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RELATIONS BETWEEN PSYCHOPATHY FACETS AND EXTERNALIZING IN A CRIMINAL OFFENDER SAMPLE

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Abstract

The construct of psychopathy is viewed as comprising distinctive but correlated affective-interpersonal and social deviance facets. Here, we examined these facets of Hare's Psychopathy Checklist-Revised (PCL-R) in terms of their associations with the externalizing dimension of adult psychopathology, defined as the common factor underlying symptoms of conduct disorder, adult antisocial behavior, alcohol use/abuse, and drug abuse, along with disinhibitory personality traits. Correlational analyses revealed a strong relationship between this externalizing dimension and the social deviance facet of psychopathy (r = .84), and a lesser relationship with the emotional-interpersonal component (r = .44). Structural models controlling for the moderate overlap between the PCL-R factors revealed that externalizing was substantially related to the unique variance in the social deviance features of psychopathy, but unrelated to the unique variance of the emotional and interpersonal features whether modeled together or as separate factors. These results indicate that the social deviance factor of the PCL-R reflects the externalizing dimension of psychopathology, whereas the emotional-interpersonal component taps something distinct aside from externalizing. In addition, based on our finding of an association between PCL-R social deviance and externalizing, we were able to predict new relations between this facet of psychopathy and criterion variables, including nicotine use and gambling, that have previously been linked to externalizing. Implications for future research on the causes and correlates of psychopathy are discussed.

Antisocial behavior is a problem of enormous social importance that has been the focus of intensive psychological study. Two research traditions have been prominent in this area: (1) longitudinal, epidemiological studies examining precursors and predictors of criminality in the population at large, and (2) experimental psychopathology studies investigating the construct of psychopathic personality in incarcerated offender populations. The former has yielded evidence of a broad spectrum of externalizing problems, encompassing alcohol and drug abuse as well as child and adult antisociality, that arise from a common etiologic vulnerability (e.g., Krueger et al., 2002; Young, Stallings, Corley, Krauter, & Hewitt, 2000). The latter has produced evidence that there are distinct facets to psychopathy with differing external correlates (e.g., Cooke & Michie, 2001; Hall, Benning, & Patrick, 2004; Hare, 1991, 2003; Harpur, Hare, & Hakstian, 1989; Patrick, 1994; Widiger & Lynam, 1998) that may reflect separate etiologic processes (Fowles & Dindo, 2006; Patrick, 2001, in press). The current study bridges these research domains by demonstrating a link between the externalizing dimension of adult psychopathology and the social deviance factor of psychopathy, and illustrating how novel predictions can be generated through knowledge of this association.

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THE EXTERNALIZING CONSTRUCT

In a factor analytic investigation that employed diagnostic data from the National Comorbidity Survey (*N* = 8,098; Kessler et al., 1994), Krueger (1999) reported evidence for two broad factors underlying the most common mental disorders within the DSM: an “externalizing” factor encompassing Antisocial Personality Disorder, alcohol dependence, and drug dependence, and an “internalizing” dimension encompassing the unipolar mood and anxiety disorders. The fact that covariance among syndromes was systematic as opposed to random implied a coherent vulnerability factor underlying each of these disorder spectra. Vollebergh et al. (2001) extended this work by demonstrating the temporal stability of this factor structure in the Netherlands Mental Health and Incidence Study.

For the externalizing disorders, the hypothesis of a common etiologic vulnerability is supported by recent behavior genetic research. Using a large adolescent twin sample, Krueger et al. (2002) performed a biometric structural analysis of symptoms of conduct disorder, adult antisocial behavior, alcohol dependence, and drug dependence, along with scores on a normal-range index of disinhibitory traits, the Constraint dimension of the Multidimensional Personality Questionnaire (MPQ; Tellegen, in press). A single latent factor (termed “externalizing”) accounted for the covariance among these measures, and this factor was substantially heritable (81%). Parallel results were reported by Young et al. (2000). More recently, Kendler, Prescott, Myers, and Neale (2003) extended this work by modeling etiologic contributions to internalizing as well as externalizing disorders within a large community twin sample; their analyses revealed that the co-occurrence among disorders within each of these spectra was largely attributable to overlapping genetic influences. Taken together, the findings of these studies provide compelling evidence that a shared vulnerability factor, predominantly genetic, underlies the spectrum of externalizing disorders and affiliated personality traits.

A central idea in the conceptualization of “externalizing” as a latent construct is that it transcends specific indicators. In this regard, Krueger et al. (2002) theorized that the externalizing factor represents a predominantly genetic vulnerability that is expressed in distinctive ways (e.g., as conduct disorder, alcohol dependence, or drug abuse) depending upon other, specific etiologic influences (cf. Gorenstein & Newman, 1980). Krueger et al. postulated that other traits and problem behaviors aside from those included in their model likely reflect expressions of this common, underlying vulnerability. For example, Slutske and colleagues have shown that pathological gambling shares a genetic association with alcohol dependence (Slutske, Eisen, True, Lyons, Goldberg, & Tsuang (2000) and antisocial personality (Slutske et al., 2001). This accords with the idea that gambling, although phenotypically distinct from these other syndromes, arises from a common etiologic vulnerability. Other salient problem behaviors that appear to fall within this vulnerability spectrum include nicotine dependence (Hicks, Krueger, Patrick, McGue, & Iacono, 2002; Iacono, Carlson, Malone, & McGue, 2002) and suicidal behavior (Verona, Sachs-Ericsson, & Joiner, 2004).

FACETS OF PSYCHOPATHY

In contrast with epidemiological investigations of antisocial behavior, experimental research on criminality has been dominated by the construct of psychopathy formalized by Cleckley (1941), and operationalized by Hare's (1991, 2003) Psychopathy Checklist-Revised (PCL-R). The dominant perspective for some time has been that the PCL-R indexes two correlated dimensions (Hare et al., 1990; Harpur, Hakstian, & Hare, 1988). One of these (“Factor 1”) encompasses the interpersonal and emotional features of psychopathy: charm, grandiosity, and deceitfulness, and absence of remorse, empathy, and emotional depth. These “primary” features have been of particular interest to researchers because they are considered pathognomonic of the syndrome (Cleckley, 1941; Lykken, 1995). It has been hypothesized

that these features reflect a deficiency in the capacity for anxiety or fear (Fowles, 1980; Hare, 1970; Lykken, 1957). Consistent with this, PCL-R Factor 1 is correlated selectively and negatively with trait anxiety and positively with social dominance (Harpur et al., 1989; Verona, Patrick, & Joiner, 2001), and is associated with a lack of normal enhancement of the defensive startle reflex in the presence of threat (Patrick, 1994).

The other factor ("Factor 2") encompasses nine items describing a socially deviant lifestyle, including delinquency, aggression, boredom proneness, irresponsibility, and absence of long-term goals. This factor shows selective relations with conduct disorder and adult antisocial behavior as defined within the DSM (Hare, 1991, 2003); controlling for the association between the PCL-R factors, only Factor 2 is related to these DSM syndromes (Verona et al., 2001). This is perhaps unsurprising in view of criterion overlap between the two. However, Factor 2 also shows selective associations with alcohol and drug abuse (Reardon, Lang, & Patrick, 2002; Smith & Newman, 1990)—even though substance problems are not prominent in the scoring criteria for this factor. Additionally, PCL-R Factor 2 shows selective relations with self-report indices of disinhibitory personality, including MPQ-Constraint, conscientiousness, sensation seeking, and various impulsivity scales (Hare, 1991, 2003; Harpur et al., 1989; Widiger & Lynam, 1998; Patrick, 1994; Verona et al., 2001). This pattern of findings points to an association between PCL-R Factor 2 and the latent externalizing factor identified in epidemiological studies of psychopathology (Krueger, 1999; Krueger et al., 2002; Vollebergh et al., 2001).

An alternative three-factor model of the PCL-R has recently been proposed (Cooke & Michie, 2001). In this model, Factor 1 is parsed into two separate factors, one comprising the interpersonal items of the PCL-R (glibness, grandiosity, lying, manipulativeness; full label = "arrogant and deceitful interpersonal style"), and the other encompassing the *affective* items (lack of remorse, shallow affect, lack of empathy, failure to accept responsibility; full label = "deficient affective experience"). The third factor in this newer model ("impulsive and irresponsible behavioral style") comprises five of the nine items of Factor 2: proneness to boredom, impulsivity, irresponsibility, parasitic lifestyle, and lack of realistic goals. Cooke and Michie characterized these items as more trait-dispositional indicators of the construct underlying Factor 2. In view of recent data affirming the discriminant validity of the three factors represented in this alternative structural model (Skeem, Mulvey, & Grisso, 2003; Hall et al., 2004), we felt it would be useful for us to evaluate associations for this model as well as for the more established two-factor model.[1]

THE PRESENT STUDY

The current study had two specific aims. The first was to examine relations between the latent externalizing factor identified in epidemiological studies of psychopathology and facets of psychopathy as indexed by the PCL-R. We examined associations for the well-established two-factor model of the PCL-R (Hare et al., 1990; Harpur et al., 1988), as well as for the more recently proposed three-factor model (Cooke & Michie, 2001). Our primary prediction was that externalizing would be preferentially related to the social deviance facet of psychopathy (i.e., Factor 2 of the two-factor model, represented in abbreviated form as the *behavioral* factor in the three-factor model). The basis for this hypothesis was the relations that have previously

[1]Even more recently, Hare (2003) has presented a critique of the three-factor PCL-R model and advanced an alternative four-factor model. In this model, the affective and interpersonal factors of the Cooke-Michie model are seen as facets of Factor 1, and the five-item behavioral factor is viewed as one facet of Factor 2, with the other facet encompassing items omitted from the three-factor model (i.e., poor behavioral controls, early behavior problems, delinquency, revocation of conditional release, criminal versatility). Factors 1 and 2 in turn are indicators of a higher-order psychopathy construct. This new model offers a potentially valuable synthesis of the two- and three-factor models. However, because a detailed journal report of the four-factor model has not yet appeared in the literature, we did not formally evaluate associations for this model in the current article.

been reported between the social deviance factor of the PCL-R and various individual indicators of externalizing (i.e., child and adult antisocial behavior, alcohol and drug dependence, and disinhibitory personality traits).

The second aim of the study was to examine whether knowledge of this association might allow us to predict relations between the PCL-R and other criterion variables that have previously been linked to externalizing. Specifically, we hypothesized that significant correlations would be found between the social deviance factor of the PCL-R and indices of gambling and smoking —variables that to our knowledge have not previously been examined in relation to the PCL-R—and that these correlations would be accounted for (mediated by) scores on the externalizing factor. Additionally, we tested the hypothesis that the recently demonstrated association between PCL-R Factor 2 and suicidal behavior (Verona et al, 2001) would be mediated by externalizing.

METHOD

SAMPLE

Participants were 219 male inmates of the Federal Correctional Institution in Tallahassee, FL. The mean age of the inmate sample was 32.8 years (*SD* = 7.8, range = 19−57). Ethnic composition was as follows: 50.2% White, 35.2% African American, 14.2% Hispanic, and 0.5% Asian. Informed written consent was obtained from all individuals prior to their participation.

ASSESSMENT

A semi-structured interview was conducted to obtain information relevant to diagnostic criteria for Hare's (1991) Psychopathy Checklist Revised (PCL-R). The interview included separate questions designed to assess for child and adult symptoms of Antisocial Personality Disorder (APD) as defined within the DSM (American Psychiatric Association, 1987, 1994). Diagnostic criteria from the Revised Third Edition (DSM-IIIR; American Psychiatric Association) were used for a portion of the sample (*N* = 110) on whom APD assessments were completed prior to 1994; DSM-IV criteria were used for the remainder of participants, assessed after 1994. Symptom data for the two subsamples were combined by expressing raw symptom counts as the proportion of child or adult criteria met for the version of the DSM with which participants were assessed.

Interviewers were either advanced bachelor's- or master's-level psychology students who received specialized training in the relevant diagnostic procedures. Information from the interview was used together with data from prison file records (i.e., behavioral, medical-psychological, and criminal history information) to assign PCL-R and APD ratings. Interviews were videotaped and viewed by a second trained diagnostician who made independent ratings based on the interview and file records. The senior author (Christopher J. Patrick) performed periodic reliability checks to guard against observer drift, and weekly meetings were held to ensure adherence to the diagnostic criteria. To optimize the stability of scores used in analyses, ratings for the two assessors (interviewer and secondary diagnostician) were averaged, with scores for individual PCL-R items rounded to the nearest whole number. In a separate session following the interview, inmate participants completed questionnaires assessing symptoms of alcohol and drug abuse/dependence.

Psychopathy—The PCL-R consists of 20 items, each rated from 0 to 2 (0 = does not apply, 1 = somewhat, 2 = definitely). Scores on the two PCL-R factors are typically computed by summing the raw scores for items that load principally on each factor. For Factors 1 and 2, the interrater reliability coefficients (intraclass) for the mean of two raters were .91 and .94,

respectively. For the three-factor model (Interpersonal, Affective, Impulsive-Irresponsible factors), the coefficients for the mean of the two raters were .88, .84, and .87, respectively.

Adult Antisocial Behavior—The proportion of adult symptoms of APD met according to DSM criteria constituted the adult antisocial behavior variable. Interrater agreement for this variable was very high (intraclass correlation = .83, $p < .001$).

Conduct Disorder—The proportion of child symptoms of APD met according to DSM criteria constituted the conduct disorder variable. For this variable, the intraclass correlation coefficient was .94, $p < .001$.

Alcohol Use/Abuse—Drinking behavior was assessed by two self-report measures: the Short Michigan Alcoholism Screening Test (SMAST; Selzer, Vinokur, & Van Rooijen, 1975) and the Survey of Alcohol and Drug Use (SADU; Backman, Johnston, & O'Malley, 1991). The SMAST consists of 13 items related to alcohol abuse and drinking-related problems (e.g., “Do your friends and relatives think you are a normal drinker?”; “Have you ever gotten into trouble at work because of drinking?”). The SADU assesses the quantity and frequency of an individual's consumption of alcohol and a range of illicit drugs over varying historical periods. Two items relating to alcohol use were used in the current investigation: number of drinks consumed in the last 30 days (prior to arrest) and frequency of drinking to intoxication. A composite alcohol use/abuse variable was calculated by summing each participant's standardized score for the SMAST and the two SADU items (weighted by a 2:1 ratio, SMAST score to each SADU item).

Drug Abuse/Dependence—The Short Drug Abuse Screening Test (SDAST; Skinner & Allen, 1982) was used to assess drug abuse/dependence. The SDAST is composed of 20 yes/no questions that assess symptoms of drug abuse (e.g., “Has drug abuse ever created problems between you and your spouse/partner?”) and dependence (e.g., “Have you ever experienced withdrawal symptoms as a result of heavy drug intake?”). Prior research supports its validity as an index of DSM-IV drug dependence (Peters et al., 2000).

Personality—As in prior epidemiological work (Krueger et al., 2002) we included scores on the higher-order Constraint factor of the Multidimensional Personality Questionnaire (MPQ; Tellegen, in press) as an index of externalizing tendencies within the normal personality range. Persons low on Constraint describe themselves as impulsive, thrill seeking, and socially nonconformist.

Other Behaviors in the Externalizing Spectrum: Gambling, Smoking, and Suicide—To examine our ability to predict and account for relations between PCL-R Factor 2 and other problem behaviors that have been linked to externalizing, we performed mediational analyses (cf. Baron & Kenny, 1986) for each of the following criterion variables: gambling (Slutske et al., 2000, 2001), smoking (Hicks et al., 2002; Iacono et al., 2002), and suicidal attempts (Verona et al., 2004). Gambling was assessed during the interview by the question, “Are you a gambler?” and this item was available for 105 participants. Responses were coded as yes (25.9%)/no. Smoking was assessed as the sum of the standardized scores for two items from the SADU: frequency of smoking cigarettes in general, and number of cigarettes smoked in the last 30 days. History of suicide attempts (present/absent) was assessed by asking participants in the diagnostic interview if they had ever attempted suicide or been hospitalized for a suicide attempt, and by reviewing participants' prison files for evidence of past suicidal attempts; individuals with a history of suicide attempts according to *either* self-report (i.e., interview) or prison records were coded as having a history of suicidality (cf.

Verona et al., 2001). Data for the smoking and suicide variables were available for all study participants. The prevalence of suicide attempts in this sample was 7.3%.

STATISTICAL ANALYSIS

We sought to investigate relations between the factors of psychopathy and the Externalizing dimension of psychopathology using structural equation modeling. This approach entails estimating the associations among latent constructs, which are operationalized as the covariance among multiple, observed indicators. As such, our goal was *not* to model the item-level structure of the PCL-R; rather we sought to use items from the PCL-R to construct facet-level indicators of the latent psychopathy constructs. To construct the facet indicators, we created "item parcels" by summing the raw scores of specific item combinations. Parcels were used because they are more reliable than individual items, and reducing the number of items to parcels results in fewer model parameters, which can be estimated with greater precision (cf. West, Finch, & Curran, 1995). In constructing these item parcels, we referred to the analytic work of Cooke and Michie (2001), which demonstrated local dependence (i.e., a greater-than-expected statistical association, implying an overlap in scoring criteria) among certain PCL-R items.

Table 1 shows how we have organized items of the PCL-R into item parcels for the purpose of the current analyses. Consistent with Cooke and Michie (2001), we organized 13 of the PCL-R items into subsets (parcels) reflecting *Interpersonal* (parcels 1 and 2), *Affective* (parcels 3 and 4), and *Impulsive-Irresponsible* (parcels 5 and 6) facets of psychopathy. We formed additional parcels from three other PCL-R items that reflect *Antisocial Behavior*: parcel 7, consisting of items 12 (early behavior problems*)* and 18 (juvenile delinquency*)*, and parcel 8, comprising a single item (item 10, poor behavioral controls). We retained these items because they are indicators of PCL-R Factor 2 in the original two-factor model, and we wished to address this well-established model in our primary analysis. (One further indicator of original Factor 2, item 19 [revocation of conditional release] was omitted because of systematically missing data: This item was inapplicable for approximately one-third of participants because they had no history of conditional release on which to base a score.). To address the more recent three-factor model, we report supplementary analyses incorporating only the Cooke and Michie item parcels. Three remaining PCL-R items, item 11 (*promiscuous sexual behavior*), item 17 (*many short-term marital relationships*), and item 20 (*criminal versatility*) were excluded from the analyses because they did not emerge as specific indicators in either the two-factor model (Hare et al., 1990;Harpur et al., 1988) or the three-factor model (Cooke & Michie, 2001).

Having constructed facet-level indicators, we next examined how the different psychopathy factors related to the Externalizing construct, testing both a two- and a three-factor conceptualization of psychopathy. For the two-factor model, the item parcels for the Interpersonal and Affective items were used as indicators of Factor 1, while the Impulsive-Irresponsible and Antisocial Behavior item parcels were used as indicators of Factor 2. For the three-factor model, the Interpersonal and Affective item parcels were used as indicators of separate factors. Indicators of Externalizing included symptoms of adult antisocial behavior (the adult criteria for APD) and conduct disorder, the alcohol use/abuse variable, a drug abuse/dependence variable (scores on the SDAST), and scores on the Constraint dimension of personality (cf. Krueger et al., 2002). The conduct disorder, alcohol use/abuse, and drug abuse/dependence variables were Blom transformed (rank normalized) due to the positive skew of the untransformed variables (Krueger et al., 2002).

The computer program *PRELIS 2.20* (Jöreskog & Sörbom, 2001a) was used to calculate the Pearson product moment, polyserial, and polychoric correlations and asymptotic covariance matrices among the PCL-R item parcels and indicators of Externalizing. Models were fit using *LISREL 8.51* (Jöreskog & Sörbom, 2001b) employing the weighted least squares estimation

procedure (WLS). WLS requires complete data for each case, which were available for 202 participants. Model fit was evaluated using the χ^2 goodness of fit statistic, the root mean square error of approximation (RMSEA), the Akaike Information Criterion (AIC = $\chi^2 - 2df$; Akaike, 1987), and the Bayesian Information Criterion (BIC = $\chi^2 - df \ln N$; Raftery, 1995). RMSEA values less than .08 indicate a good fit to the data while values less than .05 indicate a very good fit to the data (Browne & Cudeck, 1993). The AIC and BIC are comparative indices of fit (rather than absolute indices of fit) that attempt to balance model fit with parsimony such that the fit of the model is penalized for retaining unnecessary parameters. More negative values of AIC and BIC indicate better fit. An alpha level of .01 was used to evaluate the significance of latent correlations within each model.

RESULTS

STRUCTURAL MODEL OF RELATIONS BETWEEN PSYCHOPATHY AND EXTERNALIZING: TWO-FACTOR MODEL

To examine relations between Externalizing and psychopathy, a regression-based structural model was tested in which the psychopathy factors were modeled as predictors of Externalizing (see Figure 1). This model provided a good fit to the data, $\chi^2(62, N = 202) = 118.35$ ($p < .01$), RMSEA = .067, AIC = −5.65, BIC = −210.8. Zero-order correlations between the latent Externalizing factor and the two psychopathy factors modeled as latent variables were $r = .44$ for Factor 1 and $r = .84$ for Factor 2. Figure 1 displays the standardized parameter estimates for the model, which are estimates of the association between the *unique* variance of each psychopathy factor and Externalizing (i.e., the association between one psychopathy factor and Externalizing controlling for the other psychopathy factor). Note that the partial association between Factor 2 and Externalizing approaches unity, whereas Factor 1 shows a nonsignificant negative association with Externalizing.

STRUCTURAL MODEL OF RELATIONSHIPS BETWEEN PSYCHOPATHY AND EXTERNALIZING: THREE-FACTOR MODEL

As some investigators (Cooke & Michie, 2001) have emphasized the importance of separating the Interpersonal and Affective components of psychopathy, we reran the model allowing the item parcels for the Interpersonal and Affective items to form separate factors. This model provided a good fit to the data, $\chi^2(59, N = 202) = 103.58$ ($p < .01$), RMSEA = .061, AIC = −14.42, BIC = −209.6. A direct comparison of the fit of the two- and three-factor models using the χ^2 likelihood ratio test revealed a significantly poorer fit for the two-factor model, $\Delta\chi^2(3, N = 202) = 14.77$, $p < .01$. The RMSEA and AIC also indicated that the three-factor model provided a better fit to the data, whereas the BIC (which exacts the greatest penalty to fit for including additional parameters in the model) indicated that the models fit equally well.

Zero-order correlations with the latent Externalizing factor were $r = .37$ for the latent Interpersonal factor and $r = .46$ for the latent Affective factor. As can be seen in Figure 2, neither the Interpersonal nor the Affective factor was significantly related to Externalizing after controlling for the common variance among the psychopathy factors. Essentially the same parameter estimates were obtained if only the Interpersonal or Affective factor was included in the model with Factor 2. The same results were also obtained when Factor 2 was modeled as the Impulsive-Irresponsible factor proposed by Cooke & Michie (2001), which excludes four Factor 2 items that those authors viewed as more indicative of overt criminal behavior than underlying trait dispositions: The zero-order correlation between the latent factor derived from these five-items and the Externalizing factor was $r = .87$ ($\beta = .99$, $SE = .19$).

DOES THE EXTERNALIZING CONSTRUCT MEDIATE THE ASSOCIATION BETWEEN FACTOR 2 AND OTHER BEHAVIORS IN THE EXTERNALIZING SPECTRUM?

Having established an empirical link between the Externalizing construct and Factor 2, we next endeavored to demonstrate the theoretical utility of this conceptualization by predicting that: (a) Factor 2 would be related to other behaviors in the externalizing spectrum that are not part of the PCL-R criteria for psychopathy, and (b) the Externalizing construct would mediate these links. The other behaviors in the externalizing spectrum that we examined were: gambling (Slutske et al., 2000, 2001), smoking (Hicks et al., 2002; Iacono et al., 2002), and suicide attempts (Verona & Patrick, 2000). For this analysis, our measure of Externalizing consisted of scores on the first principal component derived from its five indicators; Factor 2 was simply the sum of the raw scores for the eight items included in the structural model. The Pearson correlation between Externalizing and Factor 2 calculated in this way was $r = .74$, $p < .001$. Table 2 provides the Pearson and biserial correlations between Factor 2 and the other criterion variables in the externalizing spectrum, as well as the partial correlation controlling for the Externalizing variate. As can be seen in the table, Factor 2 is significantly correlated with each of these criterion variables, and in each case the relationship is mediated by Externalizing.

DISCUSSION

The main hypotheses of this study were that (1) the externalizing construct would relate preferentially to one facet of psychopathy as assessed by Hare's (1991, 2003) PCL-R—the social deviance component (Factor 2), and (2) this association would predict relations between PCL-R social deviance scores and other criterion variables (gambling, smoking, suicide), with these relations mediated by externalizing. Support was obtained for both hypotheses.

With regard to the first hypothesis, we found evidence of a strong, preferential association between the social deviance factor of the PCL-R and the externalizing construct, defined as the shared variance among five distinct indicators: conduct disorder symptoms, adult antisocial behavior, alcohol use/abuse, drug abuse/dependence, and disinhibitory personality traits. The structural models depicted in Figures 1 and 2 show that the unique variance in Factor 2 correlates almost perfectly with the externalizing factor. On the other hand, the association between externalizing and the unique variance in Factor 1—whether modeled as a single entity (Figure 1), or as separate interpersonal and affective facets (Figure 2; cf. Cooke & Michie, 2001)—was negligible. This is not to say that PCL-R Factor 1 is unrelated to externalizing: A zero-order correlation of .44 was found between the two variables in the current study. However, our structural modeling results demonstrate that this moderate association is attributable entirely to the variance in Factor 1 that overlaps with that of PCL-R Factor 2.

Our comparisons of the fit of structural models based on competing two- and three-factor conceptualizations of the PCL-R yielded two notable findings. First, the model in which the interpersonal and affective features of the PCL-R were represented as separate factors (Figure 2) provided a better fit to the data according to some statistical criteria (i.e., χ^2, RMSEA, and AIC, but not BIC) than the model in which these features were represented in terms of a single factor (Figure 1). Second, notwithstanding this apparent difference in goodness-of-fit, the two models revealed essentially the same pattern of associations with the externalizing construct: Neither the Interpersonal nor the Affective factor, nor the composite of the two (Factor 1), was significantly related to Externalizing after controlling for the covariance among the psychopathy factors. This was true whether the social deviance factor was represented by all items of Factor 2 (aside from “revocation of conditional release,” which was missing for many participants), or Cooke and Michie's (2001) abbreviated Impulsive-Irresponsible factor.

This highlights a key point: Statistical goodness-of-fit is merely one basis for evaluating the validity of a model. Another consideration is how the model helps to organize relations among

constructs. In the present context, the two- and three-factor models proved equally useful in terms of elucidating the connection between psychopathy and externalizing psychopathology, even though superior fit was evident for the latter. This is because the main difference between the models, the division of Factor 1 into interpersonal and affective facets, was irrelevant to an understanding of the psychopathy/externalizing association; this association was accounted for entirely by the antisocial deviance component of the PCL-R. However, the distinction between affective and interpersonal facets may prove useful in understanding relations between psychopathy and other constructs. As an example, Hall et al. (2004) presented evidence that the previously documented association between PCL-R Factor 1 and dominance (e.g., Harpur et al., 1989) is accounted for exclusively by the interpersonal facet of the PCL-R.

An important issue that needs to be considered in interpreting the results of the current study is that of criterion overlap between PCL-R Factor 2 and diagnostic indicators of the externalizing construct. In particular, it could be argued that a robust association between Factor 2 and externalizing was assured because child and adult antisocial behavior were included as indicators of both constructs in our structural analyses. While this issue might be redressed in part by omitting adult antisocial behavior as an indicator of externalizing, and omitting child deviance items (early behavior problems, juvenile delinquency) as indicators of Factor 2 of the PCL-R,[2] it is not clear that this would eliminate criterion overlap entirely. As such, our finding of a close link between PCL-R Factor 2 and externalizing is informative mainly at a descriptive, rather than an explanatory, level (i.e., the diagnostic criteria for Factor 2 appear to tap essentially the same construct as the DSM-based indicators of the externalizing factor).

Nevertheless, we believe that our demonstration of a link between these diagnostic entities has important conceptual implications. The literature on psychopathy has tended to proceed separately from the broader literature on DSM psychopathology, in terms of experimental paradigms and theories. However, the current data suggest that the two literatures can profitably inform one another. For example, in their initial report of a selective association between PCL-R Factor 2 and alcohol/drug abuse, Smith & Newman (1990; for a subsequent replication, see Reardon et al., 2002) speculated that: “[An] interesting and potentially important possibility is that Factor 2 of the PCL taps into a pattern of behavior related to a general disinhibitory diathesis” (p. 437). Recent twin studies have shown that the systematic covariance between DSM substance-related, antisocial behavior disorders, and disinhibitory personality traits, embodied in the externalizing factor, reflects the presence of a shared underlying vulnerability that is predominantly (~80%) heritable (Krueger et al., 2002; Young et al., 2000). The findings of the current study, in line with Smith and Newman's suggestion, indicate that Factor 2 of the PCL-R indexes this same “general inhibitory diathesis.” This possibility could be explored further by examining, within a community twin sample, the genetic association between externalizing as indexed by diagnostic variables and PCL-R Factor 2 as indexed by separate indicators such as Gough's (1960) Socialization scale (cf. Hare, 2003) or the “impulsive antisociality” factor of Lilienfeld's (1990) Psychopathic Personality Inventory (cf. Benning, Patrick, Hicks, Blonigen, & Krueger, 2005).

Beyond the descriptive level, our finding of a close association between PCL-R Factor 2 and externalizing enabled us to predict new associations with other external criterion variables (gambling, nicotine use) that have previously been connected with externalizing but not to our knowledge with Factor 2. We also found, as hypothesized, that scores on the latent externalizing factor mediated relations between Factor 2 and these other variables. In parallel with this, we

[2]We did run the primary analysis depicted in Figure 1 after omitting these overlapping indicators, and found the same robust, selective association between Factor 2 (minus the child deviance items) and externalizing (minus adult antisocial behavior). Details of this analysis can be obtained from the authors upon request.

found that the previously reported link between suicidal behavior and PCL-R Factor 2 (Verona et al., 2001) was also mediated by externalizing. These data are consistent with the idea that Factor 2 reflects a broad vulnerability to impulse control problems that extends beyond the psychopathy construct that the PCL-R was developed to assess. A caveat to these findings is that evidence in the interview or file regarding gambling or suicidal behavior, although not explicitly represented in the PCL-R scoring criteria, might conceivably have influenced PCL-R ratings. This seems unlikely, as PCL-R raters were trained to adhere closely to the specific item indicators and examples listed in the PCL-R manual. Nevertheless, it will be useful to conduct further research in which criterion variables such as these are assessed in isolation from the PCL-R, as was true for the smoking variable in the current study.

The current findings also suggest that biological or behavioral correlates of externalizing might also apply to PCL-R Factor 2, and vice versa. For example, recent research has revealed that externalizing vulnerability is associated with reduced amplitude of the P300 brain potential response (Iacono et al., 2002; Patrick et al., 2001). There is evidence that this association may be stronger in childhood and adolescence than in adulthood (Hill & Steinhauer, 2001). These data suggest that it would be fruitful to test for an association between P300 response amplitude and Factor 2 of the PCL-R specifically, with some consideration of potential moderating effects of age. Work of this kind could help to resolve inconsistencies in the literature on psychopathy and brain potential response (cf. Raine, 1989, 1993). Reciprocally, the rich literature on the behavioral and personality correlates of PCL-R Factor 2 (cf. Hare, 1991, 2003) can serve as a basis for generating predictions regarding additional indicators and correlates of externalizing.

Aside from demonstrating close correspondence between PCL-R Factor 2 and externalizing, another important implication of the current work is that the affective-interpersonal factor of the PCL-R (Factor 1) taps something quite different. Evidence from prior research indicates that this component of psychopathy (in particular, the part of it that is unrelated to Factor 2) is associated with high interpersonal dominance (Harpur et al., 1989; Verona et al., 2001) and low trait anxiousness (Hare, 1991; Harpur et al., 1989; Hart, Forth, & Hare, 1990; Patrick, 1994; see also Frick, Lilienfeld, Ellis, Loney, & Silverthorn, 1999; but see Schmitt & Newman, 1999[3]). These personality correlates are clearly distinct from those known to be associated with externalizing/PCL-R Factor 2, namely, high negative emotionality (especially aggression) and low constraint/low conscientiousness (Verona et al., 2001; Widiger & Lynam, 1998). Our perspective is that the affective-interpersonal component of psychopathy reflects, at least in part, a separate etiology from the social deviance component (Patrick, 2001, in press; Patrick & Lang, 1999; Blonigen, Hicks, Krueger, Patrick, & Iacono, 2005; see also Fowles & Dindo, 2006). Accordingly, we believe that a productive strategy for future research will be to study these distinctive facets of psychopathy in isolation from one another by developing purer indicators of each and exploring their distinctive etiologic underpinnings (cf. Widiger, in press).

In summary, our work illustrates the value of examining the structure of psychopathy in relation to other broad psychopathology constructs. The current study revealed a close association between the social deviance facet of psychopathy and the externalizing factor that underlies a broad spectrum of impulse control disorders. A parallel analytic strategy could be used to elucidate etiologic factors associated with the affective-interpersonal component of psychopathy. For example, in line with Cleckley's (1941) characterization of psychopaths as lacking in “nervousness or psychoneurotic manifestations,” the unique variance in PCL-R

[3]Schmitt and Newman (1999) did not find significant associations between PCL-R Factor 1 and measures of trait anxiety. However, interrater reliability for the PCL-R was very low in this study compared with other published studies—i.e., only .70 for PCL-R total scores (reliabilities for the two factors, which contain fewer items, would almost certainly have been lower, but this information was not reported in the article). The low reliability of PCL-R scores in this study would have operated to constrain the magnitude of observed associations with criterion measures, including trait anxiety.

Factor 1 is negatively associated with various indices of trait anxiety (cf. Hare, 2003). This points to a possible negative association between the unique variance in PCL-R Factor 1 and the "internalizing" factor of adult psychopathology (i.e., the common factor underlying anxiety and mood disorders; Krueger, 1999). This possibility could also be evaluated using a structural modeling approach. Further research of this kind will help to advance our knowledge of the nature and etiology of psychopathy, as well as contribute to our understanding of other common mental disorders.

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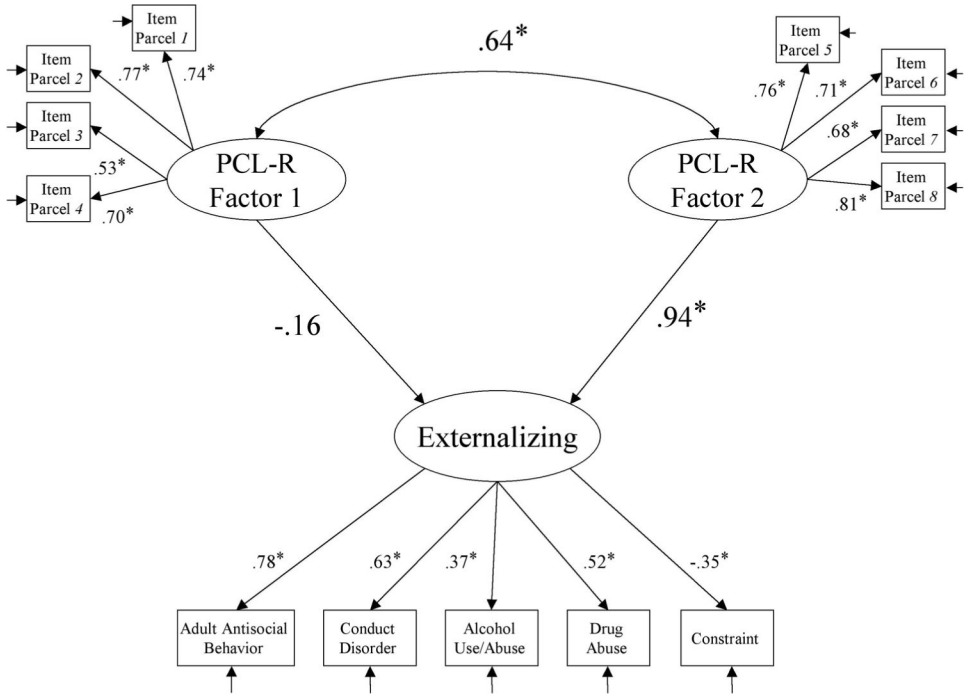

FIGURE 1.
Structural equation model of relations between the two-factor model of PCL-R psychopathy and the externalizing dimension of psychopathology. *$p < .01$.

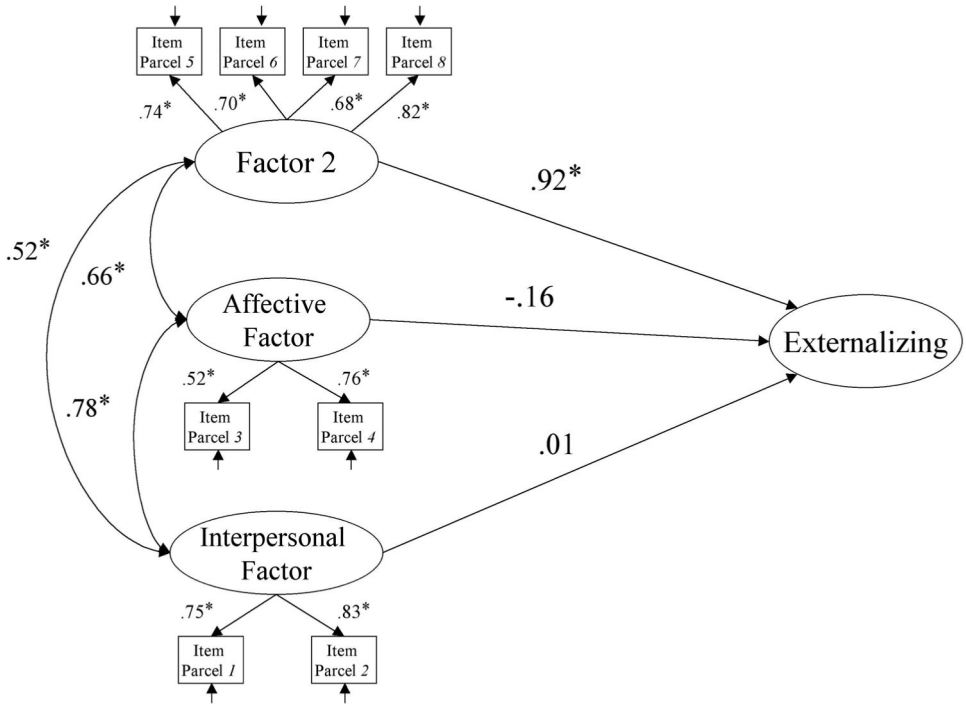

FIGURE 2.

Structural equation model of relations between the three-factor model of PCL-R psychopathy and the externalizing dimension of psychopathology. The latent Externalizing variable (including all factor loadings) is identical to that in Figure 1. *$p < .01$.

TABLE 1

Psychopathy Checklist-Revised (PCL-R) Items, Grouped by Content and Item Parcel

Interpersonal items		
Item parcel 1	1.	Glibness/superficial charm
	2.	Grandiose sense of self-worth
Item parcel 2	4.	Pathological lying
	5.	Conning/manipulative
Affective items		
Item parcel 3	6.	Lack of remorse or guilt
	16.	Failure to accept responsibility
Item parcel 4	7.	Shallow affect
	8.	Callous/lack of empathy
Impulsive-Irresponsible items		
Item parcel 5	3.	Need for stimulation/proneness to boredom
	14.	Impulsivity
	15.	Irresponsibility
Item parcel 6	9.	Parasitic lifestyle
	13.	Lack of realistic, long-term goals
Antisocial Behavior items		
Item parcel 7	12.	Early behavior problems
	18.	Juvenile delinquency
Item parcel 8	10.	Poor behavioral controls (aggressive)
Items excluded from the analysis		
	11.	Promiscuous sexual behavior
	17.	Many short-term marital relationships
	19.	Revocation of conditional release
	20.	Criminal versatility

TABLE 2

Relations between PCL-R Factor 2 and Other Behaviors in the Externalizing Spectrum

	Correlation with PCL-R Factor 2	
Behavior in the externalizing spectrum	**zero order**	**partial controlling for EXT**
Gambling	.27*	.12
Smoking	.20*	.04
Suicide	.19*	-.02

Note. EXT = Externalizing. $N = 102$ for gambling; $N = 202$ for suicide and smoking. The correlation between EXT and Factor 2 is $r = .74$. *$p < .01$.