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Capturing the Four-Factor Structure of Psychopathy in College Students Via Self-Report

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A number of self-report psychopathy scales have been used successfully in both clinical and nonclinical settings. However, their factor structure does not adequately capture the four factors (Interpersonal, Affective, Lifestyle, and Antisocial) recently identified in the Psychopathy Checklist-Revised (PCL-R; Hare, 2003) and related measures. This deficit was addressed by upgrading the Self Report Psychopathy Scale (SRP-II; Hare, Hemphill, & Harpur, 1989). In Study 1 ($N = 249$), an exploratory factor analysis of this experimental version revealed oblique factors similar to those outlined by Hare (2003). In Study 2 ($N = 274$), confirmatory factor analysis (CFA) confirmed this structure, that is, four distinct but intercorrelated factors. The factors exhibited appropriate construct validity in a nomological network of related personality measures. Links with self-reports of offensive activities (including entertainment preferences and behavior) also supported the construct validity of the oblique four-factor model.

Psychopathy is a personality construct traditionally associated with a mix of offensive personality traits and antisocial behaviors. It first gained prominence in North American psychiatry and forensic psychology with the work of Cleckley (1941) and other clinicians. Attempts to assess psychopathy with self-report measures date back almost as far: The Psychopathic Deviate scale, for example, was part of the original Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1940). The dissimulation inherent in the psychopathic personality, however, raised serious questions about self-report as an appropriate assessment approach. Such concerns motivated the development of the Psychopathy Checklist (PCL; Hare, 1980) and its revision, the PCL-Revised (PCL-R; Hare, 1991, 2003, 2006). The latter instrument is scored by combining interview information with file data and is now widely considered the "gold standard" of psychopathy measures (e.g., Acheson, 2005; Cooke & Michie, 2001). It has generated decades worth of data clarifying the nature and implications of psychopathy (e.g., Book, Clark, Forth, & Hare, 2006; Gacono, 2000; Hare, 2003; Hervé & Yuille, in press; Patrick, 2006).

Recently, however, there has been growing interest in assessing psychopathy in nonforensic, nonclinical (i.e., "normal") samples (e.g., Babiak, 2000; Book & Quinsey, 2003; Hart, Cox, & Hare, 1995; LeBreton, Binning, & Adorno, 2006; Paulhus & Williams, 2002). The rationale is that some individuals with a psychopathic personality manage to function in open society without confronting the criminal justice system. Research on such individuals is impractical with the PCL-R given the need for clinical interviews and reviews of collateral information. Studies with the PCL: Screening Version (PCL: SV; Hart, Cox, & Hare, 1995) have begun to provide data on the distribution of psychopathy in large representative samples from the general population (Coid, Yang, Ulrich, Roberts, & Hare, 2006; Neumann & Hare, 2006). However, research of this sort is expensive and time consuming.

For facilitating research in the community at large, self-report measures are most practical. Several such instruments are now available. The three with the most empirical support are the Self-Report Psychopathy Scale-II (SRP-II; Hare, Harpur, & Hemphill, 1989), the Psychopathic Personality

Inventory (PPI; Lilienfeld & Andrews, 1996), and the Levenson Self-Report Psychopathy Scale (LSRP; Levenson, Kiehl, & Fitzpatrick, 1995).[1] A number of studies have indicated that the SRP-II and PPI (and to a lesser extent the LSRP) have shown empirical convergence and predictive validity (e.g., Hicklin & Widiger, 2005; Lilienfeld & Fowler, 2006; Salekin, Trobst, & Krioukova, 2001; Williams & Paulhus, 2004). Two issues that remain in contention are the factor structure of psychopathy and the role played by antisocial behavior.

THE FACTOR STRUCTURE OF PSYCHOPATHY

The PCL-R and Related Instruments

Early factor analyses of the PCL-R have yielded an oblique two-factor structure consisting of eight items reflecting interpersonal and affective features (Factor 1) and nine items reflecting social deviance features (Factor 2). Subsequently, Cooke and Michie (2001) showed that a three-factor solution could be recovered from a subset of 13 PCL-R items. That solution showed a hierarchical structure in which a superordinate factor (Psychopathy) is underpinned by three correlated factors involving interpersonal features, affective features, and lifestyle features. Since then, a number of researchers (e.g., Hare, 2003; Neumann, Hare, & Newman, in press; Neumann, Vitacco, Hare, & Wupperman, 2005) have questioned the procedures used by Cooke and Michie (2001) to include and exclude items and have argued that antisociality (generalized rule breaking) is an intrinsic part of the psychopathy construct.

For example, Neumann et al. (2005) and Neumann, Hare, et al. (in press) conducted large-sample confirmatory factor analysis (CFA) of the PCL-R and concluded that 18 of the items were underpinned by four factors: Interpersonal, Affective, Lifestyle, and Antisocial. The first three factors correspond to the Cooke and Michie (2001) factors. The additional Antisocial factor consisted of five items, four of which had been excluded in the three-factor model. A hierarchical model also fit the data well. The four-factor model has recently been replicated in the PCL: SV (Hart et al., 1995), a shorter instrument that requires less file information and can be used with nonforensic samples (see Hill, Neumann, & Rogers, 2004; Vitacco, Neumann, & Jackson, 2005) as well as the PCL: Youth Version (PCL: YV; Forth, Kosson, & Hare, 2003; see Jones, Cauffman, Miller, & Mulvey, 2006; Neumann, Kosson, Forth, & Hare, 2006; Salekin, Neumann, Leistico, DiCicco, & Duros, 2004).

Using the PCL-R, PCL: YV, and the PCL: SV, several CFA studies have demonstrated that the four-factor model fits at least as well as the three-factor model (e.g., Hill et al., 2004; Neumann et al., 2005; Vitacco, Neumann, et al., 2005; Vitacco, Rogers, Neumann, Harrison, & Vincent, 2005). Because the three-factor model is viable only when some selected items are dropped (seven from the PCL-R and three from the PCL: SV), it is not nested within the four-factor model. Therefore, a direct statistical test comparison is not possible using CFA fit indexes (see discussion by Vitacco, Neumann, & Jackson, 2005). Instead, some researchers have used multiple regression to compare the predictive utility of the three-factor and four-factor models directly. For example, in a sample of forensic inpatients, Hill et al. (2004) showed that the four-factor model of the PCL: SV predicted more of the variance in staff ratings of aggression than did the three-factor model (31% vs. 27%). Similarly, Vitacco, Neumann, and Jackson (2005) used the large MacArthur sample of civil psychiatric patients to demonstrate that the four-factor model and its components were more strongly associated with violence than was the three-factor model and its components (21% vs. 12% of the variance).

In short, the viability of the three-factor model appears to rest on the selective exclusion of items. Inclusion of these items yields a statistically sound and theoretically meaningful four-factor model.

Self-Report Measures

In the literature on self-report measures of psychopathy, the debate over factor structure has been somewhat different. Two of the most popular self-report instruments—the LSRP and SRP-II—began with subscales based on the two-factor scoring of the PCL-R. In contrast, the PPI was designed to be as comprehensive as possible by measuring eight distinct factors with a total of 187 items. Recent work provided a two-orthogonal-factor representation of the PPI (Benning, Patrick, Hicks, Blonigen, and Krueger, 2003). In contrast, the two factors in the LSRP and SRP-II are oblique.

Unfortunately, two-factor solutions have failed to show a credible correspondence with the PCL-R factors in either the LSRP (Lynam, Whiteside, & Jones, 1999), the SRP-II (Williams & Paulhus, 2004), or the PPI (Benning et al., 2003). Despite the appearance that the two-factor model was confirmed in self-report psychopathy assessment, in fact, there is substantial disagreement. The available solutions differ with each other and with the PCL-R factors.

To date, no one has examined four-factor solutions in self-report measures of psychopathy. Accordingly, our goal was to determine whether four oblique factors could be established and validated in student samples using SRP items. In Study 1, we expanded the item set and evaluated a four-factor solution. In Study 2, we used CFA to address the replicability

[1] Although using different labels, several other self-report measures seem to tap the same construct (e.g., Blackburn & Fawcett, 1999; Book, Knap, & Holden, 2001). Even some self-report antisocial personality disorder measures seem to converge empirically with self-report psychopathy measures (see Hicklin & Widiger, 2005).

of the four factors as well as their discriminant and predictive validity.

STUDY 1: UNCOVERING THE FACTORS

Williams and Paulhus (2004) cited two problems with the SRP-II factor structure, namely, an excess of anxiety-related items and a paucity of antisocial behavior items. Accordingly, in our Study 1, we effected two alterations to the instrument. Both require some justification.

Anxiety Items

Clarifying the role that anxiety plays in psychopathy has proved to be difficult. Although historically linked to the concept of psychopathy (e.g., Cleckley, 1941), low levels of anxiety are also central to classic definitions of the well-adjusted personality (e.g., Allport, 1937; Jahoda, 1958).[2] Moreover, it is high rather than low anxiety that is associated with the traditional class of personality disorders (Hicklin & Widiger, 2005).

Despite substantial attention to this issue, contemporary empirical work has failed to establish a direct link between the PCL-R and anxiety (e.g., Schmitt & Newman, 1999). On the other hand, it appears that anxiety scores may be useful in subtyping psychopathic individuals (Hicks, Markon, Patrick, Krueger, & Newman, 2004; Newman, MacCoon, Vaughn, & Sadeh, 2005). Such findings are consistent with the notion of discriminating primary psychopaths from secondary psychopaths according to Karpman's (1941) typology. One example of the utility of anxiety as a moderator was the demonstration that its interaction with psychopathy predicts emotional arousal (Sutton, Vitale, & Newman, 2002). In sum, the majority of relevant studies have failed to find a direct connection between psychopathy scores and anxiety measures. Such data led Hare (2003) to conclude that low anxiety is not an essential feature of psychopathy.

This conclusion raises similar doubts about the role of anxiety items in self-report measures such as the SRP-II. Because of their abundance in the item set, anxiety items formed a strong factor in a previous factor analysis (Williams & Paulhus, 2004). In retrospect, their prevalence in the item set is understandable given that the items were selected from measures of normal personality to tap Cleckley's (1941) features (including low anxiety). In large personality inventories, anxiety items invariably emerge as an independent factor under such labels as *neuroticism, sensitivity, maladjustment, and negative affectivity.* When similar item sets—including the SRP-II—are administered to nonoffender samples (e.g., students), a large anxiety factor is guaranteed to emerge. Items loading negatively on this factor tap confidence, stability, stress immunity, and self-esteem—in short, good adjustment (Williams & Paulhus, 2004). To interpret low scores on this anxiety factor as fundamental to psychopathy seems inapt—tantamount to labeling well-adjusted individuals as psychopathic.

Another compelling reason for excluding a low-anxiety component is that, when found, it fails to behave like an element of psychopathy. In a total of six samples, Williams, McAndrew, Learn, Harms, and Paulhus (2001) and Williams and Paulhus (2004) found minimal associations between the anxiety-laden factor of the SRP-II and psychopathy-relevant criteria such as self-reported misconduct or with concrete measures of misconduct (Nathanson, Paulhus, & Williams, 2006). Similar results (Benning et al., 2003) were found with two-factor analyses of the PPI: The factor anchored by Stress Immunity (i.e., low anxiety) did not consistently predict delinquent behavior.[3]

Therefore, to preclude them from engulfing our factor analyses, we removed three anxiety-related items: We chose items that make specific reference to anxiety (e.g., "I worry a lot about possible misfortunes") because in previous work, these items have tended to cluster together to anchor the low-anxiety factor. Although apparently minor, this change has both conceptual and empirical significance.

Antisocial Behavior Items

In contrast to anxiety items, antisocial behavior items have been rare in the SRP-II item pool. Previously, criminality items such as those on the PCL-R have been deemed inappropriate for nonforensic samples. More recent research (Williams et al., 2001), however, has suggested that even in college student samples, most misconduct items—including serious crime—has shown sufficient variance for consideration. Accordingly, we assembled and added to the item pool a set of 20 antisocial behavior items: Some were milder than those on the PCL-R (e.g., "I have cheated on a school test"), but some directly addressed criminal behavior (e.g., "I have never been arrested").

To address these issues, in Study 1, we examined the effects of (a) reducing the anxiety items and (b) adding antisocial behavior items. The result was a pool of 77 psychopathy-relevant items. Of central interest here was the degree to which this item set would show a four-factor oblique structure similar to that found with the PCL-R in forensic samples (Hare, 2003).

[2]This paradox becomes apparent in noting that in the Five-factor model, low scores on the anxiety factor are often a proxy for mental health (McCrae & Costa, 1999). A similar claim can be made for the MMPI (Holden, 2000).

[3]Note again that deficient affect, in the form of callousness (i.e., low empathy and guilt), remains a legitimate factor of psychopathy.

Method

Participants

A total of 249 undergraduate students (62.7% female, mean age = 20.4 years) at a large Western university participated for course credit. The majority were either of European (41.4%) or East Asian (32.5%) heritage and representative of the student body as a whole. We asked the participants to complete a take-home questionnaire package on their own time and return it to class later in the term. To encourage honest responding, participants were told beforehand not to put their names or any other identifying information on the questionnaire.

Materials

The original SRP comprised 29 items written by Hare (1985). The item pool was expanded to 60 for the SRP-II (Hare et al., 1989). Evidence for its forensic/clinical validity includes substantial positive associations with PCL-R (Hare, 1991; Rutherford, Alterman, Cacciola, & McKay, 1997) and PCL: SV scores (Forth, Brown, Hart, & Hare, 1996). In the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed. [*DSM-IV*]; American Psychiatric Association, 1994) trials, the instrument was consistently correlated with the *DSM-IV* criteria for antisocial personality disorder, the International Classification of Diseases-10 (ICD-10; World Health Organization, 1992) criteria for dysocial personality disorder, and the 10-item Psychopathy Criteria Set (Hare, Hart, & Harpur, 1991) developed for the field trial (Widiger et al., 1996).

Evidence for the validity of the SRP-II in nonforensic samples includes convergent correlations with other self-report psychopathy measures (for a review, see Hicklin & Widiger, 2005), self-reported misconduct (Andershed, Gustafson, Kerr, & Stattin, 2002; Williams & Paulhus, 2004), and concrete scholastic misconduct (Nathanson et al., 2006b). Among other supportive findings is a −.31 correlation with socialization (Crocker et al., 2005), and a +.42 correlation with impulsivity (Hunt, Hopko, Bare, Lejuez, & Robinson, 2005).

Of the 60 items in the SRP-II, a subset of 31 was isolated by Hare et al. (1989) to represent the two-factor model developed by Harpur, Hare, and Hakstian (1989). Those factors were recently bolstered with new items of similar content (Williams et al., 2001). Altogether, data from a total of 11 samples of students have provided factor structure data on the expanded item set (Williams, Nathanson, & Paulhus, 2003; Williams & Paulhus, 2004).

In our Study 1 data, the removal of 3 anxiety items and addition of 20 antisocial behavior items to the original 60 SRP-II items resulted in a pool of 77 psychopathy-relevant items. Participants indicated their degree of agreement with the items on 5-point scales ranging from 1 (*disagree strongly*) to 5 (*agree strongly*).

Results

We subjected the 77 items to a principal components analysis followed by a direct oblimin rotation. We scored all items in the direction of psychopathy prior to the analysis. Among the methods for determining the number of factors to retain, parallel analysis is currently strongly recommended (Horn, 1965; see discussions by Reise, Waller, & Comrey, 2000; Russell, 2002). Parallel analysis involves generating multiple random data sets with the same number of participants and variables as in the data set of interest and then comparing the eigenvalues from the actual and random data sets. Thus, it is possible to determine how many of the factors generated by the actual data set explain more variance than the factors generated by random data.

Figure 1 displays the results of the parallel analysis. We conducted it using SPSS with 100 random data sets (see O'Connor, 2000) and superimposed it in Figure 1 onto the scree plot from the actual data set. We determined the appropriate number of factors by examining the point at which the eigenvalues for the actual data drop below those of the random data. Here, the two lines cross just after the fourth eigenvalue, which suggested that a four-factor solution was most appropriate. In other words, the fifth and subsequent factors in the actual data explained less variance than those generated by the random data and were therefore not useful to retain.

The first four unrotated factors represented 22.8%, 7.2%, 5.6%, and 4.4% of the overall variance. After rotation, the variance was more evenly distributed: 29%, 26%, 23%, and 22% of the rotated variance. The interpretability of these four factors is clear from Table 1, which shows the highest item loadings for all factors (pattern matrix). For the sake of parsimony, we listed only the top 5 loading items per factor. A total of 12 items loaded at least .30 on the first factor, only 2 of which loaded more than .30 on any other factor. We named this factor Interpersonal Manipulation (IPM). The IPM factor appears to be conceptually parallel to Hare's

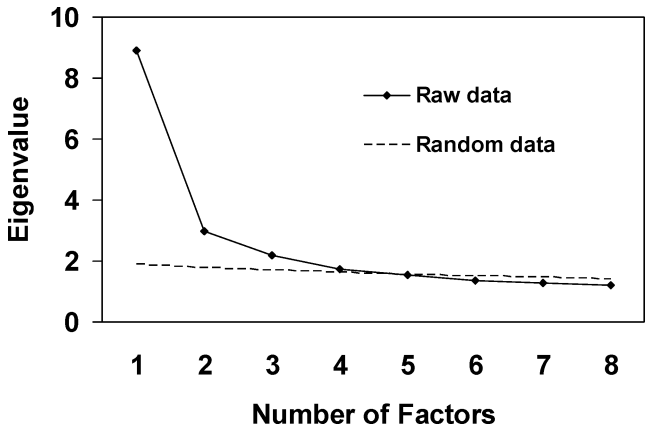

FIGURE 1. Scree plot from the principal components analysis and parallel analysis conducted on experimental Self-Report Psychopathy Scale items in Study 1.

(2003) Interpersonal factor, which taps characteristics such as pathological lying, conning, and manipulating.

The second factor was composed primarily of new antisocial behavior items. Eight items loaded at least .30 on this factor, only one of which cross-loaded more than .30 on any other factor. The highest loading items concerned criminal activity and versatility. Therefore, we labeled the factor Criminal Tendencies (CT). Although the factor closely resembles Hare's (2003) Antisocial factor, criminality is more distinctive from other forms of antisocial behavior.

A total of 13 items loaded at least .30 on the third factor, only 1 of which loaded more than .30 on any other factor. We named this factor Erratic Lifestyle (ELS). Analogous to Hare's (2003) Lifestyle factor, the ELS items reflect generally undependability, recklessness, and impulsivity.

The fourth factor contained items relating to low empathy and a general lack of concern for other people. Loading in excess of .30 were 10 items, only 2 of which loaded more than .30 on any other factor. We named this factor Callous Affect (CA). It appears to map well onto Hare's (2003) Affective factor, which taps deficiencies in affect including remorse, guilt, and empathy. Table 2 presents the correlations among the four factor scores: They are all positive, ranging from .20 to .33.

Discussion

The results provide support for our decisions to prune back anxiety items and add antisocial behavior items to the item pool. We found four oblique factors resembling those in the four-factor model of the PCL-R and related instruments. A distinctive criminality factor emerged from the new antisocial behavior items. Note that the addition of these items did not compel the emergence of a distinct but correlated factor: The items might have been dispersed across the other three factors, or they might have yielded an orthogonal factor. Nor did a dominant anxiety factor emerge as in earlier factor analyses of the SRP-II (Williams & Paulhus, 2004). As expected, the remaining anxiety items did form a small but orthogonal factor.

The oblique four-factor structure was therefore supported on both empirical and theoretical grounds. These four factors appeared to be versions of the four factors in the PCL-R, PCL: YV, and PCL: SV. Of critical importance is the finding that the four factors intercorrelated positively, which suggested that they tapped a common underlying factor, namely, psychopathy (see Neumann et al., in press). At the same time, these intercorrelations were not so high as to suggest complete redundancy among the factors.

Although Study 1 was an important step in the elucidation of psychopathy in nonoffender samples, several important steps remain. First is the need to replicate these results. Second, the construct validity of the factors requires investigation. Accordingly, in Study 2, we examined associations between each of the factors and various psychopathy-relevant criteria including relevant personality constructs and self-reported offensive activities.

TABLE 1
Top Factor Loadings from Exploratory Factor Analysis in Study 1

	IPM	*CT*	*ELS*	*CA*
Interpersonal Manipulation (IPM)				
I find it easy to manipulate people.	.67	.04	.06	.08
People can usually tell if I'm lying. (R)	.62	−.03	−.04	.03
I don't think of myself as tricky or sly. (R)	.57	.18	−.03	.14
Conning people gives me the "shakes". (R)	.56	−.11	−.05	.19
I get a "kick" out of conning someone.	.56	.05	.18	.06
Criminal Tendencies (CT)				
I have stolen a motor vehicle.	−.07	.93	−.05	−.04
I've been involved in delinquent gang activity.	.00	.87	.09	.11
I have been arrested.	−.08	.81	.03	.01
I have broken into a building or vehicle to steal or vandalize.	.06	.76	.02	−.08
Some of my friends have gone to jail.	.08	.71	.11	.03
Erratic Lifestyle (ELS)				
Rules are made to be broken.	.16	.10	.62	−.03
I have often done something dangerous just for the thrill of it.	.26	.14	.59	−.18
I enjoy drinking and doing wild things.	.16	.00	.57	−.07
I have broken an appointment when something better came along.	.29	.07	.53	.26
I have avoided paying for things, such as movies, rides, and food.	−.02	.04	.52	.28
Callous Affect (CA)				
I am often rude to other people.	.01	.07	.21	.64
My friends would probably say I am a kind person. (R)	.10	.13	−.12	.64
I'm not afraid to step on others to get what I want.	.11	−.09	.10	.59
I'm the most important person in the world: No-one else matters.	.01	.01	.05	.44
Not hurting others' feelings is important to me. (R)	.27	.15	−.05	.43

Note: $N = 249$. The method was principal components followed by oblimin rotation. Reversals are marked with (R). Underlined entries are the highest loading items.

STUDY 2: PERSONALITY AND ACTIVITY CORRELATES

Based on the results of Study 1 (and several other unpublished data sets cited previously), we formed four 10-item subscales for confirmation in Study 2. These 40 items were selected on both empirical (e.g., high factor loadings, replication, lack of cross-loadings) and conceptual (e.g., interpretability) criteria. We chose the same number of items for each subscale to provide equal representation of each of the four factors. Together, these subscales formed an improved, experimental version of the SRP, which we dubbed the SRP-E.

The first goal of Study 2 was to verify the factor structure emerging from Study 1. The method of choice was CFA, the technique that has been previously used to support the four-factor model of the PCL-R (Hare, 2003; Vitacco, Rogers, et al., 2005; Neumann et al., 2005; Neumann et al., in press). CFA evaluates the hypothesized structure of a fixed set of factors—including their intercorrelations. For comparison, we also evaluated the fit of the earlier two-factor model and the three-factor model proposed by Cooke and Michie (2001).

Some researchers have criticized the use of CFA for testing the factor structure of personality (e.g., Church & Burke, 1994; McCrae, Zonderman, Costa, Bond, & Paunonen, 1996). Their key concern was the use of the chi-square test for goodness of fit, which is highly sensitive to factors such as sample size and distributional assumptions (e.g., nonnormality). We concur with this concern and accordingly have placed more emphasis on alternative goodness-of-fit tests such as the root mean square error of approximation (*RMSEA*) and the comparative fit index (CFI; Bentler, 1990; Bollen, 1989; Steiger & Lind, 1980). Inferences regarding goodness of fit are best made by considering all these indicators and determining the degree of consensus among them (Raykov, 1998).

Personality Correlates

In Study 2, we also addressed the construct validity of the four-factor structure. To begin this task, we examined associations with key personality variables. Most relevant are other self-report psychopathy measures, especially the LSRP (Levenson et al., 1995) and the PPI (Lilienfeld & Andrews, 1996). To support its convergent validity, we expected high correlations between the SRP-E total score and the PPI and to a lesser extent the LSRP (see Hicklin & Widiger, 2005). Another conceptually related measure is the Psychoticism (P) scale of the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1985). Previous studies have demonstrated that although labeled Psychoticism, the scale taps many of the features in recognized definitions of psychopathy (e.g., impulsivity, shallow affect) and correlates with standard psychopathy measures (Hare, 2003). To the extent that these three measures capture aspects of psychopathy, we expected them to have positive correlations with at least one of the four SRP-E factors.

TABLE 2
Intercorrelations Among the Four Factor Scores in Study 1

Factor	*CA*	*IPM*	*ELS*	*CT*
CA	—	.26	.20	.33
IPM		—	.28	.26
ELS			—	.22
CT				—

Note: $N = 249$. All correlations significant at $p < .01$. CA = Callous Affect, IPM = Interpersonal Manipulation; ELS = Erratic Lifestyle; CT = Criminal Tendencies.

Other obvious candidates for evaluating the four factors are the other members of the so-called "Dark Triad" of personality (Paulhus & Williams, 2002). Along with psychopathy, the triad includes Machiavellianism and narcissism: They constitute the three most aversive traits in the normal range of personality. Machiavellian individuals are described as manipulative, cynical, and amoral (Christie & Geis, 1970). Narcissism is associated with grandiosity, entitlement, and an unrealistically positive self-image (Raskin & Hall, 1979). Although they share a number of common features, these three personality traits are distinct enough to warrant separate measurement (LeBreton et al., 2006; Lee & Ashton, 2005; Nathanson et al., 2003; Paulhus & Williams, 2002; Williams et al., 2001, 2003). One specific expectation was that the IPM subscale would show its strongest correlation with Machiavellianism.

The Big Five dimensions of personality (e.g., Goldberg, 1990; McCrae & Costa, 1999) have been studied in relation to self-report psychopathy (Hicklin & Widiger, 2005). For example, psychopaths score low on Agreeableness and Conscientiousness: This association holds whether psychopathy is measured with the LSRP (e.g., Jakobwitz & Egan, 2006; Miller, Lynam, Widiger, & Leukefeld, 2001; Widiger & Lynam, 1998), the PPI (Hicklin & Widiger, 2004), or the SRP-II (Paulhus & Williams, 2002; Williams et al., 2001). Replicating these findings would help confirm the parallel between the SRP-E and the PCL-R. With regard to the factors, we predicted that Conscientiousness would show its highest correlations with the two behavioral factors, ELS and CT, and that they will be negative.

As noted earlier, associations of psychopathy scales with neuroticism have varied between positive, neutral, and negative. In other words, this association with psychopathy is as controversial as that with its close cousin, trait anxiety. Based on previous work showing that anxiety items separate from standard psychopathy items (Williams & Paulhus, 2004), we expected small to null correlations between neuroticism and SRP-E total scores in Study 2.

Note that we did not include the Pd scale of the MMPI-2 (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) in this research. One reason is that empirical associations between Pd and contemporary measures of psychopathy are elusive (see Lilienfeld, 1999). Indeed, major features of the Pd—specifically, anxiety and depression (Graham, 2000)—are incongruent with most current operationalizations of psychopathy.

Offensive Activity Correlates

An essential part of validating the four factors is examining their associations with socially offensive activities. These included self-report measures of offensive entertainment preferences and five types of misconduct.

Offensive Entertainment

In previous work, the SRP-II showed positive associations with a preference for offensive types of entertainment across a variety of media: listening to aggressive music, watching violent movies, and playing violent video games (Williams et al., 2001). These same individuals reported a dislike for prosocial types of entertainment. Similar associations between personality and entertainment preferences have been reported elsewhere (e.g., Robinson, Weaver, & Zillman, 1996; Svebak & Kerr, 1989; Weaver, 2000): They held up even after accounting for gender differences.

Misconduct

The link between psychopathy and criminal history has been well established—whether file information or self-report measures of delinquency have been employed. The association between self-reported misconduct and psychopathy has been established in offender samples (Alexio & Norris, 2000; Hall, Benning, & Patrick, 2004) and nonoffender samples (Frick, Cornell, Barry, Bodin, & Dane, 2003; Lynam, 1998; Williams et al., 2001; Williams & Paulhus, 2004).[4] To provide a comprehensive self-report criterion, Williams and Paulhus (2004) partitioned misconduct into six subtypes ranging from mild to serious. Out of a full range of personality predictors, psychopathy (as measured by the SRP-II) emerged as the best predictor of all six forms of misconduct.

Based on the previously mentioned literature, we predicted that SRP-E total scores would correlate positively with a wide range of offensive behaviors and a preference for offensive forms of entertainment. Of special importance was the hypothesis that all four subscales would predict total misconduct counts.

In addition, we used hierarchical multiple regression analyses to compare the utility of the three-factor and four-factor models in predicting offensive activities. Among other things, this analysis allowed us to explore the incremental predictive ability of the CT factor. Previous studies have used similar analyses to validate the Antisocial factor of the PCL-R and its derivatives (Hill et al., 2004; Salekin et al., 2004; Vitacco, Neumann, & Jackson, 2005).

Method

Participants

A total of 274 undergraduate students (70.0% female) at a large western university participated for course credit. They came from three introductory psychology courses containing a representative sample of school majors. Most were of either of European (43.1%) or East Asian (38.0%) ethnicity. This demographic breakdown of the sample was also representative of the student body as a whole.

Materials

We administered questionnaires in three waves—one in-class questionnaire and two take-home questionnaires. We matched cases across waves of data collection using birth dates. Unless otherwise specified, all measures employed Likert scales ranging from 1 (*disagree strongly*) to 5 (*agree strongly*).

Convergent validity. Along with the 40 SRP-E items, the first take-home package included the LSRP, the PPI, and Eysenck and Eysenck's (1985) P scale. The LSRP (Levenson et al., 1995) is a 26-item self-report scale that subdivides psychopathy into "primary" and "secondary" variants. Primary psychopathy is described as a "selfish, uncaring, and manipulative posture toward others" (Levenson et al., 1995, p. 152), whereas secondary psychopathy is defined by "impulsivity and a self-defeating lifestyle" (Levenson et al., 1995, p. 152). The abridged 56-item version of the PPI (Lilienfeld & Andrews, 1996) assesses psychopathy along eight dimensions: Blame Externalization, Carefree Nonplanfulness, Coldheartedness, Fearlessness, Impulsive Nonconformity, Machiavellian Egocentricity, Social Potency, and Stress Immunity. The 25-item P scale (Eysenck & Eysenck, 1985) measures one of the three fundamental traits in their model of personality. As we noted previously, despite the label psychoticism, it appears to capture psychopathy.

The second take-home package included two personality questionnaires: the Mach-IV scale (Christie & Geis, 1970) and the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979). The Mach-IV is a 20-item questionnaire designed to measure the manipulative and cynical nature of Machiavellians. The NPI is a 40-item, forced-choice questionnaire considered to be the definitive measure of subclinical narcissism.

[4] Some of these studies have measured facets of psychopathy (e.g. "callous-unemotional traits") rather than psychopathy per se.

Criterion measures: Socially offensive activities. Also included in the take-home package were self-report measures of both offensive entertainment and behavior. The former was assessed with the 65-item Entertainment Preference and Activities Report, developed in earlier research (Williams et al., 2001). Respondents are asked to rate on 5-point scales how much they enjoy or participate in various types of entertainment. Major categories include music, sports, movies, Internet, and video games. Previous factor analyses have suggested that the 65 enjoyment ratings form two independent statistical factors—Prosocial and Antisocial entertainment. Among the items loading on the Prosocial factor were pop music, figure skating, card games, romance movies, and Internet chatting. Items loading on the Antisocial factor included heavy metal music, wrestling, shooter games, horror movies, and Internet virus distribution. Enjoyment ratings were then combined to form composite prosocial and antisocial entertainment preferences.

The Comprehensive Misconduct Inventory (CMI; Williams et al., 2001) consists of 42 items written to provide a comprehensive set of antisocial acts ranging from minor misbehaviors to felony crimes. Although revised, reformatted, and expanded, the CMI is modeled after the Self-Report Delinquency scale (Elliott & Ageton, 1980). Participants are asked to estimate how many times in the past 5 years they had committed each of a variety of acts. Factor analyses of the scale (e.g., Williams et al., 2001; Williams & Paulhus, 2004) have suggested that the items separate into five categories: crime (e.g., shoplifting, auto theft, violent assault, sexual assault), bullying (physical intimidation, harassing, ridiculing), anti-authority (verbally assaulting parents and other authority figures, parking illegally), drug abuse (public drunkenness; abuse of alcohol, cocaine, heroine, and other drugs), and driving misconduct (street racing, speeding, driving while impaired). Each participant also receives an overall misconduct score, the mean of the five categories.

The Big Five. Finally, the second in-class administration consisted solely of the Big Five Inventory (John & Srivastava, 1999), a 5-point, 44-item instrument that assesses the Big Five traits: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. Substantial evidence has accumulated for the validity of all five factors (John & Srivastava, 1999).

Results

Group Differences

SRP-E total scores were significantly higher for men than women, $t(272) = 4.93$, $p < .01$. (effect size = .29). Group comparisons we conducted with LISREL, however, showed no apparent differences in factor structure, which suggested that we could pool the samples for the CFAs. Similar group comparisons by ethnicity suggested that East Asian students differed in factor structure from other ethnic groups in the sample. Therefore, we excluded that ethnic group from the CFA, which resulted in a sample size of 170. We retained all 274 participants for the subsequent validity analyses.

Internal Consistency

The correlations among the subscales ranged from .28 to .48, with a mean of .37. The alpha reliabilities for the subscales were acceptable, ranging from .67 to .91. Alpha for the total score was .88.

CFA

We performed all CFA analyses on the item correlation matrix. Our hypothesized structure was an oblique model with four factors. Thus, we estimated 40 loadings and six correlations among the factors.

The χ^2 test did not suggest a good model fit, $\chi^2\,(734, N = 170) = 1360.98$, $p < .01$; but as we noted previously, this test is considered inappropriately strict for various reasons (e.g., Bentler & Bonett, 1980; Byrne, 1998; Marsh, Balla, & McDonald, 1988; Raykov, 1998). More widely accepted is the *RMSEA* (Steiger & Lind, 1980). For our model, *RMSEA* was .06, which suggested an acceptable fit to the model (Byrne, 1998; Hu & Bentler, 1999). On three other goodness-of-fit indexes, the incremental fit index (IFI; Bollen, 1989), CFI (Bentler, 1990), and normed fit index (NFI; Bentler & Bonett, 1980), a model has a "good fit" if the index exceeds .90 (Byrne, 1998; McDonald & Ho, 2002). All three indexes supported our four-factor model with values exceeding .92. Overall, the convergence of the goodness-of-fit tests indicates that the four-factor model was tenable.

The parameter estimates for the factor loadings are displayed in Figure 2. The values were generally high, averaging .53: Of 40 loadings, 39 were statistically significant (i.e., $t > \pm 1.96$). The correlations among the four factors ranged from .36 to .54. Note that these values are higher than the subscale intercorrelations because they represent disattenuated versions of the correlations.

Next, we directly compared the four-factor solution to the two-factor solution. Not surprisingly, the four-factor solution fit much better, $\chi^2\,(5, N = 170) = 2382.51$, $p < .01$. We then compared the four-factor to a three-factor solution. To correspond to Cooke and Michie (2001), this comparison required omission of the antisocial behavior items. The fit indexes for this 30-item model were relatively poorer than those of the four-factor solution: $\chi^2\,(402, N = 170) = 1247.79$, $p < .01$; *RMSEA* = .087, NFI = .79, CFI = .84, IFI = .84. None of these indexes reached conventional standards for acceptable model fit. Recall that a direct statistical test of the difference between the three- and four-factor solutions was not possible because one was not nested within the other (Vitacco, Neumann, & Jackson, 2005).

Personality Correlates

Table 3 indicates that the alpha reliabilities of the other personality scales were all respectable, ranging from .73 (PPI) to .87 (NPI, Extraversion). The SRP-E total score correlated substantially with each of the other self-report psychopathy scales: the PPI ($r = .60$, $p < .01$), the LSRP ($r = .53$, $p < .01$), and the P scale ($r = .63$, $p < .01$). Correlations with the NPI and Mach-IV were .46 and .48, respectively ($p < .01$). The SRP-E total also correlated negatively with Agreeableness ($r = -.46$, $p < .01$) and Conscientiousness ($r = -.23$, $p < .01$). None of the other total SRP-E correlates reached significance, even at the .05 level.

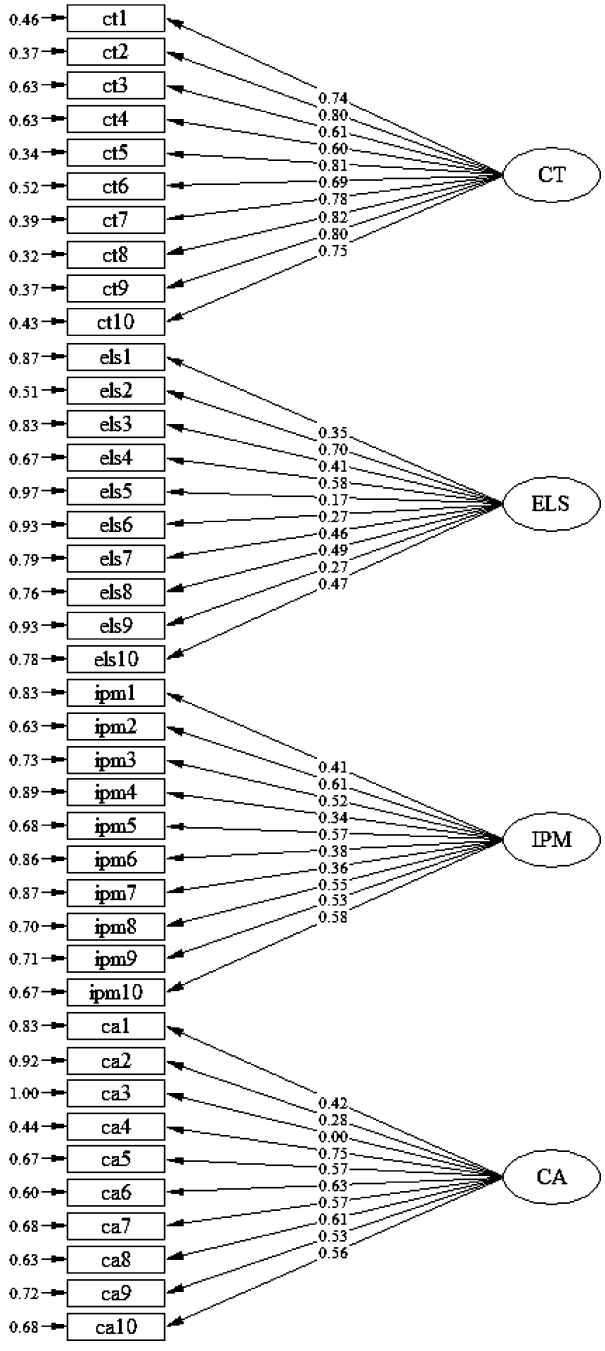

FIGURE 2. Path diagram for confirmatory factor analysis in Study 2. ASB = Antisocial Behavior; ELS = Erratic Lifestyle; IPM = Interpersonal Manipulation, CA = Callous Affect.

TABLE 3
Correlations of the Subscales with other Personality Variables in Study 2

Personality Variable	*CT*	*ELS*	*IPM*	*CA*	*SRP-E Total score*
Eysenck's P scale (.79)	.37	.37	.40	.67	.63
Pyschopathic Personality Inventory (.73)	.11	.45	.30	.12	.60[a]
Levenson SRP (.85)	.30	.38	.54	.40	.53
Dark Triad					
Narcissistic Personality Inventory (.87)	.13	.47	.43	.28	.46
Machiavellianism (Mach–IV) (.81)	.21	.38	.58	.51	.48
Big Five					
Extraversion (.87)	−.02	.23	.04	−.12	.05
Agreeableness (.78)	−.22	−.14	−.36	−.62	−.46
Conscientiousness (.80)	−.19	−.26	−.11	−.10	−.23
Neuroticism (.83)	.01	−.09	−.12	.05	−.05
Openness to Experience (.79)	.00	.12	.12	−.11	.05

Note: $N = 274$. Correlations of at least .12 are significant at $p < .05$, and correlations of at least .16 are significant at $p < .01$ (both two-tailed). Values in parentheses signify alpha coefficients. Factor labels: CT = Criminal Tendencies; ELS = Erratic Lifestyle; IPM = Interpersonal Manipulation; CA = Callous Affect; SRP–E = Self-Report Psychopathy Scale (SRP), experimental version; P scale = Psychoticism scale.

[a]This value was adjusted to account for the fact that we used a shortened version of the Psychopathic Personality Inventory.

Offensive Activity Correlates

Internal consistencies for the entertainment reports were acceptable: The alpha reliabilities were .86 and .76 for the Antisocial and Prosocial factors, respectively. They were virtually independent ($r = -.05$, *ns*), consistent with the independence of other measures of antisocial and prosocial behavior (e.g., Krueger, Hicks, & McGue, 2001). The overall reliability for the CMI was .89 and averaged .63 for the subscales.

Note from Table 4 that, as expected, the SRP-E total score correlated positively with preferences for antisocial entertainment ($r = .35$, $p < .01$). There was also a trend against participation in prosocial entertainment ($r = -.11$, $p = .06$).[5]

As expected, SRP-E total scores correlated substantially ($r = .47$, $p < .01$) with total misconduct and significantly with all five subtypes. All four subscales correlated

[5]Results listed in Tables 3 and 4 were virtually identical when analyzed without data from East Asian participants.

TABLE 4
Correlations of the Subscales with Self-reported Activities in Study 2

Subscale	*CT*	*ELS*	*IPM*	*CA*	*Total SRP-E*
Entertainment Preferences					
Antisocial	.09	.44	.36	.12	.35
Prosocial	−.04	−.01	−.12	−.16	−.11
Type of Misconduct					
Bullying	.15	.23	.31	.39	.37
Drug Abuse	.18	.34	.13	.06	.24
Driving Misconduct	.06	.36	.30	.07	.27
Crime	.27	.34	.16	.01	.27
Anti-Authority	.12	.31	.24	.19	.29
Overall Misconduct	.26	.52	.36	.23	.47

Note: $N = 274$. Correlations greater than .11 are significant at $p < .05$; and correlations greater than .15 are significant at $p < .01$ (two-tailed). Factor labels: CT = Criminal Tendencies; ELS = Erratic Lifestyle; IPM = Interpersonal Manipulation; CA = Callous Affect; SRP–E = Self-Report; Psychopathy Scale, experimental version.

significantly with overall misconduct. Even after partialing out the CT factor, overall misconduct remained correlated with ELS ($r = .48$, $p < .01$), IPM ($r = .30$, $p < .01$), and CA ($r = .13$, $p < .05$). Note that we removed three items from the misconduct inventory before these correlations were calculated. Otherwise, the item similarity in the predictor and criterion would have artificially inflated the correlations.

Next, we compared the predictive utility of the three- and four-factor solutions directly via hierarchical multiple regression. In the first step of the regression, we examined the three-factor model by regressing total misconduct scores onto the ELS, IPM, and CA subscales of the SRP-E. In the second step, we added the CT subscale as a fourth predictor in the regression equation to evaluate the four-factor solution as well as the incremental validity of the CT factor over and above the other three SRP factors. In predicting total misconduct, the results indicated a nonsignificant increase in the amount of variance explained. Next, we then used the same analyses to predict the misconduct subscale most relevant to psychopathy, namely, crime. Here, the addition of the CT factor led to a significant increase in the R^2 value of the model ($\Delta R^2 = .06$, $p < .01$).

Finally, we evaluated the two-factor solution. It was found to be inferior to both the three-factor solution ($\Delta R^2 = .05$), $F(1, 138) = 10.66$, $p < .01$, and the four-factor solution ($\Delta R2 = .06$), $F(1, 137) = 11.58$, $p < .01$, in predicting total misconduct.

Discussion

Sex Differences

The higher SRP-E mean observed for men echoes the clear sex difference in psychopathy found with the SRP-II (e.g., Lilienfeld & Hess, 2001; Williams & Paulhus, 2004; Wilson, Frick, & Clements, 1999; Zagon & Jackson, 1994) as well as the PCL-R (Hare, 2003; Rutherford, Alterman, Cacciola, & McKay, 1998, see also Cale & Lilienfeld, 2002), the PCL: SV (Forth et al., 1996), and the PPI (Lilienfeld & Andrews, 1996).

At the same time, our results provide some support for studies that have shown minimal sex differences in the factor structure of psychopathy (Cale & Lilienfeld, 2002; Hare, 2003; Neumann et al., in press). However, future studies with larger sample sizes would permit more stringent tests of structural invariance. In summary, our failure to find structural differences across gender was consistent with previous research and suggested the pooling of male and female respondents in our factor analyses was justified.

CFA

Our CFA represents an important and necessary verification that the oblique four-factor structure of the SRP-E holds in a nonclinical sample. Originally found with a forensic measure (PCL-R) in forensic samples (Hare, 2003; Vitacco, Rogers, et al., 2005), the four-factor model appeared to have more general significance. Although CFA does not permit direct comparison tests of the three-factor and four-factor models, the latter appeared to better represent the data.

Personality and Activity Correlates

We also established a coherent nomological network of the SRP-E total score and its factors by evaluating their links with standard measures of personality. Convergent validity was established by demonstrating substantial correlations with other established measures of psychopathy (namely the LSRP and PPI) as well as with Eysenck's P scale. Although strong, these correlations were not high enough to indicate complete overlap of the SRP-E with any of the other self-report psychopathy measures.

Correlations with self-report activities also replicated previous research in a coherent fashion. Total SRP-E scores are associated with a general attraction to violent, aggressive, and antisocial media (e.g., Williams et al., 2001; Williams & Paulhus, 2004). High scorers also reported a wide range of misconduct consistent with the features of psychopathy in forensic samples (e.g., Hare, 2003; Hare, McPherson, & Forth, 1988; Hemphill, Hare, & Wong, 1998). The results were also consistent with similar research on community samples (e.g., Frick et al., 2003; LeBreton et al., 2006; Lynam, 1998; Williams et al., 2001; Williams & Paulhus, 2004). The pattern of correlations of SRP-E total scores with other personality measures matched previous research with the SRP-II (Paulhus & Williams, 2002). Correlations with the Big Five traits confirmed the essential features of psychopathy: Psychopaths are both disagreeable and unconscientious. In sum, the new SRP-E total score appeared to function as

well as the SRP-II as a reliable and valid measure of psychopathy in college samples.

Of singular importance, SRP-E total scores failed to correlate with neuroticism, a result consistent with Hare's (2003) doubts about the role of anxiety in psychopathy. In contrast, the predecessor instrument, the SRP-II, showed a substantial negative association ($r = -.33$) with anxiety (Williams & Paulhus, 2004). Our pruning of anxiety items did not guarantee that the correlation with neuroticism would be eliminated, only that artifactual overlap would be minimized. Any legitimate association between SRP-E psychopathy and neuroticism would have remained. This vanishing correlation supported the notion that psychopathy and anxiety are unrelated.

These results also provide promising preliminary evidence that the subscales provided discriminant prediction. For example, correlations with the Mach-IV were largely confined to the IPM subscale ($r = .58$). This association remained strong even after controlling for the other three subscales ($\beta = .41$, $p < .01$). On the other hand, reports of misconduct were best predicted by the two behavioral subscales, ELS and CT. The fact that the Criminal Behavior subscale of the SRP-E demonstrated clear incremental validity over the other three subscales in links with crime speaks to the debate over its utility (e.g., Cooke & Michie, 2001; Hare & Neumann, 2005). Our data support previous studies (e.g., Hill et al., 2004; Salekin et al., 2004; Vitacco, Neumann, & Jackson, 2005), which suggested that the CT factor is a useful inclusion in a psychopathy measure.

Finally, it is noteworthy that the pattern of validity correlations was virtually identical with or without East Asian participants (see Footnote 5). This generalizability held despite the observed ethnic differences in factor structure. Apparently, imposing the European structure on the whole sample had no adverse consequences. Hence, these findings support the application of the same scoring procedure for mixed heritage samples—in North America, at least. Of course, we cannot speculate about the effects of combining a North American sample with an indigenous sample from China, for example.

GENERAL DISCUSSION

Our revision of the SRP-II has provided promising evidence that an oblique, four-factor model of psychopathy can be represented via self-report. Although originally based on application of a forensic instrument (the PCL-R) to forensic samples, Hare's (2003) elaborated structural model appears to have more general viability. Our self-report items appeared to distinguish these four factors in an analogous fashion. Note that our alteration of the item set did not guarantee an oblique four-factor solution in which all factors predicted misconduct: However, that is exactly what we found.

Our evidence for a coherent underlying construct included correlations of the total score with a wide variety of personality scales. For example, psychopathy is related to—but distinctive from—other members of the dark triad of negative personalities (Paulhus & Williams, 2002). The construct validity of psychopathy among college students was also supported by correlations with self-reports of a wide variety of offensive activities. Of particular importance is the fact that all four factors, not just the CT subscale, were linked to misconduct. Moreover, CT proved to be as incrementally useful as its PCL-R counterpart is in forensic samples. Indeed, the results of our parallel analysis, principal components analysis, CFA, and hierarchical multiple regression analyses all point to the utility of the CT subscale in a nonoffender sample.

Of particular importance is the positive manifold (i.e., the obliqueness) exhibited by our four self-report factors. The positive intercorrelations suggested that they all tapped into a superordinate factor identifiable as psychopathy. This overlap sustained the notion of a coherent hierarchical construct of psychopathy—as with the PCL-R (Hare, 2003; Neumann, et al., in press). Running through all the factors is an axis of psychopathy linked to misconduct. Hence, the use of the total score created by summing the four factors was justified.

Further use of the two orthogonal factors extracted from the SRP-II (Williams & Paulhus, 2004) is not recommended because the sum of the subscales has questionable meaning. Orthogonality is not consistent with the assumption of a common underlying concept (Carver, 1989). Uncorrelated factors typically have distinct patterns of correlations with external criteria, a result that is at odds with a unitary conception of psychopathy (West & Finch, 1997).

Our hierarchical measurement model provides a coherent total score as well as specific assessment when desired. Thus, the model allows for an understanding of the underlying, latent factor of psychopathy while also discriminating among the four specific factors. The latter provide theoretical illumination as well as potential advantage for specific measurement. Our results were in line with growing support for the four-factor structure of psychopathy (Hare, 2003; Hill et al., 2004; Jones et al., 2006; Neumann et al., 2005, 2006; Salekin et al., 2004; Vitacco, Neumann, & Jackson, 2005).

Limitations and Future Research

It is intriguing that the four factors of psychopathy can be captured via self-report in college student samples. At this point, however, our conclusions about the structure of self-report must be limited to college samples. Replication in broader community samples is a high priority for extending the applicability of the four-factor model. One domain of special interest is psychopathy in the business world (Babiak, 2000). Of equal interest is the investigation of the factor pattern in forensic samples.

Even for application to student samples, however, further refinement of the item set is warranted before we would recommend widespread use. The building of subscales with alphas above .80 would increase confidence in use of the subscales for predicting specific psychopathy-related criteria. In addition, further work is necessary to complete the nomological network of the four-factor structure. Most obvious is the need to map these self-report factors against the corresponding PCL-R (or PCL: SV) factors. This mapping needs to be evaluated in both forensic and nonforensic samples. Examination of these links is necessary in determining whether self-report measures can (or should) represent psychopathy in the same fashion as the PCL-R.

Links with a number of other self-report measures relevant to the concept of psychopathy have yet to be evaluated with the new instrument: These include Blackburn and Fawcett's (1999) Antisocial Practices Questionnaire, the Socialization subscale of the California Personality Inventory (Gough & Bradley, 1996), Holden's (2000) Psychological Screening Index, and the Interpersonal Reactivity Index (Davis, 1983)—a self-report measure of empathy. Studies involving both the SRP-II and the PCL-R have suggested that these personality scales do relate to psychopathy in both forensic and clinical samples (e.g., Hart, Forth, & Hare, 1991; Rutherford, Alterman, Cacciola, & McKay, 1997; Rutherford, Cacciola, Alterman, & McKay, 1996; Williams & Paulhus, 2004). It would also be illuminating to interpret the factor scores within the context of the interpersonal circumplex as done previously with the SRP-II and PPI (Salekin et al., 2001).

Finally, although we used a well-validated, self-report measure of misconduct, we did not report concrete criterion measures here. Elsewhere, however, others have presented studies in which a similar item set was able to predict concrete misconduct of a noncriminal nature. Among these concrete criteria are (a) classroom cheating as detected by sophisticated computer programs (Nathanson et al., 2003) and (b) fraudulent claims to have won a departmental lottery (Paulhus, 2001). Such corroborative studies with concrete outcomes have alleviated concerns that the self-report outcomes used here yielded artifactual correlations with self-report psychopathy. More detailed research is required to evaluate whether the four subscales can differentially predict various concrete outcomes.

CONCLUSIONS

Our studies indicate that a self-report measure of psychopathy can capture the oblique four-factor structure similar to that found in forensic instruments such as the PCL-R and PCL: SV. Our experimental SRP item set provided a useful set of items, but further refinement is required before distribution as a research instrument.[6] Our data add to the growing body of evidence that the construct of psychopathy has applicability outside of the clinical and justice systems (e.g., Andershed et al., 2002; Babiak, 2000; Forth et al., 1996; LeBreton et al., 2006; Lilienfeld & Fowler, 2006).

[6] A more refined version of the SRP is now available (Paulhus, Hemphill, & Hare, in press).

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REFERENCES

Acheson, S. K. (2005). Review of the Hare Psychopathy Checklist-Revised, 2nd edition. In R. A. Spies & B. S. Plake (Eds.), *The sixteenth mental measurements yearbook* (pp. 429–431). Lincoln, NE: Buros Institute of Mental Measurements.

Alexio, P. A., & Norris, C. E. (2000). Personality and moral reasoning in young offenders. *Personality and Individual Differences, 28,* 609–623.

Allport, G. W. (1937). *Personality: A psychological interpretation*. Boston: Deacon.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Andershed, H. A., Gustafson, S. B., Kerr, M., & Stattin, H. (2002). The usefulness of self-reported psychopathy-like traits in the study of antisocial behavior among non-referred adolescents. *European Journal of Personality, 16,* 383–402.

Babiak, P. (2000). Psychopathic manipulation at work. In C. B. Gacono (Ed.), *The clinical and forensic assessment of psychopathy: A practioners' guide* (pp. 287–311). Mahwah, NJ: Erlbaum.

Benning, S. D., Patrick, C. J., Hicks, B. M., Blonigen, D. M., & Krueger, R. F. (2003). Factor structure of the Psychopathic Personality Inventory: Validity and implications for clinical assessment. *Psychological Assessment, 15,* 340–350.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107,* 238–246.

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness-of-fit in the analysis of covariance structures. *Psychological Bulletin, 88,* 588–606.

Blackburn, R., & Fawcett, D. (1999). The Antisocial Personality Questionnaire: An inventory for assessing personality deviation in offender populations. *European Journal of Psychological Assessment, 15,* 14–24.

Bollen, K. W. (1989). *Structural equations with latent variables*. New York: Wiley.

Book, A. S., Clark, H. J., Forth, A. E., & Hare, R. D. (2006). The PCL-R and PCL: YV: Forensic applications and limitations In R. P. Archer (Ed.), *Clinical assessment instruments in forensic settings: Uses and limitations* (pp. 147–179). Mahwah, NJ: Erlbaum.

Book, A. S., Knap, M. A., & Holden R. R. (2001). Criterion validity of the Holden Psychological Screening Inventory Social Sympomatology Scale in a prison sample. *Psychological Assessment, 13,* 249–253.

Book, A. S., & Quinsey, V. L. (2003). Psychopaths: Cheaters or warrior-hawks? *Personality and Individual Differences, 36,* 33–45.

Butcher, J. N., Dahlstrom, W. G., Graham, J. R., Tellegen, A. M., & Kaemmer, B. (1989). *MMPI-2: Minnesota Multiphasic Personality Inventory-2: Manual for administration and scoring.* Minneapolis: University of Minnesota Press.

Byrne, B. M. (1998). *Structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming*. Mahwah, NJ: Erlbaum.

Cale, E. M., & Lilienfeld, S. O. (2002). Sex differences in psychopathy and antisocial personality disorder: A review and integration. *Clinical Psychology Review, 22,* 1179–1207.

Carver, C. S. (1989). How should multifaceted personality constructs be tested? Issues illustrated by self-monitoring, attributional style, and hardiness. *Journal of Personality and Social Psychology, 56,* 577–585.

Christie, R., & Geis, F. L. (1970). *Studies in Machiavellianism.* New York: Academic.

Church, A. T., & Burke, P. J. (1994). Exploratory and confirmatory tests of the Big Five and Tellegen's three- and four-dimensional models. *Journal of Personality and Social Psychology, 66,* 93–114.

Cleckley, H. (1941). *The mask of sanity.* St. Louis, MO: Mosby.

Coid, J., Yang, M., Ullrich, S., Roberts, A., & Hare, R. (2006). *Prevalence and correlates of self-disclosed psychopathic traits in a household population: Findings from the National Survey of Psychiatric Morbidity in Great Britain.* Unpublished manuscript.

Cooke, D. J., & Michie, C. (2001). Refining the construct of psychopathy: Towards a hierarchical model. *Psychological Assessment, 13,* 171–188.

Cooke, D. J., Michie, C., Hart, S. D., & Clark, D. (2005). Searching for the pan-cultural core of psychopathic personality disorder. *Personality and Individual Differences, 39,* 283–295.

Crocker, A. G., Mueser, K. T., Drake, R. E., Clark, R. E., McHugo, G. J., Ackerson, T. H., et al. (2005). Antisocial personality, psychopathy, and violence in persons with dual disorders: A longitudinal analysis. *Criminal Justice and Behavior, 32,* 452–476.

Davis, M. H. (1983). Measuring individual differences in empathy. Evidence for a multidimensional approach. *Journal of Personality and Social Psychology, 44,* 113–126.

Elliott, D. S., & Ageton, S. S. (1980). Reconciling race and class differences in self-reported and official estimates of delinquency. *American Sociological Review, 45,* 95–110.

Eysenck, H. J., & Eysenck, M. W. (1985). *Personality and individual differences.* New York: Plenum.

Forth, A. E., Brown, S. L., Hart, S. D., & Hare, R. D. (1996). The assessment of psychopathy in male and female noncriminals: Reliability and validity. *Personality and Individual Differences, 20,* 531–543.

Forth, A. E., Kosson, D. S., & Hare, R. D. (2003). *The Psychopathy Checklist: Youth Version.* Toronto, Ontario, Canada: Multi-Health Systems.

Frick, P. J., Cornell, A. H., Barry, C. T., Bodin, S. D., & Dane, H. E. (2003). Callous-unemotional traits and conduct problems in the prediction of conduct problem severity, aggression, and self-report of delinquency. *Journal of Abnormal Child Psychology, 31,* 457–470.

Gacono, C. B. (2000). *The clinical and forensic assessment of psychopathy: A practioners' guide.* Mahwah, NJ: Erlbaum.

Goldberg, L. R. (1990). An alternative description of personality: The Big Five factor structure. *Journal of Personality and Social Psychology, 59,* 1216–1229.

Gough, H. G., & Bradley, P. (1996). *The California Personality Inventory manual* (3rd ed.). Palo Alto, CA: Consulting Psychologists Press.

Graham, J. R. (2000). *MMPI–2: Assessing personality and psychopathology* (3rd ed.). New York: Oxford University Press.

Hall, J. R., Benning, S. D., & Patrick, C. J. (2004). Criterion-related validity of the three-factor model of psychopathy: Personality, behavior, and adaptive functioning. *Assessment, 11,* 4–16.

Hare, R. D. (1980). A research scale for the assessment of psychopathy in criminal populations. *Personality and Individual Differences, 1,* 111–117.

Hare, R. D. (1985). Comparison of procedures for the assessment of psychopathy. *Journal of Consulting and Clinical Psychology, 53,* 7–16.

Hare, R. D. (1991). *The Hare Psychopathy Checklist-Revised (PCL-R).* Toronto, Ontario, Canada: Multi-Health Systems.

Hare, R. D. (2003). *The Hare Psychopathy Checklist-Revised (PCL-R)* (2nd ed.). Toronto, Ontario, Canada: Multi-Health Systems.

Hare, R. D., Hart, S. D., & Harper, T. J. (1991). Psychopathy and the DSM-IV criteria for antisocial personality disorder. *Journal of Abnormal Psychology, 100*, 391–398.

Hare, R. D., Harpur, T. J., & Hemphill, J. D. (1989). *Scoring pamphlet for the Self-Report Psychopathy scale: SRP-II.* Unpublished manuscript, Simon Fraser University, Vancouver, British Columbia, Canada.

Hare, R. D., McPherson, L. M., & Forth, A. E. (1988). Male psychopaths and their criminal careers. *Journal of Consulting and Clinical Psychology, 56,* 710–714.

Hare, R. D., & Neumann, C. S. (2006). The PCL–R assessment of psychopathy: Development, structural properties, and new directions. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 58–88). New York: Guilford.

Harpur, T. J., Hare, R. D., & Hakstian, A. R. (1989). Two-factor conceptualization of psychopathy: Construct validity and assessment implications. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 1,* 6–17.

Hart, S. D., Cox, D. N., & Hare, R. D. (1995). *Manual for the Psychopathy Checklist: Screening Version (PCL: SV).* Toronto, Ontario, Canada: Multi-Health Systems.

Hart, S. D., Forth, A. E., & Hare, R. D. (1991). The MCMI-II and psychopathy. *Journal of Personality Disorders, 5,* 318–327.

Hathaway, S. R., & McKinley, J. C. (1940). A multiphasic personality schedule (Minnesota): 1. Construction of the schedule. *Journal of Psychology, 10,* 249–254.

Hemphill, J. F., Hare, R. D., & Wong, S. (1998). Psychopathy and recidivism: A review. *Legal and Criminological Psychology, 3,* 139–170.

Hervé, H., & Yuille, J. (Eds.). (in press). *Psychopathy in the 21st century.* Mahwah, NJ: Erlbaum.

Hicklin, J., & Widiger, T. A. (2005). Similarities and differences among antisocial and psychopathic self-report inventories from the perspective of general personality functioning. *European Journal of Personality, 19,* 325–342.

Hicks, B. M., Markon, K. E., Patrick, C. J., Krueger, R. F., & Newman, J. P. (2004). Identifying psychopathy subtypes on the basis of personality structure. *Psychological Assessment, 16,* 276–288.

Hill, C. D., Neumann, C. S., & Rogers, R. (2004). Confirmatory Factor Analysis of the Psychopathy Checklist: Screening Version (PCL: SV) in offenders with Axis I disorders. *Psychological Assessment, 16,* 90–95.

Holden, R. R. (2000). Application of the construct heuristic to the screening of psychopathology: The Holden Psychological Screening Inventory (HPSI). In R. D. Goffin & E. Helmes (Eds.), *Problems and solutions in human assessment: Honoring Douglas N. Jackson at seventy* (pp. 97–121). New York: Kluwer/Plenum.

Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika, 27,* 179–185.

Hu, L., & Bentler, P. M. (1999). Cut-score criteria for fit indexes in covariance structure analysis: Conventional criteria vs. new alternatives. *Structural Equation Modeling, 6,* 1–55.

Hunt, M. K., Hopko, D. R., Bare, R., Lejuez, C. W., & Robinson, E. V. (2005). Construct validity of the Balloon Analoge Risk Task (BART): Associations with psychopathy and impulsivity. *Assessment, 12,* 416–428.

Jahoda, M. (1958). *Current concepts of positive mental health.* Oxford, England: Basic.

Jakobwitz, S., & Egan, V. (2006). The dark triad and normal personality traits. *Personality and Individual Differences, 39,* 33–55.

John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102–138). New York: Guilford.

Jones S., Cauffman E., Miller, J. D., & Mulvey, E. (2006). Investigating different factor structures of the Psychopathy Checklist: Youth Version: Confirmatory factor analytic findings. *Psychological Assessment, 18,* 33–48.

Karpman, B. (1941). On the need for separating psychopathy into two distinct clinical types: Symptomatic and idiopathic. *Journal of Criminology and Psychopathology, 3,* 112–137.

Krueger, R. F., Hicks, B. M., & McGue, M. (2001). Altruism and antisocial behavior: Independent tendencies, unique personality correlates, distinct etiologies. *Psychological Science, 12,* 397–402.

LeBreton, J. M., Binning, J. F., & Adorno, A. J. (2006). Subclinical psychopaths. In J. C. Thomas & D. Segal (Eds.), *Comprehensive handbook of personality and psychopathology* (Vol.1, pp. 388–411). New York: Wiley.

Lee, K., & Ashton, M. C. (2005). Psychopathy, Machiavellianism, and narcissism in the Five-factor model and the HEXACO model of personality structure. *Personality and Individual Differences, 38,* 1571–1582.

Levenson, M. R., Kiehl, K. A., & Fitzpatrick, C. (1995). Assessing psychopathic attributes in a non-institutionalized population. *Journal of Personality and Social Psychology, 68,* 151–158.

Lilienfeld, S. O. (1999). The relation of the MMPI-2 Pd Harris–Lingoes subscales to psychopathy, psychopathy facets, and antisocial behavior: Implications for clinical practice. *Journal of Clinical Psychology, 55,* 241–255.

Lilienfeld, S. O., & Andrews, B. P. (1996). Development and preliminary validation of a self-report measure of psychopathic personality traits in noncriminal populations. *Journal of Personality Assessment, 66,* 488–524.

Lilienfeld, S. O., & Fowler, K. A. (2006). The self-report assessment of psychopathy: Problems, pitfalls, and promises. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 107–132). New York: Guilford.

Lilienfeld, S. O., & Hess, T. H. (2001). Psychopathic personality traits and somatization: Sex differences and the mediating role of negative emotionality. *Journal of Psychopathology and Behavioral Assessment, 23,* 11–24.

Lynam, D. R. (1998). Early identification of the fledgling psychopath: Locating the psychopathic child in the current nomenclature. *Journal of Abnormal Psychology, 107,* 566–575.

Lynam, D. R., Whiteside, S., & Jones, S. (1999). Self-reported psychopathy: A validation study. *Journal of Personality Assessment, 73,* 110–132.

Marsh, H. W., Balla, J. R., & McDonald, R. P. (1988). Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size. *Psychological Bulletin, 103,* 391–410.

McCrae, R. R., & Costa, P. T., Jr. (1999). A Five-factor theory of personality. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 139–153). New York: Guilford.

McCrae, R. R., Zonderman, A. B., Costa, P. T., Jr., Bond, M. H., & Paunonen, S. V. (1996). Evaluating replicability of factors in the Revised NEO Personality Inventory: Confirmatory factor analysis versus Procrustes rotation. *Journal of Personality and Social Psychology, 70,* 552–566.

McDonald, R. P., & Ho, M.-H. R. (2002). Principles and practice in reporting structural equation analyses. *Psychological Methods, 7,* 64–82.

Miller, J. D., Lynam, D. R., Widiger, T. A., & Leukefeld, C. (2001). Personality disorders as extreme variants of common personality dimensions: Can the Five-factor model adequately represent psychopathy? *Journal of Personality, 69,* 253–276.

Nathanson, C., Paulhus, D. L., & Williams, K. M. (2006a). Personality and misbehavior correlates of body modification and other cultural deviance markers. *Journal of Research in Personality, 40*, 779–802.

Nathanson, C., Paulhus, D. L., & Williams, K. M. (2006b). Predictors of a behavioral measure of scholastic cheating: Personality and competence but not demographics. *Contemporary Educational Psychology, 31,* 97–122.

Neumann, C. S., Hare, R. D., & Newman, J. P. (in press). The super-ordinate nature of psychopathy. *Journal of Personality Disorders.*

Neumann, C. S., Kosson, D. S., Forth, A. E., & Hare, R. D. (2006). Factor structure of the Hare Psychopathy Checklist: Youth Version (PCL: YV) in incarcerated adolescents. *Psychological Assessment, 18*, 142–154.

Neumann, C. S., Vitacco, M. J., Hare, R. .D., & Wupperman, P. (2005). Reconstruing the "Reconstruction" of psychopathy: A Comment on Cooke, Michie, Hart, & Clark. *Journal of Personality Disorders, 19,* 624–640.

Newman, J. P., MacCoon, D. G., Vaughn, L. J., & Sadeh, N. (2005). Validating a distinction between primary and secondary psychopathy with measures of Gray's BIS and BAS constructs. *Journal of Abnormal Psychology, 114,* 319–323.

O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instrumentation, and Computers, 32,* 396–402.

Patrick, C. J. (1994). Emotion and psychopathy: Startling new insights. *Psychophysiology, 31,* 319–330.

Patrick, C. J. (Ed.). (2006). *Handbook of psychopathy.* New York: Guilford.

Paulhus, D. L. (2001, February). *Validation of the dark triad measures.* Paper presented at the annual meeting of the Society for Personality and Social Psychology, San Antonio, TX.

Paulhus, D. L., Hemphill, J. F., & Hare, R. D. (in press). *Manual for the Self-Report Psychopathy scale.* Toronto, Ontario, Canada: Multi-Health Systems.

Paulhus, D. L., & Williams, K. M. (2002). The dark triad of personality: Narcissism, Machiavellianism, and psychopathy. *Journal of Research in Personality, 36,* 556–563.

Raskin, R., & Hall, C. S. (1979). A Narcissistic Personality Inventory. *Psychological Reports, 45,* 590.

Raykov, T. (1998). On the use of confirmatory factor analysis in personality research. *Personality and Individual Differences, 24,* 291–293.

Reise, S. P., Waller, N. G., & Comrey, A. L. (2000). Factor analysis and scale revision. *Psychological Assessment, 12,* 287–297.

Robinson, T., Weaver, J., & Zillman, D. (1996). Exploring the relation between personality characteristics and the appreciation of rock music. *Psychological Reports, 78,* 259–269.

Russell, D. W. (2002). In search of underlying dimensions: The use (and abuse) of factor analysis in *Personality and Social Psychology Bulletin. Personality and Social Psychology Bulletin, 28,* 1629–1646.

Rutherford, M. J., Alterman, A. I., Cacciola, J. S., & McKay, J. R. (1997). Validity of the Psychopathy Checklist-Revised in male methadone patients. *Drug & Alcohol Dependence, 44,* 143–149.

Rutherford, M. J., Alterman, A. I., Cacciola, J. S., & McKay, J. R. (1998). Gender differences in the relationship of antisocial personality disorder criteria to Psychopathy Checklist-Revised scored. *Journal of Personality Disorders, 12,* 69–76.

Rutherford, M. J., Cacciola, J. S., Alterman, A. I., & McKay, J. R. (1996). Reliability and validity of the Revised Psychopathy Checklist in women methadone patients. *Assessment, 3,* 145–156.

Salekin, R. T., Neumann, C. S., Leistico, A.-M. R., DiCicco, T. M., & Duros, R. L. (2004). Psychopathy and comorbidity in a young offender sample: Taking a closer look at psychopathy's potential importance over disruptive behavior disorders. *Journal of Abnormal Psychology, 113,* 416–427.

Salekin, R. T., Trobst, K. K., & Krioukova, M. (2001). Construct validity of psychopathy in a community sample: A nomological net approach. *Journal of Personality Disorders, 15,* 425–441.

Schmitt, W. A., & Newman, J. P. (1999). Are all psychopathic individuals low-anxious? *Journal of Abnormal Psychology, 108,* 353–358.

Steiger, J. H., & Lind, J. C. (1980, May). *Statistically-based tests for the number of common factors.* Paper presented at the annual meeting of the Psychometric Society, Iowa City, IA.

Sutton, S. K., Vitale, J. E., & Newman, J. P. (2002). Emotion among women with psychopathy during picture perception. *Journal of Abnormal Psychopathy, 111,* 610–619.

Svebak, S., & Kerr, J. (1989). The role of impulsivity in preference for sports. *Personality and Individual Differences, 10,* 51–58.

Vitacco, M. J., Neumann, C. S., & Jackson, R. L. (2005). Testing a four-factor model of psychopathy and its association with ethnicity, gender,

intelligence, and violence. *Journal of Consulting and Clinical Psychology, 73,* 466–476.

Vitacco, M. J., Rogers, R., Neumann, C. S., Harrison, K., & Vincent, G. (2005). A comparison of factor models on the PCL-R with mentally disordered offenders: The development of a four factor model. *Criminal Justice and Behavior, 32,* 526–545.

Weaver, J. B., III. (2000). Personality and entertainment preferences. In D. Zillman & P. Vorderer (Eds.), *Media entertainment: The psychology of its appeal* (pp. 235–248). Mahwah, NJ: Erlbaum.

West, S. G., & Finch, J. F. (1997). Personality measurement: Reliability and validity issues. In R. Hogan, J. A. Johnson, & S. R. Briggs (Eds.), *Handbook of personality psychology* (pp. 143–164). San Diego, CA: Academic.

Widiger, T. A., Cadoret, R., Hare, R. D., Robins, L., Rutherford, M., Zanarini, M., et al. (1996). *DSM-IV* antisocial personality disorder field trial. *Journal of Abnormal Psychology, 105,* 3–16.

Widiger, T. A., & Lynam, D. R. (1998). Psychopathy and the Five-factor model of personality. In T. Millon, E. Simonson, M. Birket-Smith, & R. D. Davis (Eds.), *Psychopathy: Antisocial, criminal, and violent behavior* (pp. 171–187). New York: Guilford.

Williams, K. M., McAndrew, A., Learn, T., Harms, P. D., & Paulhus, D. L. (2001, August). *The dark triad returns: Anti-social behavior and entertainment preferences among narcissists, Machiavellians, and psychopaths*. Poster session presented at the annual meeting of the American Psychological Association, San Francisco.

Williams, K. M., Nathanson, C., & Paulhus, D. L. (2003, August). *Factor structure of the Self-Report Psychopathy Scale in non-forensic samples*. Poster session presented at the annual meeting of the American Psychological Association, Toronto, Ontario, Canada.

Williams, K. M., & Paulhus, D. L. (2004). Factor structure of the Self-Report Psychopathy Scale (SRP-II) in non-forensic samples. *Personality and Individual Differences, 37,* 765–778.

Wilson, D. L., Frick, P. J., & Clements, C. B. (1999). Gender, somatization, and psychopathic traits in a college sample. *Journal of Psychopathology and Behavioral Assessment, 21,* 221–235.

World Health Organization. (1992). *The ICD-10 classification of mental and behavioral disorders*. Geneva, Switzerland: Author.

Zagon, I. K., & Jackson, H. J. (1994). Construct validity of a psychopathy measure. *Personality and Individual Differences, 17,* 125–135.

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