



Published in final edited form as:

Assessment. 2007 December ; 14(4): 323–340.

Validity of Factors of the Psychopathy Checklist–Revised in Female Prisoners:

Discriminant Relations With Antisocial Behavior, Substance Abuse, and Personality

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Abstract

The validity of the Psychopathy Checklist–Revised (PCL-R) has been examined extensively in men, but its validity for women remains understudied. Specifically, the correlates of the general construct of psychopathy and its components as assessed by PCL-R total, factor, and facet scores have yet to be examined in depth. Based on previous research conducted with male offenders, a large female inmate sample was used to examine the patterns of relations between total, factor, and facet scores on the PCL-R and various criterion variables. These variables include ratings of psychopathy based on Cleckley’s criteria, symptoms of antisocial personality disorder, and measures of substance use and abuse, criminal behavior, institutional misconduct, interpersonal aggression, normal range personality, intellectual functioning, and social background variables. Results were highly consistent with past findings in male samples and provide further evidence for the construct validity of the PCL-R two-factor and four-facet models across genders.

Keywords

psychopathy; Psychopathy Checklist–Revised; female offenders; partialing; suppression

Given the rapidly increasing incarceration rates among women in the United States (Bonczar, 2003), examining the construct of psychopathy in women remains an understudied but increasingly important area of research. The correlates and causes of psychopathy and its components as assessed by the Psychopathy Checklist–Revised (PCL-R; Hare, 2003) have been examined predominantly in male inmate samples, whereas much less is known about the external correlates of the PCL-R and its factors in female inmate samples. Previous studies examining the PCL-R in women have provided evidence for the reliability of diagnostic ratings, and some of these studies have reported relations between total PCL-R scores and criterion measures resembling those of men, contributing to claims of its measurement equivalence in women (Bolt, Hare, Vitale, & Newman, 2004; Hare & Neumann, 2006; Salekin, Rogers, & Sewell, 1997; Verona & Vitale, 2006; Vitale, Smith, Brinkley, & Newman, 2002). However, the differential correlates of the PCL-R component scores (i.e., factor and facet scores; see Hare, 2003) have yet to be systematically examined in female prisoners.

Based on previous research conducted on male offenders, this study’s purpose was to examine the patterns of relations between total, factor, and facet scores on the PCL-R and criterion-

related variables in a large female inmate sample. These analyses extend the findings of a previous report that examined the link between suicidal behavior and psychopathy in the same sample (Verona, Hicks, & Patrick, 2005). This work's aim was to provide a comprehensive analysis of the correlates of these PCL-R score variables by examining relations with an array of criterion measures. The measures include psychopathy ratings based on Cleckley's criteria, symptoms of antisocial personality disorder (APD), and measures of substance use and abuse, criminal behavior, institutional misconduct, interpersonal aggression, normal range personality, intellectual functioning, and social background variables.

CONCEPTUALIZATIONS OF PSYCHOPATHY

Origins of contemporary conceptualizations of psychopathy can be traced to Hervey Cleckley's influential monograph *The Mask of Sanity* (1941, 1976). His work contained several case studies, including those of two women, highlighting several of the manifestations of his criteria for psychopathy. Cleckley regarded psychopathy as an amalgam of personality features such as deficient affective response and superficial charm, along with severe behavioral maladjustment in the form of irresponsibility, unmotivated antisocial behavior, and promiscuity. One of the strengths of Cleckley's criteria is a lack of reliance on specific behaviors, which helped to mitigate gender stereotypes for both men and women (Vitale & Newman, 2001).

The PCL-R, a 20-item checklist that is scored on the basis of a face-to-face interview and review of relevant file information, has emerged as the predominant measure for psychopathy assessment in prison and forensic settings (Hare, 1991, 2003). The PCL-R was modeled after Cleckley's conceptualization and was initially validated against a global-rating approach to psychopathy assessment (Hare, 1980). Scored on a 7-point scale, with the high extreme designating a *definite psychopath* and the low extreme a *definite nonpsychopath*, the Cleckley global ratings took into consideration scores on Cleckley's criteria as a whole and demonstrated a reliable level of interrater agreement (Hare & Cox, 1978; Hare & Quinn, 1971). In developing the original PCL, Hare (1980) sought to eliminate confusion in the interpretation of Cleckley's criteria because of its vagueness in descriptions (i.e., lack of objective referents) and to remove overlap in the descriptive features across criteria. The set of indicators included in the final version of the PCL (and its successor, the PCL-R) were selected for their demonstrated empirical ability to differentiate psychopathic from nonpsychopathic inmates. The resulting measure maintained adequate and even higher levels of reliability in comparison to Cleckley's global-rating approach and further standardized the assessment of psychopathy in criminal offenders (Hare, 1980, 1991). Research has since demonstrated high levels of interrater reliability and good internal consistency of PCL-R scores in female samples (Vitale & Newman, 2001).

FACTOR STRUCTURE OF PCL-R

Factor analytic studies of the PCL-R (Harpur, Hare, & Hakstian, 1989; Hare et al., 1990) suggested that its items cohere into two correlated ($r \sim .50$) factors. This initial work characterized Factor 1 (F1) as reflecting superficial charm and manipulative interpersonal style, callousness, and remorseless use of others, and Factor 2 (F2) as reflecting impulsivity, irresponsibility, antisocial deviance, and a chronically unstable lifestyle. Subsequent research consistently demonstrated distinctive relations between these two broad factors of the PCL-R and a variety of criterion-related variables (at a bivariate level and after controlling for their common variance; Edens, Hart, Johnson, Johnson, & Olver, 2000; Hare, 1991; Harpur et al., 1989; Hart & Hare, 1989; Patrick, 1994, 1995, 2001; Patrick, Zempolich, & Levenston, 1997; Smith & Newman, 1990; Verona, Patrick, & Joiner, 2001).

More recently, Hare (2003) proposed a revised four-facet model of the PCL-R on the basis of exploratory and confirmatory factor analyses. In this model, F1 was parsed into two distinct facets: one reflecting an arrogant and deceitful interpersonal style (interpersonal) and the other indexing a deficient affective experience (affective). F2 was also separated into two distinct facets: one reflecting an Impulsive and Irresponsible Behavioral (IIB) style (lifestyle) and the other indexing antisocial deviance (antisocial).¹ With regard to gender, Hare and Neumann (2006) reported results of covariance equivalence analyses and found similar patterns in covariance matrices of the PCL-R items for men and women. Additionally, studies employing item response theory (IRT) to examine gender differences in the functioning of PCL-R items have concluded that, although some differences in item and test functioning between genders are present, for the most part the measurement properties of the PCL-R are equivalent across men and women, with minimal effects on the ability to identify psychopathic individuals via PCL-R total scores (Bolt et al., 2004; Vitale et al., 2002).

PSYCHOPATHY IN WOMEN

Although the aforementioned work indicates that the construct of psychopathy is applicable to women, notable divergences in the construct nevertheless have been observed across genders that raise questions about its general applicability to women and point to the need for further empirical validation. First, female offenders have demonstrated a trend toward lower overall PCL-R scores (Hare, 2003; Jackson, Rogers, Neumann, & Lambert, 2002; Salekin et al., 1997; Vitale & Newman, 2001) and lower base rates of psychopathy (Bolt et al., 2004; Cale & Lilienfeld, 2002; Hare, 2003; Rutherford, Cacciola, Alterman, & McKay, 1996; Salekin et al., 1997; Vitale et al., 2002). Second, women exhibit a delayed-onset and lower prevalence of early behavioral problems (Silverthorn & Frick, 1999), as well as a lower prevalence of violent and aggressive behavioral symptoms (Crick & Grotpeter, 1995). Third, F1 items, specifically Interpersonal facet items, have been reported to be less prominent in women (Cooke, Michie, Hart, & Clark, 2005; Cooke, Michie, Hart, & Hare, 1999). In addition, F2 items, specifically Antisocial facet items, have been reported as being less informative in female offenders (Bolt et al., 2004). Grann (2000) suggesting that these gender differences could be the result of a gender bias present in the clinical interview, file information, or in the PCL-R item criteria themselves. Others have suggested that both sex-linked biological differences and gender-specific socialization could account for divergences between genders in the diagnostic manifestation of the construct (e.g., as APD to a greater extent in men vs. histrionic personality disorder, more so in women; Cale & Lilienfeld, 2002). To further evaluate the existence of such diagnostic divergences between genders and to establish whether they result from measurement bias or sex differences, Forouzan and Cooke (2005) have called for studies examining whether the psychopathy construct is associated in parallel ways with behavioral and personality traits in women compared to men. Studies of this kind would be valuable in terms of identifying gender-related differences in the expression of impulsive and antisocial behaviors (Verona & Vitale, 2006).

DIFFERENTIAL CORRELATES OF PCL-R FACTORS

Previous research has revealed divergent patterns of relations between the PCL-R F1 and F2, as well as their residual components (i.e., the portion of variance remaining after partialing out

¹Cooke and Michie (2001) initially proposed a reconceptualization of the factor structure of the PCL-R. The Cooke and Michie model parsed the original F1 into Arrogant and Deceitful Interpersonal (ADI) style and Deficit Affective Experience (DAE) facets, which are composed of the same PCL-R items as Hare's Interpersonal and Affective facets, respectively. The Cooke and Michie model also includes an Impulsive and Irresponsible Behavioral style that is equivalent to the Hare's Lifestyle facet. Cooke and Michie (2001) excluded the items that comprise Hare's Antisocial facet on the theoretical grounds that these items are better conceptualized as consequences rather than as symptoms of the psychopathy syndrome. We present results for Hare's four-facet model because it incorporates more of the total content covered by the PCL-R and examine whether the Antisocial facet exhibits a unique pattern of relations with external correlates.

the common variance of the PCL-R factors), and criterion-related variables, including indices of antisocial deviance, criminal history, and substance abuse. Both F1 and F2 evince significant associations with Cleckley global ratings and APD diagnoses (Harpur et al., 1989), official records of criminal offenses (Brandt, Kennedy, Patrick, & Curtin, 1997; Hare, Clark, Grann, & Thornton, 2000; Vitale et al., 2002), age of onset of criminal behavior (Brandt et al., 1997), total nonviolent and violent criminal charges (Porter, Birt, & Boer, 2001), institutional infractions (Guy et al., 2005), and number of fights (Hare, 2003; Kosson, Steuerwald, Forth, & Kirkhart, 1997). Also F2 scores and its unique variance are selectively associated with measures of substance abuse (Reardon, Lang, & Patrick, 2002; Rutherford et al., 1996; Smith & Newman, 1990). In addition, within the four-facet model, the Affective and Antisocial facets are significantly associated with a history of violent criminal offending (Hall, Benning, & Patrick, 2004).

The associations of normal range personality traits with the PCL-R have been previously examined using a number of measures including the Multidimensional Personality Questionnaire MPQ; (Tellegen & Waller, 1992) and the Consensus Big Four (Watson, Clark, & Harkness, 1994). PCL-R total scores have been shown to correlate with high interpersonal dominance, high aggression, high rebelliousness as well as low agreeableness, low conscientiousness, low social closeness, and low behavioral constraint (Lynam & Derefinko, 2006; Patrick, 1995; Vitale et al., 2002). Both F1 and F2 scores show negative zero-order associations with agreeableness whereas F2 is also associated with neuroticism and low conscientiousness (Lynam & Derefinko, 2006). Residualized F1, in particular the unique variance of its Interpersonal component, is associated with high interpersonal dominance and a lack of anxiety (Hall et al., 2004; Patrick, 1995). Residualized F2 scores are associated with negative affect, aggression, and behavioral constraint (Verona et al., 2001). Within the four-facet model, Affective scores are also related to low social closeness whereas Lifestyle scores are related to negative affect and impulsivity (Hall et al., 2004).

Discriminant relations of the PCL-R factors with social background have been examined using a variety of criterion variables including intelligence, education, and parental occupation and criminality (Hall et al., 2004; Hare, 2003; Harpur et al., 1989). Such measures demonstrate a slight positive association with PCL-R F1 and a negative association with F2. F1 items, specifically those comprising the Interpersonal facet and its unique variance, have been positively associated with verbal intelligence (Hall et al., 2004). However, overall measures of intelligence and adaptive functioning are typically not associated with F1 or F2 scores (Arnett, Howland, Smith, & Newman, 1993; Hare, 2003; Hart, Forth, & Hare, 1990; Newman, Kosson, & Patterson, 1992). F2 scores have been selectively and negatively associated with measures of educational achievement, socioeconomic status, father's occupational class, and quality of family life (Hare, 1980, 2003; Hare, McPherson, & Forth, 1988; Harpur et al., 1989).

SUPPRESSOR SITUATIONS

Because the correlation that a PCL-R factor score exhibits with a criterion variable may be due to its overlap with another PCL-R factor score, it is also important to examine situations of mediation and suppression when delineating the differential correlates of PCL-R factor scores. The inclusion of correlated predictors in the same regression model typically results in *redundancy*, wherein the association between the unique variance in each predictor and the criterion is weaker than their simple bivariate associations. This is because the common variance between the predictors also overlaps with the criterion. *Mediation* occurs when association between a predictor and the criterion drops to nonsignificance after inclusion of another predictor variable in the regression model. *Suppression* occurs when the addition of another predictor variable into the regression model increases the association between the

initial predictor and the criterion, as evidenced by a beta coefficient that is greater than the bivariate coefficient. *Cooperative suppression* occurs when the beta coefficients for both predictors are greater than their bivariate correlations (Paulhus, Robins, Trzesniewski, & Tracy, 2004). *Crossover suppression* occurs when the beta coefficient for one predictor increases, whereas the sign of the other predictor reverses direction when the two are entered concurrently in a regression model (Paulhus et al., 2004).

Cooperative suppressor situations have been detected between F1 and F2 in the prediction of measures of anxiety, negative affect, history of suicide attempts, and social background variables (Frick, Lilienfeld, Ellis, Loney, & Silverthorn, 1999; Hall et al., 2004; Hicks & Patrick, 2006; Patrick, 1994; Verona et al., 2001; Verona et al., 2005). Crossover suppressor situations have been detected between F1 and F2 in the prediction of antisocial behavior and substance use/abuse, with the sign of F1 reversing from positive to negative and a slight increase in the size of F2 (Hall et al., 2004; Patrick, Hicks, Krueger, & Lang, 2005; Smith & Newman, 1990). Given the pattern of suppressor situations identified in male prisoners, the analytic framework of suppression informed our interpretations of the associations between the criterion variables and PCL-R factors.

CONTROVERSIES IN CONTROLLING FOR VARIANCE

In addition, concerns have been voiced about partialing psychopathy scales and then examining their associations with external criteria (Lynam, Hoyle, & Newman, 2006). For instance, by citing examples of divergences between the patterns of relations with external criteria between original and residualized psychopathy scales including PCL-R factor scores, Lynam and colleagues question how one can be sure what construct a variable represents after the common variance among the facet scales, which are indicators of a broader construct, have been removed. Lynam et al. (2006) go on to recommend that researchers be explicit in stating to which scale, original or residualized, a conclusion applies, and to always report zero-order coefficients along with partial coefficients. In the present study, these issues were addressed in three ways: (a) The pattern of associations between the PCL-R factor and facet scores with a broad range of conceptually related measures were examined, (b) Both the original and residualized associations with these external criterion measures were reported, and (c) When describing their associations with criterion variables, original PCL-R factors and facets scores from their residual components were carefully distinguished from one another. Such an approach allows a clearer conceptual picture to be drawn of the nomological net that is captured by both original and residualized PCL-R factor and facet scores.

PRESENT STUDY

Although a number of studies have reported discriminant relations between the two PCL-R factors and criterion measures, including antisocial behavior, substance abuse, and personality (providing support for the discriminant validity of these psychopathy factors in male prisoner samples), relations for these distinctive factors have not yet been investigated comprehensively in a female prisoner sample. Thus, modeled on previous research in male prisoner samples, the primary goal of the present study was to examine the discriminant relations of the PCL-R factors with criterion measures including ratings of psychopathy based on Cleckley's criteria, diagnostic symptoms of APD, substance use and abuse, criminal behavior, institutional misconduct, interpersonal aggression, normal range personality, and social background in a female prison sample assessed for psychopathy using the PCL-R. Although the PCL-R has been found to apply to women with a trend toward lower absolute rates of psychopathy in incarcerated, clinical, and community samples (Salekin et al., 1997; Verona & Vitale, 2006; Vitale & Newman, 2001), there has been less evidence that psychopathy scores show a differential pattern of external correlates in women. Therefore, it was expected that patterns of

relations between PCL-R total and factor scores (as well as their residual components) and criterion measures in the current female prison sample would be similar to those previously reported in male prison samples.

Specifically, it was predicted that PCL-R total scores would demonstrate strong relations with the Cleckley criteria, indicating strong convergence between the PCL-R criteria and Cleckley's conceptualization of psychopathy in women offenders. In addition, it was predicted that PCL-R total scores would also be highly correlated with APD and criminal behavior and moderately associated with substance abuse. It was also predicted that F1 and F2 scores would evince significant associations with symptoms of APD and with a variety of criminal behaviors, and that F2 scores would be significantly associated with substance abuse. Furthermore, it was expected that regression analyses would reveal significant positive and negative associations, respectively, between residualized F1 and measures of interpersonal dominance and anxiety, whereas residualized F2 scores would be positively associated with substance abuse, negative affect, and aggression, and negatively associated with behavioral constraint. For the four-facet scores, it was expected that regression analyses would reveal the following: (a) significant positive and negative associations of residualized Affective scores with violent crime and social closeness, respectively; (b) significant positive associations between residualized Lifestyle scores and measures of behavioral disinhibition and substance abuse; and (c) significant positive associations between residualized Antisocial scores and measures of negative affect and criminality.

METHOD

Participants

Participants consisted of 226 female inmate volunteers recruited from the population of the Federal Correctional Institution in Tallahassee, Florida, a low-medium security prison. Those meeting the following eligibility criteria were recruited randomly from the master prison roster for participation: not subject to an imminent release date, no file evidence of a current major mental disorder, and competent in English as demonstrated via conversation as well as reading aloud a text description of the study. The sample had a mean age of 31.9 years ($SD = 6.8$) and included: 57.1% ($n = 129$) African American, 29.6% ($n = 67$) White, 10.6% ($n = 24$) Hispanic, .4% ($n = 1$) Asian, and 2.2% ($n = 5$) Other. All individuals provided informed written consent prior to participation in the study.

Procedure

After consenting to participation, individuals were rated on the PCL-R, Cleckley criteria, APD, criminal history variables, and social background variables after a diagnostic interview session and a review of prison file records by the interviewer. Although information from the PCL-R interview was coded by only one rater, the interview-derived variables were defined so as to be unambiguous and thus extractable from the interview with minimal interpretation. During a separate session from the diagnostic interview, participants completed a battery of self-report questionnaires indexing substance abuse, normal-range personality, and intellectual functioning.

Assessment

Psychopathy: Ratings for the 20 items of the Psychopathy Checklist–Revised (PCL-R; Hare, 1991) were assigned on the basis of information from a semistructured diagnostic interview and a review of prison file records. The primary rater conducted the interview, while another separate, independent diagnostician viewed a video recording of the interview and performed the secondary ratings. All raters reviewed the file information. Items were rated as 0 (*does not apply*), 1 (*applies somewhat*), or 2 (*definitely applies*). Interviewers were advanced

undergraduate or graduate-level psychology students who had received specialized training in the use of the PCL-R. Their training entailed reading case summaries from Cleckley's *Mask of Sanity*, along with descriptions of his 16 diagnostic categories, and selections from Hare's PCL-R manual, including its Introduction, Administration, and Item Description sections. Ratings of 13 sample cases (including female as well as male subjects) were completed, as well as meetings after every two or three cases to compare trainees' scores with those of experienced raters' to clarify scoring rules and ensure adequate reliability of ratings. Following this initial training, ongoing meetings of primary and secondary raters were held to review and discuss cases, and ratings were intermittently checked by a third rater to protect against rater drift.

The scores of the primary and secondary raters were averaged for purposes of analysis. Table 1 shows the Intraclass correlations (ICC) for a single rater and for the mean of two raters, as presented in the PCL-R manual (Hare, 1991, 2003). The rationale for reporting results based on average PCL-R scores across the two raters is that the aggregated scores are more reliable than ratings for one or the other rater alone, as evidenced by the mean of two raters versus single-rater ICCs.

In addition to a total score, scores were computed on the two original factors of the PCL-R (Hare et al., 1990; Harpur et al., 1989), Factor 1 (F1), consisting of items reflecting the interpersonal and affective traits of psychopathy, and Factor 2 (F2), comprising items that index the chronically unstable and antisocial lifestyle of the psychopath. The correlation between F1 and F2 in the current sample was $r = .49, p < .01$. Scores on these two broad factors were in turn parsed into scores on the four PCL-R facets (Hare, 2003): Interpersonal, Affective, Lifestyle, and Antisocial. PCL-R Item 19 ("revocation of conditional release"), which is measurable only if a participant has received one or more conditional releases, was not included in the calculation of Antisocial scores because it was unscorable for one third of the sample. Correlations among the four PCL-R facets ranged from $r = .35$ to $.68$, all $ps < .01$. As noted earlier, interrater reliability of scores was estimated using intraclass correlation coefficients (ICC; Shrout & Fleiss, 1979). Table 1 presents descriptive statistics and ICCs for the PCL-R total, factor, and facet scores.

Criminal and Antisocial Behavior

Cleckley Global Rating: The Cleckley global rating was modeled on Cleckley's conception of psychopathy (1976) and served as the initial referent for the PCL-R. As with the PCL-R items, the Cleckley criteria were rated as 0 (*does not apply*), 1 (*applies somewhat*), or 2 (*definitely applies*) using information from the interview and review of the prison file. Fifteen of Cleckley's 16 criteria were rated; the criterion *suicide rarely carried out* was excluded because all participants were living. In addition to rating these 15 Cleckley criteria individually, a global rating was made wherein each participant was rated on a 7-point scale as to how closely she resembled Cleckley's description of psychopathy. The interviewer made the primary Cleckley ratings. A third diagnostician who was independent of the interviewer and the secondary rater of the PCL-R items provided secondary ratings for the Cleckley criteria. The ICC for the mean of two raters was .89 for both the Cleckley total symptom score and global rating. To reduce criterion overlap when examining associations with the PCL-R scores, PCL-R ratings made by the primary interviewer were correlated with the Cleckley ratings made by the secondary rater.

APD: Ratings of the APD criteria were derived from its *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.) definition (American Psychiatric Association, 1994). The adult criteria for *DSM-IV* APD include seven symptoms indicative of antisocial behavior after age 15, whereas the childhood criteria include 15 symptoms indicative of the same behavior before

age 15. Supplemental questions added to the PCL-R interview, along with a review of the prison file records, provided the information needed to complete APD ratings. ICCs (mean of two raters) for the total number of the adult and child symptoms were .85 and .91, respectively. Again, to reduce criterion overlap when examining associations with the PCL-R scores, PCL-R ratings made by the primary interviewer were correlated with APD symptoms assigned by the secondary rater.

Criminal history: Measures of criminal history were derived from the PCL-R interview and from prison file records. They included age of onset, nonviolent crimes, and violent crimes. Indices of age of onset included age of first charge and number of charges before age 17. Nonviolent crimes included fraud, theft, drug crimes, and prostitution. Violent crimes consisted of robbery, assault, murder, and possession of a weapon. Because the majority of criminal behavior goes undetected by the authorities, analyses are included for both official records and self-reported criminal behavior obtained from the interview. Official charges were coded as total number of charges, whereas self-reported criminal behavior was coded as present or absent for each category. Total score indices for official charges and self-reported nonviolent and violent criminal behavior were created by summing the relevant criminal categories. Finally, a criminal variety index was computed by summing the number of different categories of illegal behaviors (four nonviolent and four violent; either official charges or self-reported crimes) that the participant had engaged in.

Because ratings for many of the PCL-R items rely heavily on self-report and file information regarding criminal behavior, relations between PCL-R ratings and criminal behavior are primarily descriptive rather than predictive. Also because age may have a spurious association with criminal history, age was entered into the regression models for the criminal variety, total nonviolent and violent criminal charges, and total self-reported crime criterion variables. Additionally, a summary of findings was provided after special precautions were taken to minimize criterion contamination. In these supplemental analyses, the PCL-R item criminal versatility was removed from PCL-R total, F2, and Antisocial facet scores in examining relations with all crime-related criterion variables. In addition, the PCL-R item juvenile delinquency was removed from the PCL-R total, F2, and Antisocial facet scores when examining relations with age of onset variables. It should be noted that criterion contamination was not an issue when examining relations between PCL-R ratings and other criterion variables, such as measures of substance use and abuse, personality, social background, and intellectual functioning, because they do not enter directly into the scoring of the PCL-R.

Institutional misconduct: Measures of institutional misconduct (*present* = 1, *absent* = 0) were obtained from prison file records. Institutional misconduct was classified as either nonviolent or violent. Nonviolent institutional charges included possession of contraband such as intoxicants, insubordination by disobeying a direct order, violation of count, notices of incompatibility with cellmates, nonconformance (such as failure to work or arrive on time to scheduled activities), gambling, lying, theft, sexual contact with another inmate, verbal confrontation, threats toward other inmates and prison staff, and escaping from custody. Violent institutional charges included fighting with or assaulting other inmates or prison staff, weapon possession, and destroying property. Length of incarceration and frequency of institutional misconduct were not available, and conclusions that can be drawn regarding the association between the PCL-R factors and institutional misconduct were therefore limited.

Interpersonal violence and aggression: Measures of interpersonal aggression were obtained during the PCL-R interview and from the review of prison file records. Interpersonal aggression was indexed by self-reported number of fights as a child, number of fights as an adult, and violence against a partner. Once again, in an effort to control for criterion contamination that could occur with PCL-R ratings, findings were summarized from supplemental analyses in

which the PCL-R item poor behavioral controls was removed from the PCL-R Total, F2, and Antisocial facet scores when calculating correlations with interpersonal aggression variables.

Substance Use and Abuse

Short Michigan Alcohol Screening Test (SMAST): The SMAST (Selzer, Vinokur, & van Rooijen, 1975) is a 13-item questionnaire that measures alcohol-related problems and yields a total score. High ratings identify individuals with more extreme alcohol-related problems.

Alcohol Dependence Scale (ADS): The ADS (Skinner & Allen, 1982) is a 29-item self-report questionnaire that indexes problems related to alcohol use, including abuse and dependence. The ADS yields a total score, where higher ratings differentiate individuals with more extreme alcohol-related problems.

Drinking Motives Questionnaire (DMQ): The DMQ (Cooper, Russell, Skinner, & Windle, 1992) is a 15-item self-report questionnaire that yields three classes of drinking motives that indicate distinct behavioral patterns in alcohol consumption. The Social Motives scale reflects drinking as a way to interact and socialize with others and includes items such as, “I drink to be sociable.” The Coping Motives scale indexes drinking as a way to cope with problems and emotions and includes items such as, “I drink because it helps me when I feel depressed or nervous.” The Enhancement Motives scale consists of the tendency to drink as a way to augment positive feelings. It includes items such as, “I drink because it makes me feel good.”

Short Drug Abuse Screening Test (SDAST): The SDAST (Skinner, 1982) is a 20-item self-report measure that indexes problems related to drug use, including abuse and dependence. The SDAST yields a total score where high scores indicate severe drug-related dysfunction.

Schedule of Alcohol and Drug Use (SADU): The SADU (Bachman, Johnston, & O’Malley, 1991) is a self-report inventory examining patterns of psychoactive substance use over time by measuring the quantity and frequency of consumption. Substances inquired about include nicotine, marijuana, psychedelics, amphetamines, cocaine, barbiturates, tranquilizers, and opiates. For each substance, participants reported the frequency of use in their lifetime, within the past 12 months before incarceration, and within the last 30 days prior to incarceration. For the purpose of the current analyses, item composites of specific substances were created by summing the responses to items inquiring about the same substance.

Personality

Multidimensional Personality Questionnaire (MPQ): The Multidimensional Personality Questionnaire-brief form (MPQ-BF; Patrick, Curtin, & Tellegen, 2002) is a 155-item self-report personality inventory that includes 11 primary trait scales and 4 higher order factors. The 11 primary trait scales are the following: Well-Being, Social Potency, Achievement, Social Closeness, Stress Reaction, Alienation, Aggression, Self-Control, Harm Avoidance, Traditionalism, and Absorption. These primary trait scales factor into and define the four higher order factors (except Absorption, which is not distinctively related to any factor). The four higher order factors, and the specific content of each, are as follows: Agentic Positive Emotionality (PEM-A), which measures the obtainment of well-being via social potency and achievement; Communal Positive Emotionality (PEM-C), which indexes the attainment of well-being via social closeness; Negative Emotionality (NEM), which reflects negative affect including stress reactivity, alienation, and aggression; and Constraint (CON), which gauges behavioral restraint including self-control, harm avoidance, and traditionalism.

Social Background and Intellectual Functioning—Measures of social background were obtained from the PCL-R interview and the review of prison file records. Social

background measures included the participant's level of educational attainment, as well as the occupations and criminal history of her parents. Education and occupation levels were coded according to the Hollingshead formula (Hollingshead & Redlich, 1958), with scores reversed so that higher scores indicate greater educational and occupational attainment. Criminal history for the mother and father was coded "present" or "absent." As part of the intake procedures into the prison, inmates completed the Shipley Institute of Living (SIL) scale, a brief measure of intellectual functioning. The SIL yields a total score and two subtest scores. The subsets are a verbal score, which assesses vocabulary knowledge, and an abstraction score, which consists of abstract problem-solving items.

Data Analysis Plan—A series of correlational analyses and linear regressions were completed to examine the associations between the PCL-R factor and facet scores, and the various external criterion variables. First, bivariate correlations between each criterion variable and PCL-R scores were calculated. To control for the overlap between the PCL-R factor and facet scores, linear regression models were fit to estimate the association between the criterion variables and the unique variance of each PCL-R factor and facet score. For each criterion variable, two regression models were fit: the first included F1 and F2 as predictor variables, and the second included the four-facet scores as predictor variables. An alpha level of .01 was implemented to reduce Type I error.

In regard to detecting the presence of mediation and suppression among the PCL-R factors, quantitative research has demonstrated that mediation and suppression fall within the same intervening variable framework, and the same statistics can be used to determine their statistical significance (MacKinnon, Krull, & Lockwood, 2000; Shrout & Bolger, 2002). These effects were tested using the Sobel test, and statistics were calculated using a publicly available macro at <http://www.psych.ku.edu/preacher/sobel/sobel.htm>. This macro reports a Z-score and significance level of the change in the beta coefficient after inclusion of an additional predictor in the regression model. Because of the complexity inherent in the interpretation of suppressor effects across multiple variables, Sobel tests were performed only for the regression models that included F1 and F2.

RESULTS

Cleckley's Criteria

Table 2 presents results of the correlation and regression analyses examining relations between Cleckley's criteria and PCL-R total scores, and both original and residualized factor and facet scores. The total score and global rating scores of Cleckley's criteria both showed very high positive bivariate correlations with the PCL-R total, F1, and F2 scores. This finding is consistent with previous results for male prisoner samples (Hare, 1980; Harpur et al., 1989). Also each of the four-facets was highly correlated with the Cleckley ratings ($r = .48$ to $.66$, all $ps < .01$). When controlling for their common variance in the regression models, the associations with Cleckley's Criteria remained significant for all residualized factor and facet scores.

The use of PCL-R scores was also examined to establish a diagnostic cutoff for psychopathy using receiver operating characteristic (ROC) curves (i.e., plot of true-positive rate [sensitivity] as a function of the false-alarm rate [$1 - \text{specificity}$]) and the Cleckley global rating as the criterion for group membership. The cut-off score on the PCL-R that produced the most comparable diagnostic efficiency between Hare's (1991) normative male prisoner sample was 27 (sensitivity = .76, specificity = .92, area under curve = .95, standard error = .014), which yields a base rate for psychopathy of 25.6%. Alternatively, using the classic diagnostic cutoff score of psychopathy (PCL-R total score > 30) yielded a base rate of 15.5% for the sample.

APD

Table 2 also presents results of the relations between the APD criteria and PCL-R total scores, and both original and residualized factor and facet scores. Child and adult APD symptoms had large positive bivariate correlations with the PCL-R total and F2 scores. F1 scores demonstrated a modest positive correlation with child APD symptoms and a large positive correlation with adult APD symptoms. In the regression analyses, a crossover suppressor situation was detected in the prediction of child APD symptoms as the sign of F1 reversed from positive to negative and the beta coefficient for F2 became greater in magnitude than its bivariate correlation. In addition, F1 and F2 remained significant predictors of the adult APD symptoms.

For the four-facet scores, child APD symptoms exhibited large bivariate correlations with the Lifestyle and Antisocial scores and modest, but significant, bivariate correlations with Interpersonal and Affective scores. The adult APD symptoms were highly related to each of the four-facet scores. After controlling for the common facet variance, child APD symptoms remained significantly associated with residualized Antisocial scores. Meanwhile, adult APD symptoms maintained significant associations with the residualized Affective, Lifestyle, and Antisocial scores.

Criminal Behavior

Criminal Variety Index—Table 2 presents results of the relations between the various measures of criminal behavior and PCL-R total scores, factor, and facet scores. Scores on the Criminal Variety Index were significantly correlated with PCL-R total scores and with all factor and facet scores. After controlling for their overlapping variance in the regression model, F1 and F2 remained significantly associated with the Criminal Variety Index, although each relationship dropped in magnitude. For the four facets, only residualized Antisocial scores were a significant predictor after controlling for the common variance among facet scores.

Age of onset—The variable reflecting number of charges before age 17 showed a significant positive correlation with PCL-R total and F2 scores, whereas the age of first charge variable showed significant negative associations with PCL-R total, F1, and F2 scores (i.e., higher PCL-R scores were associated with an earlier age of onset). However, the regression analyses again identified crossover suppression situations for both ages of onset variables, as the signs for F1 scores reversed directions and there were small increases in the magnitude of the beta coefficients for F2.

For the four-facet scores, the number of charges before age 17 was significantly correlated with Lifestyle and Antisocial scores. Age of first charge was significantly correlated with each facet score. In the regression models, only residualized Antisocial scores were a significant predictor of both number of charges before age 17 and age of first charge.

Official and self-reported nonviolent crime—The total number of official nonviolent charges was significantly correlated with PCL-R total scores, both factor scores, as well as the Interpersonal, Lifestyle, and Antisocial facet scores. In the regression models, only residualized F2 and Interpersonal scores were significant predictors of total nonviolent charges.

For self-reported nonviolent crimes, PCL-R total, F1, and F2 scores were significantly correlated with total number of nonviolent crime types. In the regression models, residualized F2 scores were a significant predictor of self-reported nonviolent crime types, but residualized F1 scores were not. All four PCL-R facet scores were significantly correlated with self-reported nonviolent crime types. In the regression models, residualized Interpersonal and Antisocial scores were significant positive predictors of self-reported nonviolent crime, whereas

residualized Affective scores were significant negative predictors of self-reported nonviolent crime types.

Violent crime—PCL-R total, F1, and F2 scores were significantly correlated with the total number of violent crime charges. Among the four PCL-R facet scores, Affective, Lifestyle, and Antisocial scores were significantly correlated with the total number of violent charges. In the regression models, residualized Affective and Antisocial scores were significant predictors of the total number of violent charges.

Institutional charges—Violent institutional charges were correlated significantly with PCL-R total and F2 scores. Analyses using the four-facet scores revealed that the relation between F2 and violent institutional charges was primarily because of variance in antisocial scores.

Interpersonal aggression—Number of child and adult fights and history of violence against intimate partners had significant positive associations with PCL-R total and F2 scores and were unrelated to F1 scores. The regression models again detected a crossover suppressor situation, as the sign of F1 scores reversed direction from positive to negative and there was a slight increase in the magnitude of beta coefficient of F2 scores relative to the bivariate correlation. For the four-facet scores, Lifestyle and Antisocial scores were significantly correlated with the number of child and adult fights and history of violence against an intimate partner. In the regression models, residualized Antisocial scores were a significant predictor of child and adult fights. Meanwhile, residualized Lifestyle scores were a significant predictor of a history of violence against a partner.

Results with criminal behavior after controlling for criterion overlap—To examine the effect of criterion overlap on the relations between criminal behavior and the PCL-R total and factor scores, the correlation and regression coefficients were recalculated after removing select items (criminal versatility and others; see method section) from the PCL-R total, F2, and Antisocial facet scores. All the correlations between the PCL-R total scores and criminal behavior variables remained significant. However, in the regression models, the coefficients between the Antisocial facet and the Criminal Variety Index, total self-reported nonviolent charges, total violent crime charges, and number of adult fights dropped to nonsignificance.

One consequence of removing items from the F2 and Antisocial facet scores was greater ability to detect associations between the other PCL-R factors and the criminal behavior variables in the regression models. For F1, the regression coefficients with total violent crime charges reached significance at $p < .01$. Furthermore, for the Lifestyle facet, the regression coefficients with the criminal variety index, age of first charge, total number of official nonviolent criminal charges, and total number of self-reported nonviolent crime types also reached statistical significance.

Substance Use and Abuse

Alcohol use and abuse—Table 3 presents the results of associations between measures of alcohol use and abuse (SMAST, ADS, and DMQ scales) and PCL-R total, factor, and facet scores. Each of the indices of alcohol use and abuse demonstrated significant positive bivariate correlations with the PCL-R total and F2 scores, although the associations were slightly stronger for F2 scores. F1 scores were not significantly correlated with any measure of alcohol use or abuse. In the regression analyses, a crossover suppressor situation was detected in the prediction of the alcohol measures, as the sign of F1 reversed from positive to negative and the beta coefficients for F2 became greater in magnitude than their bivariate correlations. In

addition, in the regression analyses, F1 scores emerged as a significant negative predictor of the DMQ Coping scale.

For the four-facet scores, the measures of alcohol use and abuse were significantly correlated with the Lifestyle and Antisocial scores and unrelated to the Interpersonal and Affective scores. In the regression analyses, beta coefficients for the Lifestyle and Antisocial scores tended to be lower than the bivariate correlations, indicative of a redundancy situation. In addition, in the regression analyses, residualized Interpersonal scores emerged as a significant negative predictor of ADS and DMQ Coping scores.

Drug use and abuse—Table 3 also presents results of the relations between indices of drug use and abuse and PCL-R total, factor, and facet scores. Scores on the SDAST were significantly correlated with PCL-R total and F2 scores and unrelated to F1 scores. The regression analyses revealed both a cooperative and crossover suppressor situation. The simultaneous inclusion of both factors as predictors resulted in significant increases in the magnitudes of the beta coefficients for both F1 and F2 relative to their bivariate coefficients and a reversal of the sign of F1 from positive to negative. PCL-R total and F2 scores were positively associated with overall drug use (i.e., SADU total scores) and each drug class, with the exception of F2 and psychedelics, whereas F1 scores were uncorrelated with overall drug use and each drug class with the exception of a significant positive association with opiate use. In the regression analyses, crossover suppressor situations were detected for overall drug use and for most drug classes with the sign of F1 reversing from positive to negative and the beta coefficient for F2 increasing in magnitude, relative to its bivariate coefficient. In addition, in the regression analyses, residualized F1 scores were significant negative predictors of overall drug use, nicotine use, marijuana use, and cocaine use. Overall, F1 scores were associated with less drug use, whereas F2 scores were related to drug use.

For the four-facet scores, Lifestyle and Antisocial scores were positively associated with SDAST scores, overall drug use, and each drug class, with the exception of Antisocial scores and psychedelics and opiates. Interpersonal and Affective scores were uncorrelated with SDAST and drug use scores, with the exception of Interpersonal scores and opiate use. In the regression models, residualized Lifestyle scores were significantly associated with SDAST scores, overall drug use, as well as nicotine, marijuana, amphetamine, and cocaine use scores. Residualized Antisocial scores were significantly associated with marijuana use. In addition, residualized Affective scores emerged as a significant negative predictor of SDAST scores and overall drug use, whereas residualized Interpersonal scores emerged as significant negative predictors of nicotine use.

Personality: MPQ Primary Trait Scales and Higher Order Factors

Table 4 presents a summary of the relations between normal range personality constructs as measured by the MPQ primary trait scales and higher order factors in the current female offender sample, and PCL-R total, factor, and facet scores. PCL-R total and F2 scores were significantly associated with stress reaction, alienation, and aggression scores, as well as low self-control and traditionalism scores. F1 scores were significantly associated with high alienation and aggression scores, as well as low traditionalism scores. In the regression models, residualized F2 scores were a significant predictor of stress reaction, alienation, and aggression, as well as low self-control. F2 scores also emerged as a significant predictor of low well-being. The shared variance with F2 accounted for the associations between F1 and all the MPQ primary scales (i.e., within these regression models, all betas for F1 were nonsignificant). In addition, crossover suppressor situations were detected in the prediction of MPQ Stress Reaction and Self-Control. For MPQ Stress Reaction, the sign of F1 reversed from positive to negative whereas the beta coefficient for F2 became slightly greater in magnitude than its

bivariate correlation. In the case of MPQ Self-Control, the sign of F1 reversed from negative to positive, and the beta coefficient for F2 became slightly greater in magnitude than its bivariate correlation. For the MPQ higher order factors, PCL-R total and F2 scores were significantly correlated with NEM and low CON, whereas F1 scores were significantly correlated with NEM. In the regression models, residualized F2 scores were a significant predictor of NEM and low CON.

For the four-facet scores, Interpersonal scores were significantly correlated with social potency. Affective scores were significantly correlated with alienation, aggression, and low traditionalism. Lifestyle and Antisocial scores were significantly correlated with stress reaction, alienation, aggression, and low self-control. Lifestyle scores were also significantly correlated with low traditionalism, and Antisocial scores were significantly correlated with low social closeness. In the regression models, residualized Interpersonal scores were a significant predictor of social potency, whereas residualized Lifestyle scores were a significant predictor of low self-control. Residualized Antisocial scores were significant predictors of stress reaction, alienation, aggression, and low self-control. For the higher order factors, Affective, Lifestyle, and Antisocial scores were all significantly correlated with NEM and low CON. In the regression models, residualized Lifestyle scores were a significant predictor of low CON, and residualized Antisocial scores were a significant predictor of NEM.

Social Background and Intellectual Functioning

Table 5 presents a summary of the relations between the social background and intellectual functioning measures and PCL-R total, as well as the original and residualized factor and facet scores. Years of education exhibited significant negative associations with PCL-R total and F2 scores and was unrelated to F1 scores. The regression model identified a crossover suppressor situation, as residualized F1 scores emerged as a significant positive predictor of years of education, and there was a slight increase in the magnitude of the (negative) beta coefficient for F2 scores relative to its bivariate correlation. For the four-facet scores, Lifestyle and Antisocial scores exhibited significant negative associations with years of education, whereas only residualized Antisocial scores were a significant predictor in the regression model.

None of the PCL-R total or original factor and facet scores showed a significant association with either maternal or paternal occupational status. However, a cooperative suppressor situation was detected in the regression model that included F1 and F2 scores as predictors of mother's occupation: Residualized F1 scores were associated with higher maternal occupational status, whereas residualized F2 scores were associated with lower maternal occupational status.

Only F2 scores were significantly correlated with maternal criminality. In the regression models, a cooperative suppressor situation was detected, as residualized F1 scores emerged as a significant negative predictor of maternal criminality, and the beta coefficient for F2 scores increased relative to its bivariate correlation. For the facet scores, both the bivariate correlation and regression coefficient for Antisocial facet scores were significantly associated with maternal criminality. None of the PCL-R scores were significantly associated with paternal criminality.

None of the PCL-R total or original and residualized factor and facet scores was significantly correlated with any measure of intellectual functioning.

DISCUSSION

In the current study, the relations of the PCL-R total, two-factor, and four-facet scores were examined with several criterion-related measures in a sample of female offenders. Divergent

patterns of relations for these scores were observed with various criterion measures, and in many instances these divergent associations were augmented after controlling (i.e., partialing) for the common variance among PCL-R factor scores. Results overall were generally consistent with those reported in male inmate samples and provide further evidence of the validity of the PCL-R as a whole and for the generalizability and discriminant validity of the PCL-R two-factor and four-facet models across genders. As the construct validity, or “psychological meaning,” of a measure is ultimately defined by its patterns of covariation, the psychological interpretation of the PCL-R total and factor scores based on their patterns of external correlates will now be discussed.

PCL-R Total Score and the “Common” or “General” Variance of the PCL-R

PCL-R total scores were associated with antisocial deviance and criminal history as evidenced by correlations with Cleckley’s global ratings, child and adult APD symptoms, and criminal deviance measures, including age of onset, nonviolent and violent crime, and overall criminality. In addition, for these criterion variables, a redundancy situation was observed typically among the factor and facet scores, indicating that the common variance of the PCL-R (best indexed via the total score) is predominantly a measure of criminal and socially deviant behavior. This, perhaps, is not surprising given that most items of the PCL-R are scored with reference to criminal–antisocial behaviors (Widiger, 2006). Furthermore, PCL-R total scores were significantly correlated with alcohol and drug use and abuse, general negative affect and lack of behavioral constraint, and low education. Also notable is the fact that the pattern of associations for PCL-R total scores was very similar to that for F2 scores but generally weaker in magnitude. This indicates that the variance of F2 tends to dominate the PCL-R total score, hence the similar pattern of external correlates for this factor. The weaker effect sizes compared to F2 scores reflect the fact that the unique variance of the factor scores in many cases exhibited opposing relations with external criteria, resulting in a suppressor situation for overall PCL-R scores. In sum, based on its external correlates, the PCL-R total score appears to function more as a measure of F2 than F1, with one interpretation of overall PCL-R scores being that they reflect the general dysfunction associated with the disorder as indexed by F2, mitigated somewhat by the protective features of F1.

PCL-R F2, Lifestyle, and Antisocial Scores

PCL-R F2 scores were associated with Cleckley symptom scores and global ratings, as well as with the child and adult symptoms of APD. F2 was also strongly related to age of criminal onset, total nonviolent official charges, self-reported nonviolent crime, violent crime, violent institutional charges, and interpersonal aggression. In addition, F2 exhibited associations with measures of alcohol and drug use and abuse. In terms of normal-range personality constructs, F2 was associated with heightened negative affect (NEM, including its constituent traits of stress reaction, alienation, and aggression) and lack of behavioral restraint (low CON). F2 also was negatively associated with the social background variable low educational attainment. Thus, consistent with findings reported for male inmate samples, F2 scores index a propensity for criminal and socially deviant behavior, vulnerability to alcohol and drug abuse, an aggressive and impulsive personality style, and the experience of an adverse social background.

The source of these associations for F2 scores was further examined by parsing F2 into its two facets, Lifestyle and Antisocial. It was observed that the Lifestyle facet and its residual component primarily accounted for the associations of F2 with drug use and abuse and with low behavioral constraint. On the other hand, the Antisocial facet and its residual component primarily accounted for the associations between F2 and childhood symptoms of APD, self-reported nonviolent crime, age of criminal onset, violent crime, violent institutional charges, interpersonal aggression, alcohol use and abuse, heightened negative affect, low educational attainment, and maternal criminality. In general, the Lifestyle and Antisocial facets seem to

index two related but separable aspects of the F2 construct. The former reflects a lack of behavioral restraint and proclivity toward drug use and abuse, and the latter reflects heightened negative affect, a history of early and pervasive criminal activity, and proneness to alcohol-related problems.

The examination of mediation and suppressor situations revealed that after controlling for the variance associated with F1, the predictive utility of F2 scores was enhanced for most of the external criterion variables including alcohol and drug use and abuse, age of onset of criminal behavior, interpersonal aggression, and personality traits associated with negative affect and low behavioral constraint. This residual component may be interpreted as reflecting the “purer” or “unique” aspects of the F2 construct after the suppressing influence of F1 has been removed.

In sum, F2 scores and its residual components appear to index a common vulnerability to antisocial and criminal behavior, substance use and abuse, and a personality style characterized by heightened negative affectivity and low behavioral restraint. This pattern of relations is very similar to the externalizing construct, which is a broad, highly heritable factor that underlies the comorbidity among antisocial behavior and substance disorders (Krueger et al., 2002). In another work (Patrick et al., 2005), it has been demonstrated in a male inmate sample that F2 is equivalent to the externalizing construct, whereas residualized F1 is largely independent of externalizing. Findings for the present female inmate sample are highly consistent with the prior results. It seems then, for both men and women, that the F2 construct and its residual components primarily reflect the psychopathological aspects of the psychopathy construct, that is, the chronic social and behavioral dysfunction associated with the syndrome.

PCL-R F1, Interpersonal, and Affective Scores

PCL-R F1 scores exhibited strong associations with ratings based on Cleckley’s criteria, in particular with the global psychopathy rating, as well as with the adult symptoms of APD. Also observed were weak-to-modest correlations with child APD symptoms, total nonviolent and violent criminal charges, overall crime, and the age of first charge. In addition, F1 scores were found to be unrelated to number of charges before age 17, institutional charges, and interpersonal aggression. These results demonstrate a moderate association between F1 scores and criminal and antisocial deviance but generally weaker than was evident for F2 scores. In regard to normal-range personality traits, F1 exhibited weak, albeit significant, correlations with alienation, aggression, and risk-taking behaviors. Finally, F1 scores were generally unrelated to alcohol and drug use measures and social background variables.

The examination of mediation and suppressor situations revealed that after controlling for the variance associated with F2, an absence of predictive utility was observed for residualized F1 scores with antisocial behaviors (with the exception of Cleckley scores, adult APD symptoms, and overall crime) and with normal-range personality traits. Crossover suppressor situations revealed that the predictive utility of residualized F1 was enhanced for measures of alcohol and substance use and abuse, as well as education. Cooperative suppression was observed for social background variables including maternal occupation and maternal criminality. These examples of suppression suggest that residualized F1 serves as a protective factor for the psychopathological problems associated with F2, including substance abuse.

In examining associations for the facets that compose F1, Interpersonal scores, and more specifically its residual variance, were related to social dominance and leadership tendencies (social potency). Residualized Interpersonal scores were also found to be protective against alcohol abuse. On the other hand, the Affective component of F1 was associated with heightened negative affect (NEM, and its constituent traits of alienation and aggression, but not stress reaction), and low behavioral constraint. Affective scores also showed significant positive associations with Cleckley’s criteria, overall crime, and total violent crime charges.

In addition, residualized Affective scores were found to be protective against drug use and abuse. In sum, Interpersonal scores and their residual component appear to index interpersonal tendencies such as social dominance, whereas Affective scores seem to index a propensity toward violence, criminal behavior, heightened negative affect in the form of aggression and alienation, and low behavioral constraint. Furthermore, the Affective facet appears more similar to the Lifestyle and Antisocial facets in terms of its external correlates than the Interpersonal facet does. This indicates that the items that comprise the Affective facet are more saturated with PCL-R common variance than Interpersonal. This is consistent with previous IRT research, which reported that the affective items of the PCL-R (Lack of Remorse or Guilt, Shallow Affect, and Callous/Lack Empathy) show the highest discrimination parameters values, indicating that they are particularly effective at distinguishing between high and low PCL-R scorers and capturing the underlying trait construct indexed by the PCL-R total score (Bolt et al., 2004; Hare & Neumann, 2006).

Overall, F1 scores exhibit modest-to-moderate relations with antisocial and criminal behavior. Furthermore, residualized F1 scores were often found to be associated with measures of social adjustment and protective against alcohol and drug problems. This is consistent with empirical data in male offenders which reported that residualized F1 scores are associated with low anxiousness and high social dominance (Hicks & Patrick, 2006; Verona et al., 2001), as well as a lack of depressive symptoms (Hicks & Patrick, 2006), and with the previous report using this female offender sample of the negative association between F1 scores and suicidal behavior (Verona et al., 2005). This suggests that the unique variance in the F1 construct (i.e., the part of F1 that is distinct from F2) may index a form of psychological resilience consistent with the central traits of psychopathy described by Cleckley in the *Mask of Sanity* (1941/1976). Further, these traits may help attenuate the psychopathological tendencies associated with the F2 construct.

CONCLUSIONS

Overall, the current data provide strong support for the generalizability, reliability, and external validity of the two-factor and four-facet models of Hare's PCL-R in women. Both models exhibited patterns of differential relations, as well as suppressor relations, with criterion variables that were similar to those previously reported in male samples.

Although this study provides the first systematic examination of the convergent and discriminant relations between the PCL-R factor and facet scores with female prisoners, a number of limitations of this study should be addressed by future research. One is that all associations were cross-sectional, so the predictive validity of the PCL-R scores in women remains untested. In addition, criterion contamination remains possible even though steps were taken to reduce its impact by removing specific PCL-R items from analyses. This is because ratings for many PCL-R items are to some degree affected by knowledge of criminal history. Therefore, an argument could be made that the same source of information was used to code for both the predictor and outcome variables when examining the associations between PCL-R scores and criminal behavior, thereby increasing the possibility of criterion overlap. There is also the issue of differential validity of the PCL-R total and factor scores across women of different racial and ethnic groups.² Moreover, the current correlational data are not informative with respect to the etiological substrates that underlie the associations between the PCL-R factors and criterion variables. Research that uses behavioral, psychophysiological, neuroscience, and behavioral genetic methodologies is needed to investigate whether different etiological processes are indexed by the distinctive factors and facets of the PCL-R, and in addition, to examine whether these etiological influences are similar or different in men and women.

Acknowledgements

Grants MH48657, MH52384, MH65137, and MH072850 from the National Institute of Mental Health supported this research. Thanks are extended to the residents and staff of FCI-Tallahassee, and in particular Chief Psychologist Allen Hanley, for their support of this work. We also thank Elizabeth Sullivan and David O'Connor for their participation in the diagnostic and assessment aspects of this work. Correspondence concerning this article should be addressed to Patrick J. Kennealy, Department of Psychology and Social Behavior, 3340 Social Ecology II, University of California at Irvine, Irvine, California 92697, or Christopher J. Patrick, Department of Psychology, University of Minnesota, 75 East River Road, Minneapolis, MN 55455; e-mail: to pkenneal@uci.edu or cpatrick@umn.edu.

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²The different racial and ethnic groups that comprise the current sample were too small to provide sufficient power to detect group differences that are likely to be reliable. Additionally, space limitations preclude a comprehensive analysis of differential predictive validity across racial and ethnic groups for PCL-R total, factor, and facet scores. However, to provide some indication of potential racial/ethnic group differences that might be present, we divided our sample into African American ($n = 129$) and non-African American groups ($n = 97$; this group included prisoners who self-identified as White, Hispanic, Asian, or Other) and tested whether the magnitude of the correlation between PCL-R total, F1, and F2 scores were significantly different for each criterion variable. Only a few significant differences were detected. The associations between PCL-R total, F1, and F2 scores and MPQ Aggression were significantly greater in African American women ($r = .46, .27, \text{ and } .50$, respectively, all $ps < .01$) than in non-African American women ($r = .14, p < .05; r = .06, p > .10$; and $r = .26, p < .01$, respectively). Additionally, the association between F1 scores and the total nonviolent crime measure was significantly greater in non-African American women ($r = .37, p < .01$) than in African American women ($r = .10, p > .10$). As only a few significant differences were detected between PCL-R scores and a large number of criterion variables, it is difficult to determine whether these group differences are indicative of systematic bias or simply because of chance. An analysis that uses larger samples of racial and ethnic subgroups will be necessary to provide more definitive conclusions on the generalizability of the PCL-R across women of different race and ethnicity.

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Descriptive Statistics and Inter-Rater Reliability of Psychopathy Checklist-Revised (PCL-R) Total and Factor Scores

TABLE 1

	M	SD	Range	ICC Single Rater	ICC Two Rater M
PCL-R total	20.7	7.8	1.6 to 37.5	.91	.94
Factor 1	8.4	3.9	0 to 16	.85	.92
Factor 2	9.8	3.9	0.5 to 17.5	.86	.92
Interpersonal	4.3	2.1	0 to 8	.80	.89
Affective	4.1	2.2	0 to 8	.77	.87
Lifestyle	6.4	2.2	0.5 to 10	.74	.85
Antisocial	3.1	2.1	0 to 8	.85	.92

NOTE: N = 226. ICC = Intraclass correlation.

TABLE 2
 Correlates of Psychopathy Checklist-Revised (PCL-R) Total and Factor Scores: Ratings of Cleckley's Criteria and Antisocial Personality Disorder (APD), Criminal Behavior, Institutional Misconduct, and Interpersonal Aggression

	PCL-R Total	Factor 1	Factor 2	Interpersonal	Affective	Lifestyle	Antisocial
Cleckley criteria							
Total score	.87	.77/.54 ^a	.73/.46 ^a	.67/.19	.74/.39	.73/.35	.60/.17
Global rating	.83	.81/.64 ^a	.66/.34 ^a	.71/.27	.76/.42	.66/.24	.54/.14
APD symptoms							
Child	.54	.24/-.13 ^a	.68/.74	.22	.20	.54	.74/.69
Adult	.81	.59/.25 ^b	.80/.68 ^a	.53	.54/.14	.78/.47	.69/.30
Criminal Variety Index	.54	.36/.17 ^a	.47/.43 ^a	.34	.32	.42	.55/.52
Age of onset	.20	.07/-.10 ^a	.30/.35	.09	.04	.21	.33/.35
Charges before 17 years old	-.46	-.26/.03 ^a	-.53/-.54	-.27	-.22	-.43	-.55/-.47
Age of first charge							
Nonviolent Crime	.31	.22/.12 ^a	.26/.24	.27/.27	.14	.25	.22
Official charges total	.46	.27/.06 ^a	.45/.43	.32/.27	.18/-.21	.42	.45/.33
Self-reported total	.31	.23/.14 ^a	.25/.20	.16	.27/.24	.22	.32/.33
Violent Crime Total							
Institutional charges	.15	.15/.11	.13/.07	.13	.14	.09	.15
Nonviolent	.18	.10/.00	.20/.20	.07	.12	.15	.25/.27
Violent							
Interpersonal aggression	.33	.15/-.08 ^a	.43/.47	.14	.14	.30	.50/.54
Child fights	.27	.13/-.03 ^a	.31/.32	.11	.12	.22	.32/.31
Adult fights	.29	.08/-.13 ^a	.36/.42	.11	.03	.35/.32	.32
Violence against partner							

NOTE: $n = 186$ for charges before the age of 17; $n = 207$ to 226 for all other measures. Values on the left side of the slash are bivariate correlations; values on the right side of the slash are beta coefficients, which take into account the shared variance with other factors. In addition, age was entered into the regression models for the following variables: criminal variety, total nonviolent and violent criminal charges, and total self-reported crime. To reduce criterion overlap, PCL-R total, factor, and facet scores made by the primary interviewer were correlated with ratings by a second diagnostician who assigned Antisocial Personality Disorder (APD) symptoms and a third diagnostician who completed ratings of Cleckley's criteria. Two separate regression equations were used to estimate the beta coefficients: Each criterion was regressed on (a) Factor 1 and Factor 2 and (b) the four-facet scores. Entries in bold and italics are significant at $p < .01$. Only beta coefficients significant at the .01 level are reported for the four-facet scores.

^a Beta coefficients that are significantly different from the bivariate coefficient after inclusion of either Factor 1 or Factor 2 in the regression model as determined by the Sobel test ($p < .01$). Sobel tests were not calculated for the four-facet scores.

TABLE 3
 Correlates of Psychopathy Checklist-Revised (PCL-R) Total and Factor Scores: Substance Use and Abuse Measures

	PCL-R Total	Factor 1	Factor 2	Interpersonal	Affective	Lifestyle	Antisocial
Short Michigan Alcohol Screening Test	.24	.04/-.16 ^a	.31/.39	.01	.05	.27	.29/.22
Alcohol Dependence Scale	.32	.08/-.17 ^a	.42/.50	.03/-.23	.12	.36	.41/.33
Drinking Motives Questionnaire Social	.26	.06/-.12 ^a	.30/.36	.06	.05	.30/.31	.24
Coping	.24	.00/-.23 ^a	.34/.46 ^a	-.03/-.23	.03	.30/.24	.33/.27
Enhancement	.32	.10/-.13 ^a	.39/.46	.08	.10	.36/.26	.38/.26
Short Drug Abuse Screening Test	.38	.02/-.32 ^a	.51/.67 ^a	.01	.01/-.23	.51/.59	.40
Survey of Alcohol and Drug Use Total	.30	-.01/-.28 ^a	.41/.55 ^a	.01	-.03/-.29	.42/.50	.32
Nicotine	.20	-.02/-.23 ^a	.30/.41 ^a	-.05/-.22	.02	.25/.24	.27
Marijuana ^a	.22	-.02/-.25 ^a	.35/.47 ^a	-.02	-.02	.32/.31	.32/.22
Psychedelics	.20	.12/.05	.17/.14	.11	.11	.20	.13
Amphetamine	.20	.00/-.18 ^a	.26/.35	.02	-.02	.29/.39	.18
Cocaine	.19	-.03/-.23 ^a	.28/.39 ^a	-.02	-.03	.29/.39	.20
Barbiturates	.23	.06/-.09 ^a	.25/.30	.06	.05	.23	.26
Tranquilizers	.18	.01/-.11 ^a	.20/.26	.04	-.02	.22	.19
Opiates	.25	.18/.10	.20/.15	.18	.14	.20	.15

NOTE: $n = 183$ for the total drug use measure; $n = 200$ to 218 for all other measures. Values on the left side of the slash are bivariate correlations; values on the right side of the slash are beta coefficients, which take into account the shared variance with other factors. Two separate regression equations were used to estimate the beta coefficients: Each criterion was regressed on (a) Factor 1 and Factor 2 and (b) the four-factor scores. Entries in bold and italics are significant at $p < .01$. Only beta coefficients significant at the .01 level are reported for the four-factor scores.

^aBeta coefficients that were significantly different from the bivariate coefficient after inclusion of either Factor 1 or Factor 2 in the regression model as determined by the Sobel test ($p < .01$). Sobel tests were not calculated for the four-factor scores.

TABLE 4
 Correlates of Psychopathy Checklist-Revised (PCL-R) Total and Factor Scores: Normal Range Personality

	PCL-R Total	Factor 1	Factor 2	Interpersonal	Affective	Lifestyle	Antisocial
Primary Trait Scale							
Well-Being	-.07	.06/.17 ^a	-.14/-.22	.07	.03	-.11	-.13
Social Potency	.11	.13/.13	.07/.01	.19/.28	.05	.05	.09
Achievement	-.10	-.04/.01	-.10/-.10	-.05	-.04	-.09	-.12
Social Closeness	-.17	-.13/-.04	-.20/-.18	-.08	-.17	-.14	-.21
Stress Reaction	.26	.09/-.10 ^a	.33/.38	.07	.11	.31	.36/.29
Alienation	.28	.19/.04 ^a	.32/.29	.16	.20	.27	.34/.28
Aggression	.36	.22/.01^a	.41/.41	.15	.25	.32	.48/.48
Self-Control	-.29	-.11/.10 ^a	-.37/-.42	-.08	-.12	-.35/-.26	-.34/-.22
Harm Avoidance	-.05	-.02/.03	-.08/-.09	.04	-.07	-.09	-.02
Traditionalism	-.22	-.20/-.13	-.20/-.14	-.14	-.22	-.18	-.14
Absorption	-.06	-.04/-.04	-.01/.01	-.01	-.05	-.01	.03
Higher Order Factor							
Agentic Positive Emotionality	-.06	.04/.12	-.09/-.15	.06	.01	-.08	-.10
Communal Positive Emotionality	-.11	-.04/.05	-.16/-.18	.03	-.10	-.12	-.16
Negative Emotionality	.36	.21/.00^a	.43/.43	.17	.23	.36	.48/.43
Behavioral Constraint	-.28	-.15/.02 ^a	-.32/-.33	-.08	-.19	-.31/-.26	-.25

NOTE: $n = 210$ to 216 . Normal range personality traits were assessed via the brief form of the Multidimensional Personality Questionnaire (Patrick, Curtin, & Tellegen, 2002). Values on the left side of the slash are bivariate correlations; values on the right side of the slash are beta coefficients, which take into account the shared variance with other factors. Two separate regression equations were used to estimate the beta coefficients: Each criterion was regressed on (a) Factor 1 and Factor 2 and (b) the four-facet scores. Entries in bold and italics are significant at $p < .01$. Only beta coefficients significant at the .01 level are reported for the four-facet scores.

^a Beta coefficients that were significantly different from the bivariate coefficient after inclusion of either Factor 1 or Factor 2 in the regression model as determined by the Sobel test ($p < .01$). Sobel tests were not calculated for the four-facet scores.

Correlates of Psychopathy Checklist-Revised (PCL-R) Total and Factor Scores: Social Background Variables

TABLE 5

	PCL-R Total	Factor 1	Factor 2	Interpersonal	Affective	Lifestyle	Antisocial
Education	-.23	-.02/.19 ^a	-.33/-.43 ^a	.00	-.04	-.27	-.31/-.26
Occupation of parents	-.01	.13/.23 ^a	-.10/-.21 ^a	.10	.14	-.07	-.11
Mother	-.03	.01/.04	-.04/-.06	.03	-.02	-.04	-.06
Father							
Criminality of Parents	.08	-.08/-.22 ^a	.18/.29 ^a	-.08	-.07	.09	.21/.28
Mother	.11	.05/-.02	.13/.14	.04	.05	.10	.15
Father							
Shipley Institute of Living Scale							
Verbal score	-.16	-.15/-.15	-.06/.01	-.17	-.10	-.11	-.02
Abstraction score	-.13	-.05/.01	-.12/-.13	-.07	-.02	-.17	-.04
Total score	-.16	-.10/-.06	-.11/-.08	-.13	-.06	-.17	-.04

NOTE: $n = 197$ to 226 . Values on the left side of the slash are bivariate correlations; values on the right side of the slash are beta coefficients, which take into account the shared variance with other factors. Two separate regression equations were used to estimate the beta coefficients: Each criterion was regressed on (a) Factor 1 and Factor 2 and (b) the four-facet scores. Entries in bold and italics are significant at $p < .01$. Only beta coefficients significant at the .01 level are reported for the four-facet scores.

^a Beta coefficients that were significantly different from the bivariate coefficient after inclusion of either Factor 1 or Factor 2 in the regression model as determined by the Sobel test ($\pi < .01$). Sobel tests were not calculated for the four-facet scores.