in item writing. First, items assessing antisocial behaviors were avoided, as our goal was to provide a relatively pure measure of the personality-based approach to psychopathy. Second, in each round of test development, an equivalent number of items were keyed *true* and *false* to minimize acquiescence or counteracquiescence response bias. Third, all items were written with an eye toward minimizing social undesirability. Thus, most items were phrased so as to appear relatively normative. In addition, in each round of test development, the Marlowe-Crowne Social Desirability Scale (MCSD; Crowne & Marlowe,

TABLE 1
Principal Focal Constructs Targeted During Test Construction

1. Superficial charm (Cleckley, 1941/1982)
2. Egocentricity; grandiose self-concept (Cleckley, 1941/1982)
3. Unreliability (Cleckley, 1941/1982)
4. Untruthfulness and insincerity (Cleckley, 1941/1982)
5. Guiltlessness (Cleckley, 1941/1982; McCord & McCord, 1964)
6. Manipulativeness; Machiavellianism (Christie & Geis, 1969)
7. Lack of anxiety and neurotic symptoms (Cleckley, 1941/1982)
8. Fearlessness (Lykken, 1957, 1982)
9. Poor impulse control (Hare, 1991)
10. Low frustration tolerance; short temper (Hare, 1991)
11. Risk taking; sensation seeking (Quay, 1965; Zuckerman, 1978)
12. Inability to form close attachments (Cleckley, 1941/1982)
13. Lack of empathy; role-taking deficits (Gough, 1960)
14. Lack of emotional depth (Cleckley, 1941/1982)
15. Failure to learn from punishment (Cleckley, 1941/1982)
16. Lack of foresight and planning (Cleckley, 1941/1982)
17. Propensity to externalize blame (Cleckley, 1941/1982)
18. Authority problems; nonconformity (Lindner, 1956)
19. Low ambition (Albert, Brigante, & Chase, 1959)
20. Materialism (Albert, Brigante, & Chase, 1959)
21. Failure to appreciate kindness (Cleckley, 1941/1982)
22. Lack of capacity for fantasy (Karpman, 1948)
23. Failure to delay gratification (Gorenstein & Newman, 1980)
24. Hypermasculinity (Mosher & Sirkin, 1984)

Note. The first 18 constructs were targeted during the first round of test construction; the remaining constructs were added during subsequent rounds.

1964) was administered to eliminate or rewrite items that appeared to be substantially contaminated by a social desirability response style.

Because of limitations in time and resources, in the first two rounds of test development a decision was made to administer versions of the PPI to men only. The rationale for this decision was that men, who tend to have higher levels than women of aggression, fearlessness (e.g., Tellegen, 1978/1982), and perhaps other traits relevant to psychopathy, might also exhibit greater variance on such traits. Such increased variance should lead to greater covariance among items assessing these traits, thereby increasing the likelihood of detecting dimensions relevant to psychopathy by means of factor analysis¹. In the third round of test development, the PPI was given to both men and women in order to examine the generalizability of the findings across sex, and scores on all items were standardized (by means of *z* scores) prior to combining them by sex.

¹In fact, however, the variances of men and women on the Psychopathic Personality Inventory total score or its subscales did not differ significantly across any of the rounds of analysis.

Prior to the factor analyses in each round, protocols were screened using a specially developed validity scale, the Deviant Responding (DR) Scale, which was embedded within the PPI. This scale was designed to detect participants who were malingering, responding carelessly or randomly, or having difficulty comprehending the items or instructions. The DR scale is modeled loosely after Jackson's (1974) Infrequency Scale and consists of 10 items (5 keyed *true*, 5 keyed *false*) that, although bizarre, do not assess content indicative of any known form of psychopathology (e.g., "When I am under stress, I often see large, red, rectangular shapes moving in front of my eyes"). In all three rounds of test development, scores on the DR scale were highly positively skewed and showed a fairly clear breaking point at scores of between 17 and 20 (corresponding to an average score of 1.7 to 2.0 per item on a scale ranging from 1 to 4). Across the three rounds of test development, 4.3%, 3.4%, and 5.4% of participants, respectively, were eliminated from the analyses on the basis of elevated scores on the DR scale.

In addition, a second validity scale was developed following the development of the final version of the PPI. The Variable Response Inconsistency (VRIN) scale, which was modeled after Tellegen's (1978/1982) VRIN scale, was devised by selecting item pairs in the PPI with high ($r \geq .3$) intercorrelations in both male and female samples. The scale is scored by taking the absolute difference between the scores on each item in the pair, and then summing across pairs. High scores on the VRIN scale indicate that participants are not responding consistently to statements with similar content, and typically reflect careless responding (see Tellegen, 1988). In conjunction with the DR scale, the VRIN scale was used to exclude questionable protocols from the construct validation studies described later.

In each round, a principal components analysis was conducted to generate a plot of the eigenvalues, and Cattell's (1966) scree test was used to obtain a starting point for the number of factors to extract. Psychological interpretability, however, was always used as the ultimate criterion for terminating factor extraction. Following the principal components analysis, principal axes were orthogonally rotated to simple structure via the varimax criterion. Orthogonal rotations were used to develop subscales with as little shared variance as possible. The varimax criterion was used because it maximizes the variance across factors, thereby increasing the probability of detecting multiple lower order factors (Gorsuch, 1983). Items were retained in the succeeding version of the PPI if they loaded .3 or greater on their targeted factor and did not load .3 or greater on any other factor. Items not meeting these criteria were retained if their item-total correlations were .3 or greater (this occurred, however, in only a few cases). All other items were either eliminated or, if their factor loadings or item-total correlations were slightly below .3, rewritten to provide better indicators of their respective constructs. In several cases, the results of the factor analyses suggested new constructs to be targeted in subsequent rounds of analysis (see Table 1).

Results

PPI Subscales

In the third and final round of factor analysis, both inspection of the scree plot and psychological interpretability suggested that eight was the optimal number of factors to extract. The eigenvalues of these eight factors, which accounted for 24% of the total variance, were 16.16, 12.07, 7.59, 6.29, 4.46, 4.18, 3.42, and 3.00.

The eight subscales of the PPI, the number of items on each subscale, and one sample item from each subscale are shown in Table 2. Factor 1, Machiavellian Egocentricity, contains elements of Christie and Geis' (1969) Machiavellianism construct and appears similar to the construct of "Ruthless Practicality" identified by Hundleby and Ross (1977) in their factor analysis of psychopathy-related measures. Factor 2, Social Potency, which is named after Tellegen's (1978/1982) Social Potency construct, assesses a tendency to be charming and adept at influencing others. Factor 3, Coldheartedness, whose name derives from the interpersonal circumplex literature (Wiggins, 1982), measures a propensity toward callousness, guiltlessness, and unsentimentality. Factor 4, Carefree Nonplanfulness, seems similar to the nonplanning component of impulsivity identified by Eysenck and Eysenck (1977) and assesses an insouciant absence of forethought. Factor 5, Fearlessness, measures an absence of anticipatory anxiety concerning harm and an eagerness to take risks. Factor 6, Blame Externalization, is reminiscent of Tellegen's (1978/1982) Alienation factor and Millon's (1981) construct of malevo-

TABLE 2
PPI Subscales and Sample Items

Machiavellian Egocentricity (30 items)
I always look out for my own interests before worrying about those of the other guy. (True)
Social Potency (24 items)
Even when others are upset with me, I can usually win them over with my charm. (True)
Coldheartedness (21 items)
I have had "crushes" on people that were so intense that they were painful. (False)
Carefree Nonplanfulness (20 items)
I often make the same errors in judgment over and over again. (True)
Fearlessness (19 items)
Making a parachute jump would really frighten me. (False)
Blame Externalization (18 items)
I usually feel that people give me the credit I deserve. (False)
Impulsive Nonconformity (17 items)
I sometimes question authority figures "just for the hell of it." (True)
Stress Immunity (11 items)
I can remain calm in situations that would make many other people panic. (True)

Note. PPI = Psychopathic Personality Inventory.

lent projection, and assesses a tendency to view others as the source of one's difficulties and to offer rationalizations for one's misbehaviors. Factor 7, Impulsive Nonconformity, is named after Chapman et al.'s (1984) Impulsive Nonconformity construct, and measures a reckless lack of concern regarding social mores. Finally, Factor 8, Stress Immunity, assesses an absence of marked reactions to anxiety-provoking events.

Sex Differences

In the third round of data analysis, men received higher scores than women on the PPI total score and all eight subscales. This finding is consistent with findings that psychopathic traits are more common among men than women (Lykken, 1984). The comparisons reported here are based on participants with no missing data; the *ns* for these comparisons range from 210 to 259 for men and 331 to 361 for women. Sex differences were significant at $p < .001$ for the PPI total score (Cohen's $d = .97$) and five subscales: Machiavellian Egocentricity (Cohen's $d = .53$), Coldheartedness (Cohen's $d = .73$), Fearlessness (Cohen's $d = .79$), Impulsive Nonconformity (Cohen's $d = .52$), and Stress Immunity (Cohen's $d = .74$). In addition, men scored higher than women at $p < .05$ for Blame Externalization (Cohen's $d = .19$). Using J. Cohen's (1982) rule-of-thumb for gauging the magnitude of the effect size statistic d , this difference was in the large range for the PPI total score, in the medium to large range for the five subscales showing significant differences at $p < .001$, and in the small range for Blame Externalization.

Internal Consistency

The internal consistency (as assessed by Cronbach's alpha) of the PPI total score in four undergraduate samples (used in the four construct validation studies reported later) ranged from .90 to .93. The internal consistencies of the eight PPI subscales in these four samples ranged from .70 to .90, with 75% of the coefficients in the .80 to .90 range.

Test-Retest Reliability

Estimates of the test-retest reliability of the PPI and its subscales were obtained by administering the test on two occasions to 57 undergraduates. Two participants were excluded on the basis of elevated validity scale scores, leaving a total of 55 participants. Participants were paid \$5 each for their participation. The mean test-retest interval was 26 days (range = 21 to 39 days). The test-retest reliability of the PPI total score was extremely high ($r = .95$), and those of the eight PPI subscales were all high (rs ranged from .82 to .94).

Subscale Interrelations

The intercorrelations among the eight PPI subscales (based on the third round of factor analysis) are shown in Table 3. Participants with missing data on any of the subscales were excluded, leaving a total of 515 participants. Subscale scores were calculated by unit weighting each item and summing across items. Although most of the correlations are positive, the matrix does not present a picture of complete positive manifold. In particular, two of the subscales, Blame Externalization and Stress Immunity, have low negative correlations with several other subscales.

Relations With Social Desirability

Across the three rounds of test development, the correlations of the PPI total score with the MCSD ranged from $r = -.20$ to $-.30$. This finding suggests that scores on the PPI are not substantially affected by a social undesirability response style.

STUDY 2: RECAPTURED ITEM TECHNIQUE STUDY

Method

Although the eight PPI factors replicated across multiple rounds of factor analysis, our interpretation and naming of these factors rested entirely on subjective judgment. Because the subjectivity involved in factor labeling has been one of the most frequent criticisms of the use of factor analysis, we applied Meehl, Lykken,

TABLE 3
Intercorrelations Among PPI Subscales

Subscale	1	2	3	4	5	6	7	8
1. MAC	—	.16	.19	.26	.37	.45	.25	-.13
2. SOCPOT	—	—	.08	-.11	.26	-.09	.23	.34
3. COLD	—	—	—	.14	.03	-.11	.00	.36
4. NONPLAN	—	—	—	—	.05	.17	.16	-.12
5. FEARLESS	—	—	—	—	—	.18	.52	.29
6. BLAME	—	—	—	—	—	—	.18	-.29
7. IMP	—	—	—	—	—	—	—	.17
8. STRESSIMM	—	—	—	—	—	—	—	—

Note. $N = 515$. PPI = Psychopathic Personality Inventory. MAC = Machiavellian Egocentricity; SOCPOT = Social Potency; COLD = Coldheartedness; NONPLAN = Carefree Nonplanfulness; FEARLESS = Fearlessness; BLAME = Blame Externalization; IMP = Impulsiveness Nonconformity; STRESSIMM = Stress Immunity.

Schofield, and Tellegen's (1971) Recaptured Item Technique to the factors of the PPI.²

First, the items on each of the eight PPI factors were arranged in order of their factor loadings. Then, every other item was removed from each factor, leaving each factor with half of its original items. We then asked five graduate students enrolled in a graduate course in personality assessment (who had no prior knowledge concerning either the item content or factor structure of the PPI) to meet as a group to review the remaining half of the items on each factor, and to arrive at a consensus name for each factor. These students were not permitted to view the other half of the items that had been removed from each factor. Once these students had agreed on a label for each factor, five other graduate students enrolled in the same course were asked to match the remaining half of the items with the eight factor labels provided by the first group.

Results

The five students in the second group were able to perform the matching task with perfect accuracy, yielding a 40 out of 40 hit rate. Using a test of the exact binomial probability (Siegel & Castellan, 1988), this result is significant at $p < .001$. This finding indicates that the eight factors of the PPI contain psychologically meaningful content that can be readily communicated to other individuals.³

STUDY 3: CONSTRUCT VALIDATION STUDY 1

In the initial construct validation study, we examined the convergent and discriminant validity of the PPI by administering it in conjunction with other self-report indices relevant to psychopathy, as well as with self-report indices of schizotypy and mood disorders. Schizotypy is important to differentiate from psychopathy, because individuals with schizophrenia-spectrum disorders are at elevated risk for antisocial behavior (Heston, 1970), and because certain schizotypal features, such as blunted affect and alienation, are superficially similar to some characteristics of psychopathy. We included a measure of trait depression to ensure that the PPI was

²I thank John Billig, Paul Collins, Gary Donaldson, Donald Eggerth, Patrick Jichaku, Debi Kroll-Mensing, Brad Roper, and Chris Sager for serving as participants in the Recaptured-Item Technique study.

³It is also worth noting that the factor labels provided by the first group of judges were in most or all cases quite similar to those I had arrived at independently, despite the fact that these judges had access to only half of the items on each factor. For example, these judges labeled the Machiavellian Egocentricity factor as "Machiavellianism," the Coldheartedness factor as "Lack of Sentimentality," and the Stress Immunity factor as "Control over Negative Emotion."

not simply assessing a general dimension of Negative Affectivity (NA) or maladjustment. Measures of trait depression tend to load highly on NA (Watson & Clark, 1984). In addition, we included a measure of hypomania in light of Zuckerman's (1978) conjecture that manics and hypomanics can in some ways be thought of as episodic psychopaths. Thus, we predicted a moderate positive correlation between the PPI and an index of hypomania. Finally, we examined the discriminant validity of the PPI from a measure of impression management. This issue seems particularly important in light of psychopaths' tendencies toward prevarication (Cleckley, 1941/1982). Although the correlation of the PPI with the MCSD was below $r = -.30$ in all three rounds of test construction, we wished to replicate this finding using a different measure.

Method

Participants

The sample consisted of 71 undergraduates drawn from a large midwestern university, 57 of whom had participated in the test-retest reliability study reported earlier. Two participants were eliminated on the basis of elevated validity scale scores, leaving a total of 69 participants (12 men, 57 women). The mean age of the sample was 23.6 years ($SD = 6.0$).

Measures

CPI So scale. This measure was designed to assess the role-taking deficits characteristic of psychopaths, and was developed by contrasting the responses of delinquents and nondelinquents (Gough, 1960). The So scale administered in childhood predicts subsequent delinquency (Yates, 1970) and ratings of irresponsibility in adulthood (Block, 1971). Moreover, the So scale has been found to rank order a variety of criterion groups on a hypothesized continuum of socialization (Gough, 1960). High scores on the So scale indicate lower propensities toward psychopathy.

Self-Report Psychopathy Scale-Revised (SRP-R). This scale was developed by Hare (1985) using a combination of rational, empirical, and internal consistency approaches. The SRP scale was developed by identifying items that discriminated between high and low psychopathy groups as assessed by the PCL, and was revised to provide superior coverage of PCL Factor 1 traits (T. Harpur, personal communication, 1988). The revised version of the SRP, which was used in this study, correlates $r = .54$ with the PCL-R (T. Harpur, personal communication, 1989).

Psychopathy Scale. This measure was rationally constructed by Levenson (1990) to operationalize the Cleckley criteria for psychopathy. The Psychopathy Scale has been reported to correlate positively with self-report indices of substance use risk, disinhibition, and boredom proneness, and negatively with self-reported empathy (Levenson, 1990).

Perceptual Aberration Scale (PAS). This measure, developed by Chapman, Chapman, and Raulin (1976), assesses unusual sensory experiences sometimes found among psychotic individuals (e.g., "Sometimes part of my body has seemed smaller than it really is"). The first-degree relatives of high PAS probands have been found to have elevated rates of treatment for schizophrenia, but not mood disorders, compared with the first-degree relatives of low PAS probands (Lenzenweger & Loranger, 1989a). In addition, the PAS correlates moderately to highly with structured interview diagnoses of schizotypal and schizoid personality disorders (Lenzenweger & Loranger, 1989b).

Schizoidia Scale. This seven-item measure was developed by selecting MMPI items that discriminate between conjectured latent schizoid and nonschizoid taxa (Golden & Meehl, 1979). Among undergraduates, it has been found to relate moderately to highly with MMPI code types associated with schizophrenia (e.g., 2-7-8; Chapman, Chapman, & Miller, 1982).

The General Behavior Inventory (GBI). This measure, developed by Depue et al. (1981), contains three subscales (see Depue, 1987): Depression, Hypomania, and Biphasic (Cyclothymia). In the analyses reported here, the GBI was scored using both the case-scoring format recommended by Depue et al. (1981) and a Likert-type format. In the former format, only responses of 3 or 4 (on a 1 to 4 scale) count toward the total score. High scores on the GBI are associated with an increased rate of mood disorders among first-degree relatives, as well as greater variability in daily ratings of behavior and mood (Depue et al., 1981). In addition, the GBI distinguishes outpatients with cyclothymia and dysthymia from those without chronic mood disorders (Mallon, Klein, Bornstein, & Slater, 1986).

The Multidimensional Personality Questionnaire (MPQ) Unlikely Virtues scale. This measure developed by Tellegen (1978/1982) is similar to the MMPI Lie Scale in that it assesses trivial frailties possessed by virtually all individuals. Unlike the MMPI Lie scale, however, in which all items are keyed *false*, the Unlikely Virtues Scale has an equivalent number of items keyed *true* and *false*, thereby minimizing the potential impact of an acquiescence or counteracquiescence response bias. High scores on the Unlikely Virtues Scale indicate socially desirable impression management.

Results and Discussion

The correlations between the PPI total score and the other self-report measures are shown in Table 4. The PPI was moderately correlated (negatively) with the So scale and the Psychopathy Scale, and was correlated very highly with the SRP-R. In addition, the PPI had low and nonsignificant positive correlations with both measures of schizotypy/psychosis proneness, and with the GBI Depression and Biphasic subscales. The correlation of the PPI with the GBI Hypomania subscale was, as predicted, moderately high. Finally, the PPI had a low negative correlation with the MPQ Unlikely Virtues Scale.

Thus, the results of Study 3 indicate that the PPI exhibits convergent validity with self-report indices of psychopathy, as well as discriminant validity from self-report indices of depression, cyclothymia, and schizotypy/psychosis proneness. In addition, these findings suggest that the PPI does not simply assess a social undesirability response style.

STUDY 4: CONSTRUCT VALIDATION STUDY 2

In the second construct validation study, we examined in more detail the convergent and discriminant validity of the PPI with other self-report indices. Specifically, we examined the extent to which the PPI was correlated with additional measures

TABLE 4
Correlations Between the PPI Total Score and Self-Report Measures Relevant to Psychopathy, Schizotypy, Depression, and Impression Management

<i>Measure</i>	<i>r</i>
So scale	-.59**
SRP-R	.91**
Psychopathy Scale	.37*
PAS	.07
Schizoidia Scale	.03
GBI subscales	
Depression	.19 (.22)
Hypomania	.48* (.58)
Biphasic	.12 (.21)
MPQ Unlikely Virtues	-.13

Note. *Ns* range from 53 to 69. Correlations with the GBI subscales are presented using both the case-scoring and Likert format (the latter are in parentheses). PPI = Psychopathic Personality Inventory; So scale = CPI Socialization scale; SRP-R = Self-Report Psychopathy Scale-Revised; PAS = Perceptual Aberration Scale; GBI = General Behavior Inventory; MPQ = Multidimensional Personality Questionnaire.

* $p < .01$. ** $p < .001$, two-tailed.

relevant to psychopathy and traits relevant to psychopathy (e.g., physical and social fears) and with a measure of *DSM-III-R* ASPD. In light of research indicating moderate overlap between the personality- and behavior-based approaches to psychopathy (Harpur et al., 1989), we expected the correlation between the PPI and a measure of ASPD to be positive, but not extremely high. In addition, we examined further the discriminant validity of the PPI from NA by administering it with indices of health concerns and depression, both of which are related to NA (Watson & Clark, 1984).

Method

Participants

Participants were 106 undergraduates drawn from a large midwestern university, 4 of whom were excluded on the basis of elevated validity scale scores. Of the remaining 102 participants, 34 were men, 66 were women, and 2 neglected to record their sex. These participants had a mean age of 25.1 ($SD = 7.3$).

Measures

MMPI *Pd* scale. This measure was developed by McKinley and Hathaway (1944) by contrasting the responses of hospitalized individuals diagnosed with "psychopathic personality, asocial and amoral type" (p. 167) with those of normals. The *Pd* scale, particularly in conjunction with self-report indices of anxiety, has been found to discriminate between individuals with poor versus good passive-avoidance learning (e.g., Newman, Widom, & Nathan, 1985). Although the *Pd* scale correlates moderately with measures of antisocial behavior, its correlations with measures of Cleckley psychopathy are generally low (Harpur et al., 1989).

MMPI-2 *Antisocial Practices (ASP)* content scale. The *ASP* scale is an MMPI-2 content scale developed by Butcher, Graham, Williams, and Ben-Porath (1990). This scale was constructed by first rationally selecting a set of MMPI items assessing "antisocial ideas and practices" and removing items having low correlations with this composite. Among men, the *ASP* scale has been found to correlate positively with spousal ratings of drug use, legal problems, and use of profanity; among women, it has been found to correlate positively with spousal ratings of physical threats and dishonesty (Butcher et al., 1990).

Sociopathy (*SPY*) scale. This scale was developed by Spielberger, Kling, and O'Hagan (1978) by identifying MMPI items that distinguished between two groups: prisoners with significant elevations on the *Pd* and *Ma* (Hypomania) scales,

but not other scales, and prisoners with no clinically significant elevations on any MMPI scales. The *SPY* scale was refined by identifying MMPI items that differentiated prisoners with *Pd-Ma* elevations from other prisoners. Spielberger et al. (1978) reported that the *SPY* scale correlates positively with a checklist measure of conduct problems and negatively with the *So* scale.

Personality Diagnostic Questionnaire-Revised (PDQ-R) ASPD scale.

This measure was rationally constructed by Hyler and Rieder (1987) to assess the *DSM-III-R* (APA, 1987) criteria for ASPD. The PDQ-R ASPD scale exhibits modest agreement with diagnoses of ASPD as assessed by two structured interviews (*Ks* were .36 and .42), as well as moderate correlations with dimensional ASPD scores derived from these interviews (intraclass correlations were both .46; Hyler, Skodol, Kellman, Oldham, & Rosnick, 1990). Because the PDQ-R scales are better thought of as screening, rather than as diagnostic, measures of psychopathology (Hyler, Skodol, Oldham, Kellman, & Doidge, 1992), they are analyzed here using dimensional scores only.

Other MMPI-2 content scales. Four additional MMPI-2 content scales were administered to provide further information concerning the PPI's convergent and discriminant validity: Fears (*FRS*), Social Discomfort (*SOD*), Health (*HEA*), and Depression (*DEP*). Like the *ASP* scale, these scales have been found to exhibit meaningful sets of correlates based on spouse ratings (Butcher et al., 1990).

Results and Discussion

The correlations between the PPI total score and the other self-report indices in Study 4 are shown in Table 5. The PPI was significantly, but only moderately, correlated with the MMPI *Pd* scale ($r = .29$). Although this correlation was somewhat lower than might be expected, it is consistent with findings that the *Pd* scale does not assess adequately many of the core personality features of psychopathy (Harpur et al., 1989). In contrast, the correlations between the PPI and the other three measures relevant to psychopathy were moderately high. The correlation between the PPI and the PDQ-R ASPD scale ($r = .46$) is consistent with findings that the personality- and behavior-based approaches to psychopathy exhibit moderate, but not very high, overlap. As predicted, the PPI was significantly negatively correlated with the MMPI-2 *FRS* and *SOD* scales, although the former correlation was relatively low. Finally, the PPI exhibited nonsignificant correlations with the MMPI-2 *HEA* and *DEP* content scales. The results of Study 4 suggest that the PPI possesses adequate convergent validity with measures relevant to psychopathy and

TABLE 5
Correlations Between the PPI Total Score and Psychopathy-Related Measures
and MMPI-2 Content Scales

<i>Measure</i>	<i>r</i>
Psychopathy-related measures	
MMPI <i>Pd</i> scale	.29*
MMPI-2 <i>ASP</i> scale	.56**
<i>SPY</i> scale	.55**
PDQ-R ASPD scale	.46**
Other MMPI-2 content scales	
<i>FRS</i>	-.25*
<i>SOD</i>	-.40**
<i>HEA</i>	.11
<i>DEP</i>	.02

Note. $N = 101$. PPI = Psychopathic Personality Inventory; MMPI *Pd* scale = MMPI Psychopathic Deviate scale; MMPI-2 *ASP* scale = MMPI-2 Antisocial Practices content scale; *SPY* scale = MMPI Sociopathy Scale; PDQ-R ASPD scale = Personality Diagnostic Questionnaire-Revised Antisocial Personality Disorder scale; *FRS* = MMPI-2 Fears content scale; *SOD* = MMPI-2 Social Discomfort content scale; *HEA* = MMPI-2 Health content scale; *DEP* = MMPI-2 Depression content scale.

physical and social fears, and adequate discriminant validity from measures of health concerns and depression. In addition, the correlation between the PPI and self-reported ASPD is not sufficiently high to suggest that the former is exclusively a measure of antisocial behavior.

STUDY 5: CONSTRUCT VALIDATION STUDY 3

Up to this point, the nomological network (Cronbach & Meehl, 1955) surrounding the PPI incorporated only self-report indices. Consequently, in the third construct validation study, the nomological network was expanded to include semistructured psychiatric interview, peer rating, interview rating, and family history data. In addition, we examined the extent to which the PPI possesses incremental validity (Sechrest, 1963) for pertinent criteria compared with other self-report psychopathy measures.

Method

Participants

Participants were 98 undergraduates drawn from introductory psychology courses at a large northeastern university. Eighty-eight of these participants re-

ceived partial course credit for their participation; the remaining 10 were paid \$10 for their participation.⁴ Two participants were excluded on the basis of elevated validity scale scores, leaving a total of 96 participants for the analyses reported here. The mean age of these participants was 18.7 ($SD = 1.4$); 41 were men and 55 were women.

Measures

In addition to the PPI, the MMPI *Pd* scale, and the PDQ-R ASPD scale, participants were administered the following measures:

MMPI ASPD scale. This scale, which is designed to assess the *DSM-III* criteria for ASPD, was developed from the MMPI item pool by means of a combined rational and empirical test construction strategy (Morey, Waugh, & Blashfield, 1985). It has been reported to demonstrate a promising pattern of convergent and discriminant validity with the standard MMPI clinical scales (Morey et al., 1985) and to discriminate clinical diagnoses of ASPD from those of other personality disorders (Morey, Blashfield, Webb, & Jewell, 1988).

Short Form of the Michigan Alcohol Screening Test (SMAST). The SMAST is a screening measure consisting of items assessing complications associated with alcohol abuse and dependence. Scores on the SMAST have been reported to correlate $r = .90$ or greater with scores derived from the full version of the Michigan Alcohol Screening Test (Selzer, Vinokur, & vonRooijen, 1975). The SMAST has been found to correlate moderately to highly with other self-report measures of alcoholism and to distinguish alcoholic inpatients and outpatients from normals (Hedlund & Viewig, 1984). The SMAST was administered in this study in view of findings that psychopaths and antisocial individuals are at elevated risk for alcohol-related problems (Schuckit, 1973).

Structured Clinical Interview for DSM-III-R, Axis II (SCID-II). The SCID-II (Spitzer, Williams, & Gibbon, 1987) is a structured interview for the assessment of *DSM-III-R* personality disorders. In this study, four personality disorders were assessed for purposes of both convergent and discriminant validity:

⁴Because analyses excluding these 10 participants were virtually identical to those including all participants, only analyses on the full sample are reported here.

ASPD, histrionic personality disorder (HPD), borderline personality disorder (BPD), and narcissistic personality disorder (NPD). Because of the low base rates of symptoms of these four disorders in this nonclinical sample, symptoms were scored as present at either the subthreshold or threshold level.⁵ ASPD was assessed to examine the correlation between the PPI and a measure of chronic antisocial and criminal behavior. Although ASPD is not equivalent to psychopathy (Lilienfeld, 1994), the PPI was expected to relate more highly to ASPD than to other personality disorders. The other three personality disorders were assessed because, like ASPD, they are in the dramatic/emotional/erratic cluster of *DSM-III-R* Axis II and were thus predicted to be moderately positively correlated with the PPI. Nonetheless, they were predicted to be less highly correlated with these scales than with ASPD. Interviewers (who administered both the SCID and the Family Informant Schedule and Criteria, to be described next) were blind to participants' scores on the PPI and all other measures.

With the exception of ASPD, the base rates of personality disorder diagnoses in our nonclinical sample were too low (5% or less) to render analyses at the categorical (i.e., diagnostic) level meaningful. Hence, analyses for ASPD are reported using both categorical and dimensional scores, whereas analyses for the other personality disorders are reported using dimensional scores only. The SCID-II sections were tape-recorded and scored by an independent rater for a randomly selected subset of participants ($n = 54$). The intraclass correlations (ICCs) for interrater reliability using dimensional scores were as follows: ASPD - ICC = .85; HPD - ICC = .71; BPD - ICC = .66; and NPD - ICC = .83. The kappa coefficient (K) of interrater agreement for the ASPD diagnosis was .90.

Family Informant Schedule and Criteria (FISC). This structured interview was designed by Mannuzza, Fyer, Endicott, and Klein (1985) to assess family history of several major psychiatric disorders, and is derived largely from the Family History-Research Diagnostic Criteria (FH-RDC; Andreasen, Endicott, Spitzer, & Winokur, 1977). The FISC differs from the FH-RDC, however, in providing interviewers with more highly structured questions for assessing psychopathology. In this study, the sections of the FISC measuring ASPD, alcoholism, drug dependence, and depression were administered. The first three disorders were assessed in view of findings that they covary with psychopathy (e.g., Schuckit, 1973) and coaggregate among family members at higher-than-chance levels (Wender & Klein, 1981); depression was assessed to ascertain discriminant validity. In addition, a module developed by Lilienfeld and Blake (1988) to assess somatization

⁵Correlations calculated using threshold level scores were in almost all cases very similar to, although slightly lower, than those using subthreshold level scores.

disorder was administered. This module was based on the *DSM-III-R* screening criteria for somatization disorder (APA, 1987, pp. 263–264) and was included in light of findings indicating that ASPD and somatization disorder covary within families (Wender & Klein, 1981). Because of the low base rate of diagnoses among the first-degree relatives of this sample, only dimensional analyses (i.e., using number of symptoms endorsed) are reported. All of the analyses reported here used the number of first-degree relatives as a covariate.

Interviewer ratings. At the conclusion of the interview battery, interviewers were asked to make ratings on several characteristics of interviewees based on their clinical impressions. First, interviewers were asked to complete a 20-item measure of the Cleckley criteria for psychopathy adapted from the work of Harkness (1992). This measure had an internal consistency (Cronbach's alpha) of .79. Second, interviewers were asked to provide their clinical impressions of interviewees on 6 items. Specifically, they were asked to rate the extent to which they (a) found the participant believable, (b) found the participant trustworthy, (c) thought the participant reported accurately on his or her emotions and behaviors, (d) found the participant likeable, (e) were able to establish rapport with the participant, and (f) found the participant interesting.

Peer ratings. At the conclusion of the testing session, participants were asked to nominate two same-sex friends or roommates who had known them well for at least a 6-month period. These peers were contacted by telephone and asked to complete a brief questionnaire on the participants who had nominated them. This measure consisted of items assessing (a) the three higher order dimensions (Positive Emotionality, Negative Emotionality, and Constraint) and 11 lower order dimensions of Tellegen's (1978/1982) MPQ, (b) frequency and intensity of alcohol use, and (c) the Cleckley criteria for psychopathy, again adapted from Harkness (1992). Peers, who were paid \$2 for participating, completed the questionnaire at home and returned it by mail.

The MPQ scales were assessed by adapting a brief rating measure developed by Tellegen (1978/1982) to approximate the full MPQ scales. This measure consists of 33 items, with 3 items for each of the 11 lower order scales. The lower order scales of Wellbeing, Social Potency, Social Closeness and Achievement load primarily on Positive Emotionality, the lower order scales of Stress Reaction, Aggression, and Alienation load primarily on Negative Emotionality, and the lower order scales of Control vs. Impulsiveness, Harmavoidance, and Traditionalism load primarily on Constraint; Absorption does not load primarily on any one higher order factor (Tellegen & Waller, in press). Scores on the three higher order scales were calculated by unit weighting and summing scores on the lower order scales that

load most highly on each higher order dimension. The two alcohol use variables were each assessed by a single item. These 2 items were highly correlated ($r = .89$) and were combined into a single scale.

The internal consistency of the Cleckley scale, as assessed by Cronbach's alpha, was .76. The alphas for the three MPQ higher order scales ranged from .76 to .82, while in all but two cases the alphas for the lower order MPQ scales ranged from .50 to .71 (the exceptions were Wellbeing, $\alpha = .46$, and Traditionalism, $\alpha = .33$). At least one peer questionnaire was obtained for 62 participants. In cases in which both peers completed the questionnaire, responses were averaged.

Results and Discussion

The relations between the PPI and psychopathy-related self-report measures are shown in Table 6. The PPI was again significantly correlated with the *Pd* scale, although this correlation was relatively weak. The correlations between the PPI and other psychopathy measures were high and significant. The correlation between the PPI and the SMAST, although fairly low in magnitude, approached significance ($p < .06$).

Table 7 displays the relations between the PPI and interview measures. The PPI was moderately correlated with SCID-II ASPD as scored both dimensionally and categorically, as well as with NPD. In contrast, the correlations between the PPI and SCID-II BPD and HPD were lower and nonsignificant. The test of the difference between dependent correlations (J. Cohen & P. Cohen, 1975) revealed that the correlation between the PPI and ASPD (scored dimensionally) was significantly higher, $t(74) = 2.11$, $p < .05$, than the next highest correlation, namely, that between the PPI and NPD.

TABLE 6
Correlations Between the PPI Total Score and Self-Report Measures Relevant to Psychopathy and Alcohol Abuse/Dependence

Measure	<i>r</i>
MMPI <i>Pd</i> scale	.31*
MMPI-2 <i>ASP</i> scale	.58**
PDQ-R <i>ASPD</i> scale	.65**
MMPI <i>ASPD</i> scale	.64**
SMAST	.21

Note. $N = 96$. PPI = Psychopathic Personality Inventory; MMPI *Pd* scale = MMPI Psychopathic Deviate scale; MMPI-2 *ASP* scale = MMPI-2 Antisocial Practices content scale; PDQ-R *ASPD* scale = Personality Diagnostic Questionnaire-Revised Antisocial Personality Disorder scale; MMPI *ASPD* scale = MMPI Antisocial Personality Disorder scale; SMAST = Short form of Michigan Alcohol Screening Test.

* $p < .01$. ** $p < .001$, two-tailed.

TABLE 7
Correlations Between the PPI and Structured Psychiatric Interview and Family History Measures

Measure	<i>r</i>	
SCID-II measures		
ASPD	.59***	(.38)***
NPD	.35**	
HPD	.21	
BPD	.11	
Interview rating measures		
Cleckley psychopathy	.60***	
Believability	-.19	
Trustworthiness	-.39***	
Accuracy of reporting	-.30*	
Likeability	-.04	
Rapport	-.12	
Interest	.14	
FISC measures		
ASPD	.19	(.13)
Drug abuse/dependence	.25*	(.19)*
Alcohol abuse/dependence	.22	(.08)
Major depression	.19**	(.05)
Somatization disorder	-.07	(-.01)

Note. *Ns* range from 67 to 82. Categorical (i.e., diagnostic) scores are in parentheses. PPI = Psychopathic Personality Inventory; SCID-II = Structured Clinical Interview for *DSM-III-R*; ASPD = antisocial personality disorder; NPD = narcissistic personality disorder; HPD = histrionic personality disorder; BPD = borderline personality disorder; FISC = Family Informant Schedule and Criteria.

* $p < .05$. ** $p < .01$. *** $p < .001$, two-tailed.

The PPI was highly positively correlated with interviewer-rated Cleckley psychopathy⁶ and moderately negatively correlated with interviewer ratings of trustworthiness and accuracy of reporting. It is worth noting that PPI scores were positively correlated with interviewer ratings of how interesting they found participants to be, although this correlation was nonsignificant.

The correlations between the PPI and family history indices of psychopathology were low and, with the exception of substance abuse/dependence and major

⁶It could be argued that this correlation was inflated due to the fact that interviewers may have based their ratings of Cleckley psychopathy at least partly on the extent to which participants exhibited features of antisocial personality disorder (ASPD) on the Structured Clinical Interview for *DSM-III-R* (SCID-II) interview. Thus, we recomputed the correlation between the Psychopathic Personality Inventory and interviewer-rated Cleckley psychopathy after partialling out participants' dimensional scores on the ASPD section of the SCID-II. This partial correlation was lower than the original correlation, but still significant ($r = .39, p < .001$).

depression, nonsignificant. The correlation between the PPI and family history of ASPD symptoms, although in the predicted direction ($r = .19$), was low and only approached significance ($p < .09$).

Table 8 displays the relations between the PPI and peer rating variables. The PPI was moderately positively correlated with the MPQ higher order scale of Negative Emotionality and moderately negatively correlated with the MPQ higher order scale of Constraint. The PPI was also significantly positively correlated with the MPQ Social Potency and Aggression lower order scales, and significantly negatively correlated with the MPQ Harmavoidance, Control vs. Impulsiveness, and Traditionalism lower order scales.⁷ As noted earlier, the latter three scales are markers of Constraint (Tellegen & Waller, in press). In addition, the PPI was moderately positively correlated with peer-rated Cleckley psychopathy and weakly but significantly correlated with the index of drinking frequency and intensity.

⁷Because of the low internal consistencies of the Multidimensional Personality Questionnaire (MPQ) Wellbeing and Traditionalism scales, the correlations between the Psychopathic Personality Inventory (PPI) and these scales were recomputed after correcting these MPQ scales for attenuation. The correlation between the PPI and MPQ Wellbeing rose negligibly (from $r = .00$ to $r = .01$), whereas the correlation between the PPI and MPQ Traditionalism changed from $r = -.34$ to $r = -.59$.

TABLE 8
Correlations Between PPI and Peer Rating Variables

Variable	<i>r</i>
MPQ scales	
Positive Emotionality	.16
Negative Emotionality	.35**
Constraint	-.50***
Wellbeing	.01
Social Potency	.29*
Social Closeness	.12
Achievement	.01
Stress Reaction	.15
Alienation	.19
Aggression	.43**
Harmavoidance	-.41***
Control vs. Impulsiveness	-.38**
Traditionalism	-.34**
Absorption	.02
Cleckley psychopathy	.45***
Drinking frequency and intensity	.26*

Note. *N*s range from 58 to 63. PPI = Psychopathic Personality Inventory; MPQ = Multidimensional Personality Questionnaire.

* $p < .05$. ** $p < .01$. *** $p < .001$, two-tailed.

In addition, two hierarchical multiple regression analyses were performed to examine the incremental validity of the PPI relative to other self-report measures relevant to psychopathy. In these analyses, interviewer-rated and peer-rated Cleckley psychopathy, respectively, were used as dependent variables. In both cases, the MMPI *Pd* scale, MMPI *ASPD* scale, PDQ-R *ASPD* scale, and MMPI-2 *ASP* scale were entered on the first step, followed by the PPI total score on the second step. For interviewer-rated Cleckley psychopathy, the entry of the four measures on the first step accounted for a significant amount of variance, $R^2 = .38$, $F(4, 62) = 9.48$, $p < .001$. The addition of the PPI on the second step yielded a significant increment of variance, R^2 change = .05, F change (5, 61) = 5.90, $p < .05$. For peer-rated Cleckley psychopathy, in contrast, the amount of variance accounted for the entry of the four measures on the first step was not significant, $R^2 = .10$, $F(4, 58) = 1.64$ *ns*. The addition of the PPI of the second step again yielded a significant increment in variance, R^2 change = .11, F change (5, 57) = 7.85, $p < .01$.

Thus, the results of Study 5 indicate that the PPI exhibits theoretically meaningful correlates as assessed by structured psychiatric interview and peer ratings, as well as by self-report indices relevant to psychopathy. With respect to personality disorders, the PPI demonstrated convergent validity with *ASPD* and discriminant validity from overlapping conditions. In addition, the PPI correlated moderately to highly with interviewer and peer ratings of Cleckley psychopathy, and demonstrated incremental validity over and above four self-report psychopathy-related measures in the prediction of Cleckley psychopathy. Although the PPI correlated positively with family history of antisocial symptoms, this correlation only approached significance; moreover, the PPI exhibited comparable correlations with family history of substance abuse/dependence and depression symptoms. The extent to which these results cast doubt on the discriminant validity of the PPI is unclear, particularly in view of the high false-negative rate of family history interviews (Andreasen et al., 1977) and the low base rates of psychiatric symptoms among the family members of our nonclinical sample.

STUDY 6: CONSTRUCT VALIDATION STUDY 4

In the final construct validation study, we examined further the PPI's convergent validity with traits relevant to psychopathy (e.g., fearlessness) and its discriminant validity from personality disorders outside of the dramatic/emotional/erratic cluster. In addition, we ascertained the convergent and discriminant relations of the PPI subscales with measures of a broad spectrum of personality traits. Although the PPI subscales had previously been administered in conjunction with indices relevant to personality traits, in this study we examined in greater detail the relations of these subscales to the lower order traits of the MPQ.

Method

Participants

Participants were 119 undergraduates drawn from a large northeastern university. Six participants were excluded on the basis of elevated validity scale scores, as well as on the basis of excessive missing data, leaving a total of 113 participants (64 men, 45 women, and 4 individuals who neglected to record their sex). Their mean age was 18.7 ($SD = 1.4$).

Measures

In addition to the PDQ-R ASPD scale and the SRP-R (see Study 3), participants were administered the following self-report measures:

Self-report MPQ items. These items were similar to those used for peer ratings in Study 5, except that they were reworded appropriately for self-report. The internal consistencies of the MPQ higher order scales ranged from .70 to .83, while in all but two cases the alphas of the MPQ lower order scales ranged from .51 to .81 (the exceptions were Control vs. Impulsiveness and Absorption, $\alpha = .42$ and .33, respectively).

Activity Preference Questionnaire (APQ). The APQ (Lykken, Tellegen, & Katzenmeyer, 1973) is a forced-choice measure designed to assess fearfulness. Each APQ item consists of two choices, one of which is unpleasant primarily because it is boring or onerous, and the other of which is unpleasant primarily because it is frightening or embarrassing. Within each item, the two choices have been matched for desirability by a panel of judges using a modified Thurstone scaling procedure (Lykken et al., 1973). The APQ comprises two moderately correlated subscales, Social Fearfulness and Physical Fearfulness, as well as a total score interpretable as a global index of fearfulness. Low scores on the APQ have been reported to be correlated with psychopathy (Lykken, 1957), although several studies cast doubt on this association (Hare & Cox, 1978). In addition, the APQ has been found to be negatively correlated with frequency of minor criminal offenses among college students, and to differentiate delinquent from normal adolescents (Lykken et al., 1973).

Other PDQ-R personality disorder scales. In addition to the PDQ-R ASPD scale, we administered the PDQ-R scales for five other personality disorder

ders: NPD, BPD, HPD, and schizotypal and schizoid personality disorders. These measures were administered to (a) replicate our findings from Study 5 using alternative indices of personality disorders and (b) examine the discriminant validity of the PPI from personality disorders outside of the dramatic/emotional/erratic cluster. Schizotypal and schizoid personality disorders, which are in the odd/eccentric cluster (APA, 1994), in effect served as "comparison" disorders with which to examine the discriminant validity of the PPI, as they were predicted to be less related to psychopathy compared with the other four personality disorders.

Results and Discussion

Table 9 displays the correlations between the PPI and self-report measures in Study 6. Once again, the PPI was highly correlated with the SRP-R and weakly to moderately correlated with the *Pd* scale. The PPI was moderately negatively correlated with the APQ total and physical fearlessness scores, and weakly to moderately correlated with the APQ social fearlessness score. In addition, the PPI was weakly to moderately positively correlated with MPQ Positive and Negative Emotionality, and moderately negatively correlated with MPQ Constraint. In addition, the PPI was moderately positively correlated with the MPQ Social Potency and Aggression scales, and highly negatively correlated with the MPQ Harmavoidance scale.⁸ Finally, the PPI was positively correlated with PDQ-R ASPD and, to a lesser extent, with PDQ-R NPD and BPD. In contrast, the correlations between the PPI and HPD and schizotypal and schizoid personality disorders were low and nonsignificant. A test of the difference between dependent correlations revealed that the correlation between the PPI and ASPD was not significantly different from the correlations between the PPI and either NPD or BPD, but was significantly different from the correlations between the PPI and schizotypal personality disorder, $t(104) = 2.78, p < .01$, and the other personality disorders.

Table 10 shows the correlations between the PPI subscales and the MPQ lower order subscales in Study 6. For comparison purposes, the correlations between the PPI subscales and the peer-derived MPQ subscales in Study 5 are provided in parentheses. In general, this table provides an impressive picture of both convergent and discriminant validity for the PPI subscales. For example, Social Potency was

⁸ Because of the low internal consistencies of the Multidimensional Personality Questionnaire (MPQ) Control vs. Impulsiveness and Absorption scales, the correlations between the Psychopathic Personality Inventory (PPI) and these scales were recomputed after correcting these MPQ scales for attenuation. The correlation between the PPI and MPQ Control vs. Impulsiveness went from $r = -.27$ to $r = -.42$, whereas the correlation between the PPI and MPQ Absorption rose from $r = .12$ to $r = .20$.

TABLE 9
Correlations Between PPI Total Score and Self-Report Indices of Psychopathy,
Fearfulness, and *DSM-III-R* Personality Disorders

	<i>r</i>
SRP-R	.62***
<i>Pd</i> scale	.28**
APQ total score	-.50***
APQ Physical Fearfulness	-.48***
APQ Social Fearfulness	-.27**
MPQ scales	
Positive Emotionality	.21*
Negative Emotionality	.33***
Constraint	-.46***
Wellbeing	.04
Social Potency	.39***
Social Closeness	.04
Achievement	.17
Stress Reaction	.07
Alienation	.22**
Aggression	.38***
Harmavoidance	-.55***
Control vs. Impulsiveness	-.27**
Traditionalism	-.20*
Absorption	.12
PDQ-R scales	
ASPD	.43***
NPD	.31***
HPD	.11
BPD	.25**
Schizotypal PD	.12
Schizoid PD	-.06

Note. *Ns* range from 109 to 113. PPI = Psychopathic Personality Inventory; SRP-R = Self-Report Psychopathy Scale-Revised; *Pd* scale = Psychopathic Deviate scale; APQ = Activity Preference Questionnaire; MPQ = Multidimensional Personality Questionnaire; PDQ-R = Personality Diagnostic Questionnaire-Revised; ASPD = antisocial personality disorder; NPD = narcissistic personality disorder; HPD = histrionic personality disorder; BPD = borderline personality disorder; PD = personality disorder.

* $p < .05$. ** $p < .01$. *** $p < .001$, two-tailed.

highly correlated with the MPQ scale of the same name, Carefree Nonplanfulness was moderately negatively correlated with the MPQ Control vs. Impulsiveness Scale, Fearlessness was highly negatively correlated with the MPQ Harmavoidance scale, and Stress Immunity was moderately to highly negatively correlated with the MPQ Stress Reaction scale. Moreover, most of the MPQ correlates of the PPI subscales were similar across the two samples, although the correlations in Study 5 were generally somewhat lower than in Study 6. In addition, the PPI subscales

generally exhibited low correlations with MPQ scales that would be theoretically expected to be largely unrelated to these subscales. For example, with the exception of Machiavellian Egocentricity, none of the PPI subscales was highly correlated with the MPQ Aggression Scale; with the exception of Carefree Nonplanfulness and Impulsive Nonconformity, none of the PPI subscales was highly correlated with the MPQ Control vs. Impulsiveness Scale.

TABLE 10
Correlations Between PPI Subscales and MPQ Lower Order Scales

	MAC	SOC POT	COLD	NONPLAN	FEARLESS	BLAME	IMP	STRESSIMM
WB	.08 (.04)	.46 (.24)	.15 (-.18)	-.37 (-.14)	-.08 (-.01)	-.28 (.04)	-.24 (-.03)	.30 (.02)
SP	.21 (.17)	.66 (.39)	-.01 (-.08)	-.35 (.04)	.26 (.17)	.10 (.29)	.15 (.17)	.33 (.06)
SC	-.08 (.08)	.40 (.41)	-.14 (-.38)	-.19 (.01)	.01 (.06)	.00 (.11)	-.05 (.21)	.08 (-.09)
AC	.20 (.03)	.42 (.01)	.08 (.06)	-.47 (-.22)	.09 (.00)	-.06 (.17)	-.08 (.01)	.28 (-.10)
SR	.24 (.15)	-.20 (.16)	-.22 (-.12)	.27 (-.01)	-.06 (.07)	.48 (.31)	.13 (.15)	-.56 (-.20)
AL	.15 (.17)	-.15 (-.11)	-.24 (.15)	.32 (.28)	.16 (.09)	.65 (.34)	.22 (.08)	-.31 (-.29)
AG	.53 (.45)	.11 (.24)	.29 (.20)	-.02 (.28)	.13 (.15)	.21 (.28)	-.01 (.20)	.05 (.00)
HA	-.19 (-.28)	-.18 (-.30)	.01 (.13)	-.09 (-.05)	-.73 (-.45)	-.20 (-.39)	-.52 (-.23)	-.27 (-.11)
CON	.05 (-.20)	.03 (-.21)	-.02 (-.07)	-.47 (-.21)	-.27 (-.35)	-.17 (-.24)	-.50 (-.22)	.08 (-.15)
TR	-.01 (-.18)	.11 (.00)	.06 (-.13)	-.39 (-.21)	-.27 (-.30)	-.11 (-.32)	-.38 (-.35)	.06 (-.04)
ABS	.02 (.06)	.07 (.00)	-.40 (-.07)	-.01 (.03)	.22 (-.03)	.27 (.19)	.36 (.00)	-.17 (-.25)

Note. *N*s range from 109 to 113 for correlations from Study 6 (not in parentheses). *N* = 63 for correlations from Study 5 (in parentheses). For Study 6, correlations of $r = .19$ or greater are significant at $p < .05$; correlations of $r = .26$ or greater are significant at $p < .01$; correlations of $r = .31$ or greater are significant at $p < .001$. For Study 5, correlations of $r = .28$ or greater are significant at $p < .05$; correlations of $r = .35$ or greater are significant at $p < .01$; correlations of $r = .39$ or greater are significant at $p < .001$. For the correlations in each study, the highest correlation of each PPI subscale with a MPQ lower order scale is underlined. PPI = Psychopathic Personality Inventory; MPQ = Multidimensional Personality Questionnaire; WB = Wellbeing; SP = Social Potency; SC = Social Closeness; AC = Achievement; SR = Stress Reduction; AL = Alienation; AG = Aggression; HA = Harmavoidance; CON = Control vs. Impulsiveness; TR = Traditionalism; ABS = Absorption; MAC = Machiavellian Egocentricity; SOC POT = Social Potency; COLD = Coldheartedness; NONPLAN = Carefree Nonplanfulness; FEARLESS = Fearlessness; BLAME = Blame Externalization; IMP = Impulsive Nonconformity; STRESSIMM = Stress Immunity.

GENERAL DISCUSSION

The validation studies reported here provide preliminary but promising support for the construct validity of the PPI, and suggest that psychopathy is a meaningful construct to assess in noncriminal populations. The PPI total score demonstrated good convergent validity with self-report and observer measures of psychopathy, as well as with self-report and interview measures of ASPD and to a lesser extent, NPD (see also Harpur et al., 1989, for evidence that the core personality traits of psychopathy are related to NPD). The correlations of the PPI with indices of ASPD, although moderately high, indicate that the PPI possesses substantial variance that is not shared with measures of antisocial behavior. These results are consistent with Harpur et al.'s (1989) finding that the personality- and behavior-based approaches to the assessment of psychopathy covary only moderately, and underscore the importance of distinguishing between the personality traits of psychopathy and the antisocial behaviors sometimes accompanying this syndrome. The PPI also demonstrated incremental validity relative to commonly used self-report indices relevant to psychopathy (e.g., the MMPI *Pd* scale) in the prediction of observer-rated Cleckley psychopathy, indicating that it is not redundant with a number of extant measures. Finally, the PPI exhibited discriminant validity from self-report measures of schizotypy/psychosis proneness, mood disorders, and social desirability, as well as from measures of traits (e.g., well-being, absorption in sensory experiences) that would be expected to be largely unrelated to psychopathy.

The exploratory approach utilized in the construction of the PPI has helped to clarify the nature of the personality traits underlying psychopathy. The results of this test construction program should not be construed, however, as implying that psychopathy can be comprehensively described or understood in terms of eight factors. The eight subscales of the PPI should be viewed as assessing a sampling of the content domains most relevant to the prototypical features of psychopathy. Because psychopathy, like most or all mental disorders, can be conceptualized as an open concept with an indefinitely extensible list of indicators (see Meehl & Golden, 1982), it would seem unwise to view any psychopathy measure as providing an exhaustive delineation of all of the facets relevant to this syndrome.

The multifactorial nature of the PPI renders it well-suited for research on the etiology of psychopathy. For example, certain subscales of the PPI (e.g., Fearlessness) might be found to be more closely related to putative biological and laboratory markers, such as poor passive-avoidance learning or weak electrodermal classical conditioning to noxious stimuli, compared with other subscales. If so, such findings could indicate that the traits assessed by these subscales are especially relevant to the etiology of psychopathy, and could thus provide tests of specific theoretical models of psychopathy (e.g., models positing a high fear threshold; Lykken, 1982).

Although we regard our findings as encouraging, additional construct validation studies of the PPI are required. Three avenues of research seem particularly critical for future validation efforts. First, it will be necessary to administer the PPI in conjunction with the PCL-R (Hare, 1991), as the latter measure is probably the most extensively validated global index of psychopathy. The PCL-R was not used in the studies reported here because it was designed for use in settings (e.g., prisons) in which researchers have access to extensive file data (Hare, 1991). Administration of the PCL-R along with the PPI would permit a test of the prediction that, unlike most or all extant self-report psychopathy measures (Harpur et al., 1989), the PPI should correlate more highly with PCL-R Factor 1 (the core personality traits of psychopathy) than with PCL-R Factor 2 (antisocial and criminal behaviors).

Second, it will be important to broaden the nomological network surrounding the PPI to include laboratory measures demonstrated to distinguish psychopaths from nonpsychopaths. Such measures include tests of passive-avoidance learning (e.g., Newman et al., 1985) as well as classical conditioning and quasiconditioning paradigms examining electrodermal and cardiovascular responses to anticipated aversive stimuli (Hare, 1978).

Third, it will be necessary to examine the construct validity of the PPI in samples, such as prison inmates, characterized by elevated rates of psychopathic personality traits. Although undergraduate samples have the advantage of being relatively free from several potentially confounding variables (e.g., the effects of incarceration), they have the disadvantage of having relatively low base rates of severe antisocial behaviors, substance use, and several other criteria associated with psychopathy. In addition, our reliance on undergraduates for test development and validation raises a crucial question regarding generalizability: Is the correlational structure of psychopathic personality traits different among undergraduates than among incarcerated or clinical samples? Although the use of undergraduates in psychopathology research has traditionally been viewed with skepticism, the answer to this question should not be prejudged. In the mood disorders literature, for example, there is some evidence that the pattern of relations between depression measures and external criteria is similar in undergraduate and clinical samples (Vredenburg, Flett, & Krames, 1993).

In addition, some of the results reported here raise conceptual questions that bear implications for the assessment of psychopathy. One puzzling finding emerging from the construction of the PPI is the presence of low negative correlations among several PPI subscales, especially those assessing features of NA (Watson & Clark, 1984), namely, Blame Externalization and Stress Immunity. There are at least two explanations for these negative correlations. First, the characteristics assessed by these two PPI subscales may not in fact be part of the construct of psychopathy, despite the fact that they are often cited in the literature (e.g., Albert et al., 1959; Cleckley, 1941/1982) as relevant to this construct. It should be noted, however, that

the correlations between these two subscales and criteria relevant to psychopathy (e.g., observer-rated Cleckley psychopathy, measures of ASPD) were generally positive in the studies reported here.

Second and alternatively, psychopathy may not be a traditional syndrome in the sense of consisting of a set of covarying signs and symptoms (e.g., Kazdin, 1983). Instead, psychopathy might be conceptualized as resulting from maladaptive *interactions* among certain personality traits (Grove & Tellegen, 1991). Such interactions are posited by interpersonal models of personality (e.g., Wiggins, 1982), which imply that certain traits, which need not be positively correlated, combine in specific configurations that produce malignant social consequences. To distinguish between these two possibilities, it will be necessary to examine further the relations between the PPI subscales and various external validating criteria, such as putative biological and laboratory markers of psychopathy.

A further issue warranting investigation is the bifurcation of the PPI's correlations with indices of fearfulness (harmavoidance) and trait anxiety. In Studies 5 and 6, the PPI was moderately negatively correlated with the MPQ Harmavoidance scale and (in Study 6) the APQ, but was essentially uncorrelated with the MPQ Stress Reaction scale, a measure of trait anxiety.⁹ Several authors (e.g., Tellegen & Waller, in press; Watson & Clark, 1984) have recently presented evidence that indices of fearfulness and trait anxiety are negligibly correlated and thus probably assess quite different constructs. Specifically, fearfulness appears to be a sensitivity to signals of danger, whereas trait anxiety appears to be a chronic perception that danger is inevitable (Tellegen, 1978/1982). Indeed, whereas measures of trait anxiety tend to load on the higher order dimension of NA, measures of fearfulness tend to load on the higher order dimension of Constraint (Tellegen & Waller, in press). This finding is of theoretical significance, because Constraint has been posited by some authors (e.g., Fowles, 1987) to be a marker of Gray's (1982) Behavioral Inhibition System (BIS). Low levels of BIS activity have, in turn, been hypothesized by Gray to be the underlying biopsychological substrate of psychopathy. Thus, these findings may point to (low) fearfulness as a content domain that is underrepresented in most existing measures of psychopathy (e.g., the PCL-R; Hare, 1991). In addition, our results call into question Levenson et al.'s (1995) conclusion that "contrary to Lykken's (1982) hypothesis, adventurous, relatively fearless people are not at greater risk for psychopathy than anyone else" (p. 156).

⁹Moreover, the negative correlations between the Psychopathic Personality Inventory (PPI) and indices of fearfulness/harmavoidance are not simply attributable to the inclusion of items on the PPI explicitly assessing these traits. In Study 6, for example, the correlation between the PPI with Fearlessness scale items removed and the Activity Preference Questionnaire total score was $r = -.40$ ($p < .01$), whereas the correlation between the PPI with Fearlessness scale items removed and Multidimensional Personality Questionnaire Harmavoidance was $r = -.41$ ($p < .01$). Thus, removal of Fearlessness items from the PPI had only a relatively minor effect on these correlations.

Finally, the PPI's emphasis on the personality traits of psychopathy may facilitate research on a number of largely neglected issues, two of which we highlight here. First, the PPI may prove to be useful in research comparing the construct validities of the personality- and behavior-based approaches to psychopathy. Because most self-report psychopathy indices contain items assessing both personality traits and antisocial behaviors, they cannot be readily utilized to provide tests of the differential validity of these approaches. Because the PPI provides a relatively pure operationalization of the personality-based approach, it should prove useful for comparing the capacity of this approach to predict external validating criteria (e.g., course and outcome, performance on laboratory tests) with that of the behavior-based approach. Levenson et al. (1995) have developed a brief (16-item) self-report measure of primary (Cleckley) psychopathy that also may be useful in this regard, although their measure appears not to assess a number of personality domains traditionally believed relevant to psychopathy (e.g., lack of foresight, poor impulse control, externalization of blame, fearlessness). In addition, because the PPI, unlike other self-report psychopathy measures, is explicitly multifactorial in nature, it should assist investigators in determining which psychopathic traits are optimal for predicting different external validating criteria.

Second, the PPI may serve as a vehicle for investigating the construct of subclinical psychopathy (e.g., Widom, 1977). Because much of the research on psychopathy has been conducted in prison settings, such research has of necessity focused on psychopaths whose behavior is maladaptive. Unlike commonly used self-report psychopathy indices, the PPI does not contain items explicitly assessing criminal or antisocial behaviors and therefore has the capacity to identify individuals who possess the core personality features of psychopathy, but who have not exhibited the repeated legal or social transgressions typical of individuals with ASPD. Identification of such individuals may in turn provide valuable information regarding psychological factors (e.g., intelligence, socialization) that might buffer certain individuals with psychopathic traits from engaging in criminal and antisocial behavior. Consequently, the PPI complements the recently proposed two-factor model of the PCL-R (Harpur et al., 1989) in underscoring the critical distinction between psychopathy and ASPD. Such a distinction may be essential for understanding the factors that lead certain individuals with psychopathic personality traits down the pathway to criminal behavior, as well as the factors that allow other individuals with such traits to remain law-abiding citizens.

ACKNOWLEDGMENTS

Much of this research was supported by a Doctoral Dissertation Grant from the University of Minnesota and by continuing grants from the University of Minnesota Computer Center.

Scott O. Lilienfeld thanks the members of his dissertation committee: David Lykken, Auke Tellegen, Paul Meehl, James Butcher, William Iacono, David Ward, and Richard Depue for their valuable suggestions and guidance, and Irwin Waldman, Lori Marino, and two anonymous reviewers for their helpful comments on an earlier draft of this article.

In addition, we thank Kim Smieja, Cynthia Woodward, Cynthia Morse, Stacey Shannon, Robin Daly, Catherine York, Cassandra Stanton, Wendy Dorr, Patty Lauer, Jennifer Tifford, Jennifer Monson, and Robert Johnson for assistance in data collection and Aaron Bartell, Brad Jesness, Sheryll Mennicke, Bruce Roberts, Robin Hornik-Parritz, Jack Rossman, and Cheryl Backus for allowing us to administer questionnaires to their classes.

Portions of this research were completed in partial fulfillment of the degree of Doctor of Philosophy at the University of Minnesota.

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Received June 9, 1995

Revised August 7, 1995