

DEVELOPMENTAL ANTECEDENTS OF THE FACETS OF PSYCHOPATHY: THE ROLE OF MULTIPLE ABUSE EXPERIENCES

Sonja Krstic, MA, M.Ed., Raymond A. Knight, PhD,
and Carrie A. Robertson, MA

The etiology of psychopathy remains poorly understood, despite the wealth of studies focused on examining this serious and complex personality disorder. The present study explored the contribution of psychological, physical, and sexual abuse in predicting PCL-R facet and total scores. The study was conducted on a sample of 397 adult male sexual offenders, using archival ratings and developmental data gathered with a self-report inventory, the Multidimensional Assessment of Sex and Aggression (the MASA). All types of abuse covaried with the total PCL-R score, but the kinds of abuse were differentially associated with the facet scores. Sexual abuse was positively associated with Interpersonal and Lifestyle facet scores, whereas physical abuse was associated with Lifestyle and Antisocial facets. Psychological abuse covaried with the Affective facet, but the relation was negative. The results of the structural equation model underscored the significance of physical abuse, above and beyond psychological and sexual abuse.

Psychopathy is a personality disorder that is distinguished both by an emotional dysfunction that is characterized by an absence of guilt, empathy, and attachment to others and by antisocial behavior (Hare, 1991, 2003). It significantly predicts general (Douglas, Vincent, & Edens, 2006) and violent (Kennealy, Skeem, Walters, & Camp, 2010) recidivism in criminal samples. Lack of empathy, a weak conscience, and indifference to the threat of punishment constitute a particularly dangerous mixture when combined with hostility and aggression (Lykken, 2006), even in “successful” noncriminal psychopaths in the general population (Hall & Benning, 2006). In addition, psychopathy has been deemed one of the most treatment-resistant syndromes in criminology and psychopathology (Harris & Rice, 2006). Despite the significance of the disorder and the amount of research devoted to it, relatively

From Brandeis University, Waltham, Massachusetts.

Research Grants R01-MH54263 from the National Institute of Mental Health and 94-IJ-CX-0031 and 94-IJ-CX-0049 from the National Institute of Justice supported this research. The authors presented portions of these data at the 2013 biannual conference of the Society for the Scientific Study of Psychopathy, Washington, D.C.

Address correspondence to Sonja Krstic, Department of Psychology, MS 062, Brandeis University, Waltham, MA 02454-9110. E-mail: skrstic@brandeis.edu

little is known about its etiology. Studies in recent years have identified some hereditary and biological mechanisms associated with psychopathy, but early experiential factors are also thought to play an important role in the etiology of the disorder. Research on such developmental antecedents is lacking, and little consistency has emerged in what research has been done.

Although the definition of psychopathy has varied historically, Cleckley's (1941) powerful and incisive description of this syndrome has been the most commonly cited standard and has served as the basis of the most widely used assessment tool for measuring psychopathy, the Psychopathy Checklist-Revised (PCL-R; Hare, 1991, 2003). Cleckley's definition comprised 16 interpersonal, affective, and behavioral traits that Hare (1991) incorporated into a 20-item scale. The presence of antisociality is the basis of the *DSM-5* (American Psychiatric Association, 2013) criteria for antisocial personality disorder (APD), a construct that correlates with, but is not co-extensive with psychopathy. Only a small percentage of those diagnosed APD exhibit the core psychopathic personality traits (Hare, 2003; Ogloff, 2006), and this is not likely to change in *DSM-5*, even though callous-unemotional (CU) traits in youth, considered to predict adult psychopathy, are now included as a specifier of conduct disorder (CD), which is a prerequisite of APD.

Little is known about the etiology of this complex disorder, and psychopathy, like many other forms of psychopathology, appears to be the result of an intricate interplay of biological and experiential factors. Studies focused on the origins of antisocial behavior found moderate to large effect sizes for genetic factors (Waldman & Rhee, 2006). Research on the genetic contributions to the affective and interpersonal traits of psychopathy has been largely limited to twin studies (for a review, see Viding & McCrory, 2012). CU traits in youth have consistently shown moderate to strong heritability, and the results of the twin studies have also highlighted the significance of non-shared environmental influences in the development of these traits (Viding & McCrory, 2012). Moreover, a number of neuropsychological correlates of psychopathic traits have been identified (for a review, see Blair, 2010).

The role of environmental factors has received little attention despite the growing support that adverse developmental conditions may contribute to the neurodevelopmental changes observed in psychopaths (Daversa, 2010). Research into family factors related to psychopathy has consistently found that parental neglect, abuse, and rejection have covaried with subsequent antisocial behavior (e.g., Larsson, Viding, Rijdsdijk, & Plomin, 2008), with an impulsive and irresponsible lifestyle (Poythress, Skeem, & Lilienfeld, 2006), and with high PCL-R scores (Lang, af Klinteberg, & Alm, 2002).

Due to the growing interest in juvenile psychopathy and the connection between pervasive antisocial behavior and CU traits in youth, a number of studies have examined both the etiology of such traits and related antisocial behavioral patterns. Along with low parental SES, negative parenting has been found to predict the stability of psychopathic traits (Frick, Kimonis, Dandreaux, & Farrell, 2003). Youth exhibiting high CU traits, but low anxiety (the primary variant of psychopathy) were more likely to have experienced neglect, whereas those who were high both on CU traits and anxiety (the secondary variants) were more likely to have had a history of physical

and sexual abuse (Kahn et al., 2013; Kimonis, Fanti, Isoma, & Donoghue, 2013). Both groups have shown an increased rate of abuse history compared to controls (Kimonis et al., 2013).

Independent of the study of psychopathy, the research into the relative impact of abuse on subsequent psychopathology has faced some challenging methodological problems. Differential effects of psychological, physical, and sexual abuse are not easy to estimate; different forms of abuse during childhood co-occur frequently, and the number of the abuse types a child is exposed to appears to covary significantly with negative effects (Teicher, Samson, Polcari, & McGreenery, 2006). Not all types of abuse have been given equal attention in the literature; Teicher and colleagues (2006) noted that although earlier studies focused on the effects of physical abuse, sexual abuse, and witnessing domestic violence on subsequent adaptation, the influence of verbal aggression as a form of abuse has rarely been explored. In fact, they found that in predicting aggression it yielded a similar effect size to nonfamilial sexual abuse and to witnessing violence, and a larger effect size than physical abuse.

Notwithstanding the aforementioned issues, estimating differential effects of abuse types, rather than global effects of childhood maltreatment on psychopathology, has the potential to illuminate these relations with greater specificity (Banducci, Hoffman, Lejuez, & Koenen, 2014), allowing for more informed theoretical and empirical advancements. Research examining the effects of specific forms of childhood maltreatment on the etiology of psychopathy and its facets has been scarce. Poythress and colleagues (2006) analyzed the relation between childhood abuse and psychopathic traits, but did not focus on the differential effects of various types of abuse. Graham, Kimonis, Wasserman, and Kline (2012) found that sexual abuse covaried with total PCL-R scores and with the Interpersonal, Lifestyle, and Antisocial facets. Both physical abuse and neglect were shown to covary with the Antisocial facet of psychopathy (Graham et al., 2012).

There is growing evidence supporting Hare and Neumann's (2005, 2006) proposition that four, rather than two or three latent variable dimensions best account for the components of psychopathy as measured by the PCL-R. A good fit of the four-factor model has been demonstrated in civil psychiatric patients (Vitacco, Neumann, & Jackson, 2005), in offenders with mental disorders (Vitacco, Rogers, Neumann, Harrison, & Vincent, 2005), and in the general population (Hare & Neumann, 2005). The present study focused on the facets rather than the two overarching factors because of the increased potential of their explanatory power. Thus, the Interpersonal facet comprised traits indicative of manipulativeness and tendency to lie, whereas the Affective facet represented weak emotional connection with others. The Lifestyle facet reflected impulsivity and stimulation-seeking behavior, and the Antisocial facet reflected the range and pervasiveness of antisocial behavior (Hare, 2003; Salekin, 2006).

The aim of the present exploratory study was to examine the link between experiential developmental antecedents and psychopathy, as measured by the PCL-R. Using structural equation modeling and multiple regression, we analyzed the relation between psychological, physical, and sexual abuse

in childhood and the core facets of psychopathy. Hierarchical regressions were calculated with the aim of analyzing the associations between the abuse types and the individual facets. Structural equation modeling enabled the exploration of the relation between the various abuse measures and the construct of psychopathy. We hypothesized that psychological, physical, and sexual abuse would be associated with the PCL-R scores, but given the lack of relevant empirical evidence in the literature, we made no specific predictions about the differential covariations between abuse types and the individual facets.

METHOD

PARTICIPANTS AND PROCEDURES

A sample of 397 adult male sex offenders from a pool of 529 was selected for the study. For this subsample, extensive clinical files were available that allowed us to rate the PCL-R (Hare, 2003). The original data collection was conducted at forensic institutions and treatment centers, both inpatient and outpatient, in Massachusetts, Minnesota, and New Jersey. All individuals charged and convicted of a sexual offense who were willing to take the assessment were included in the study. Most of the participants were repeat offenders, some of whom were in civil commitment. The large majority of the participants were inpatients, and those who were outpatients had only recently completed inpatient treatment. The mean number of arrests for the subsample was 6.26 ($SD = 7.64$), with a mean of 2.43 ($SD = 1.93$) serious sexual offenses committed as an adult and .26 ($SD = .86$) committed as a juvenile. The mean age at the time of assessment was 39.6 ($SD = 10.46$), and the race composition was 68.9% White, 17.1 % African American, 4% Hispanic, 4% Native American, less than 1% Asian, and 4.6 % other races or undisclosed. The Institutional Review Board at Brandeis University and at each forensic institution reviewed and approved the participant procedures and consent forms. The participants were administered the computerized Version 3, 4, 5, or 6 of the Multidimensional Assessment of Sex and Aggression (the MASA), a self-report questionnaire on multiple dimensions of sexual aggression. Participation was voluntary, and participants received \$18 remuneration.

MEASURES

MASA. The MASA was originally developed to assess the sexual and aggressive behaviors, fantasies, and cognitions that were essential for classification in the Massachusetts Treatment Center rapist typology (MTC: R3). Versions 3, 4, 5, and 6 were contingency-based inventories administered by a computer. Recently, the inventory was reprogrammed, revised again, renamed the Multidimensional Inventory of Development, Sex, and Aggression, and made available for clinical assessment (*MIDSA Clinical Manual*, 2011). Starting with Version 3, the MASA included a comprehensive assessment of

developmental history (*MIDSA Clinical Manual*, 2011). The MASA scales have demonstrated adequate to high test-retest reliabilities and internal consistencies (*MIDSA Clinical Manual*, 2011). A writ of confidentiality from the National Institutes of Health (NIH) protected participants' responses from subpoena.

Childhood Abuse. Childhood abuse was measured using a number of the MASA scales, assessing psychological, physical, and sexual abuse. To maximize power in the present study, composite male and female caregiver scales were created by including significant male and female caregivers when the biological parent could not be rated because of insufficient experience with that parent. Close to 92% of participants rated biological mother and about 74% rated biological father. Scales were generated to make maximal use of the available MASA items, so construction varied across abuse types.

- *Psychological Abuse:* Factor analytically derived scales (Emotional Abuse, Acceptance-Neglect, and Vicarious Violence) measured psychological abuse subtypes. Emotional Abuse is an 11-item scale (e.g., "How often did your mother say things to scare or frighten you?") that measures the frequency of verbal abuse and hostile control (*MIDSA Clinical Manual*, 2011). The internal consistencies for biological mother, biological father, other female caregiver, and other male caregiver were .95, .94, .98, and .97, respectively. The Acceptance-Neglect scale contains 8 items (e.g., "When you had problems, did your mother show concern and seem to care as a child?"), assessing the degree of love and acceptance expressed by a caregiver. Internal consistencies were .96, .96, .95, and .97 for biological mother, biological father, other female caregiver, and other male caregiver, respectively. Vicarious Violence scales were used to measure the extent of observed violence between the caregivers (e.g., "Did your mother hit, punch, or slap your father?"). The internal consistencies for biological mother, biological father, other female caregiver, and other male caregiver were .87, .89, .84, and .91, respectively. Psychological abuse scales were calculated by using the mean value of the relevant items.
- *Physical Abuse:* Separate scales were generated to measure the number of physical abuse perpetrators, the frequency of abusive behavior, and the severity of abuse. The number of perpetrators ranged from 0 to 9, and the frequency of abuse was calculated as the maximum score across all perpetrators, ranging from "never" to "very often (every day)." The physical severity scale was a seven-point ordinal scale comprising items assessing levels of abuse: no abuse (0), hitting or spanking (1), hitting or spanking using anything other than a hand (2), punching or kicking (3), abuse requiring medical attention (4), burning (5), and breaking bones (6). The maximum frequency and severity of physical abuse across all caregivers were calculated.

- *Sexual Abuse*: Sexual abuse was assessed using scales measuring the frequency, the severity/level of penetration, and the degree of force used in the abuse. Maximum values across all caregivers were used in calculating the scales. Frequency ranged from no sexual contact to daily occurrence of sexual contact. The severity/level of penetration was an ordinal scale that included items ranging from no abuse (0), taking pictures (1), touching/fondling (2), oral sex (3), attempted intercourse or inserting finger in the anus (4), inserting objects in the anus (5), to complete intercourse (6). The degree of force was an ordinal scale, measuring the range of compliance: no sexual activity (0), being willing to participate in sexual contact with the perpetrator (1), being bribed to have sex, or being tricked into having sex (2), being forced to have sex by means of verbal threats (3), and being physically forced to do so (4).

PCL-R. Psychopathy was assessed from archival files using the Psychopathy Checklist-Revised (Hare, 2003). Given its status as the most extensively used assessment tool in measuring psychopathy, the PCL-R has been well validated. Typically, PCL-R scores are obtained through a semi-structured interview and a review of the offender's clinical/criminal files as a source of collateral information, but the assessment can also be done using file review exclusively (Hare, 2003; Hare & Neumann, 2006). In the present study, PCL-R facet scores were generated by raters trained by an approved PCL-R instructor using the guidelines provided in the PCL-R manual. File ratings were completed using diverse available archival information, such as psychological reports, psychosocial histories, and official police and court records. The PCL-R includes 20 items, each employing a 3-point format (2 = item definitely applies, 1 = item applies somewhat, and 0 = item doesn't apply). Higher scores indicate a higher degree of psychopathic traits. The reliability of the PCL-R is considered to be high. In the present sample, the internal consistency of the total scale was .84. A subset of the files ($n = 35$) was dual-coded to access reliability, with a resulting intraclass correlation (ICC) on the total scale of .89. Comprehensive information on the psychometric properties of the PCL-R is provided elsewhere (see Hare, 2003). In our sample, 12.8% of participants had a total score of 25 and above. The facet scores were calculated by summing the pertinent PCL-R item scores. Thus, the Interpersonal facet included the scores for glibness/superficial charm, grandiose sense of self-worth, pathological lying, and conning/manipulative features. The Affective facet comprised scores for lack of remorse or guilt, shallow affect, callousness/lack of empathy, and failure to accept responsibility for own actions. The Lifestyle facet included the scores for need for stimulation/proneness to boredom, parasitic lifestyle, lack of realistic, long-term goals, impulsivity, and irresponsibility. Finally, the Antisocial behavior facet comprised scores on the following items: poor behavioral control, early behavior problems, juvenile delinquency, revocation of conditional release, and criminal versatility. Here, the alphas for the Interpersonal, Affective, Lifestyle, and Antisocial facets were .60, .67, .57, and .66, respectively. Facet and total scores were calculated using the mean of the items. For the total score, the mean value for the sample was .87, $SD = .33$.

RESULTS

To reduce the multicollinearity in the subsequent steps of the analysis, we conducted exploratory factor analysis to determine the number of factors underlying experiential predictors. The analysis was conducted using principal axis factoring (PAF) on 12 predictors with oblique rotation. In the initial analysis, four components were shown to have eigenvalues larger than 1, satisfying Kaiser's criterion and explaining 71.4% of variance. Examination of the scree plot and the theoretical cohesion of factor loadings led us to accept the four-component solution. We created the following four summative scales based on the results: Psychological Abuse by a Significant Male Caregiver, Sexual Abuse, Psychological Abuse by a Significant Female Caregiver, and Physical Abuse. Internal consistencies for these scales ranged from .77 to .81.

The next step involved hierarchical regression analyses with the facets of PCL-R as sole dependent variables and the obtained factor scales entered in successive blocks. Because the sample was largely Caucasian, we did not control for race. The following order of entering predictors was determined by eigenvalue size: Psychological Abuse by a Significant Male Caregiver, Sexual Abuse, Psychological Abuse by a Significant Female Caregiver, Physical Abuse. The introduction of Sexual Abuse was associated with the significant increase in the predictive power in the model for the Interpersonal and Lifestyle facets, $\Delta R^2 = .03$, $p < .01$, and $\Delta R^2 = .02$, $p < .01$, respectively. Moreover, Psychological Abuse by a Significant Male Caregiver yielded a significant ΔR^2 in the prediction of the Affective facet, $\Delta R^2 = .02$, $p < .05$.

Finally, to examine the cumulative and interactive effects of the different abuse subtypes, we recoded all the individual abuse predictors into ordinal scales that attempted to equate across items the level of abuse that was captured by each item. We trichotomized each item into a "no or low abuse" ("0"), "some or moderate abuse" ("1"), and "severe abuse" ("2") metric. We examined the distribution of the scores on each item attempting to determine whether natural breaks in the item endorsements could be identified, chose natural breaks that equated as much as possible the frequencies of each level to reduce the problem of item skew, and also examined the resulting level cutoffs in each item to determine whether the theoretical meaning of the resulting levels matched the description of the level. In all instances, our goals were reasonably achieved. These comparable scales were then grouped into three superordinate predictors—psychological, physical, and sexual abuse—by taking the mean of all items in each predictive cluster. We collapsed psychological abuse across caregiver gender to improve ease of interpretation and to reduce the number of predictive sets. Among the participants, only 10.1% percent reported no abuse or low abuse, 18.9% reported moderate or severe abuse of one type, 30% reported two types, and 41.1% reported experiencing all three types. After centering each of the summary scores and generating interactive terms, we entered predictors in hierarchical regression models in three sequential blocks: abuse subtypes (physical, sexual, psychological), two-way interactions (physical \times sexual, psychological \times physical,

TABLE 1. Hierarchical Regression Models Predicting PCL-R facets and the Total Score From Physical, Sexual, and Psychological Abuse

PCL-R Score	Predictors	ΔR^2	F (df1, df2)	R^2
Facet 1: Interpersonal	Physical, Sexual, Psychological	.027*	3.53* (3,386)	.027
	Phys. \times Sex., Psych. \times Phys., Psych. \times Sex.	.004	2.01† (6,383)	.031
	Psychological \times Physical \times Sexual	.001	1.78† (7,382)	.032
Facet 2: Affective	Physical, Sexual, Psychological	.041**	5.22** (3,371)	.041
	Phys. \times Sex., Psych. \times Phys., Psych. \times Sex.	.002	2.74* (6,368)	.043
	Psychological \times Physical \times Sexual	.010*	2.93** (7,367)	.053
Facet 3: Lifestyle	Physical, Sexual, Psychological	.040**	5.42** (3,386)	.040
	Phys. \times Sex., Psych. \times Phys., Psych. \times Sex.	.012	3.53** (6,383)	.052
	Psychological \times Physical \times Sexual	.009†	3.59** (7,382)	.062
Facet 4: Antisocial	Physical, Sexual, Psychological	.030**	3.96** (3,389)	.030
	Phys. \times Sex., Psych. \times Phys., Psych. \times Sex.	.006	2.38* (6,386)	.036
	Psychological \times Physical \times Sexual	.003	2.23* (7,385)	.039
Total Score	Physical, Sexual, Psychological	.053***	7.27*** (3,392)	.053
	Phys. \times Sex., Psych. \times Phys., Psych. \times Sex.	.004	3.87** (6,389)	.056
	Psychological \times Physical \times Sexual	.010*	3.93*** (7,388)	.066

Note. ΔR^2 indicates the change resulting from entering the block into the model. F and R^2 statistics refer to the fit of each model. † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

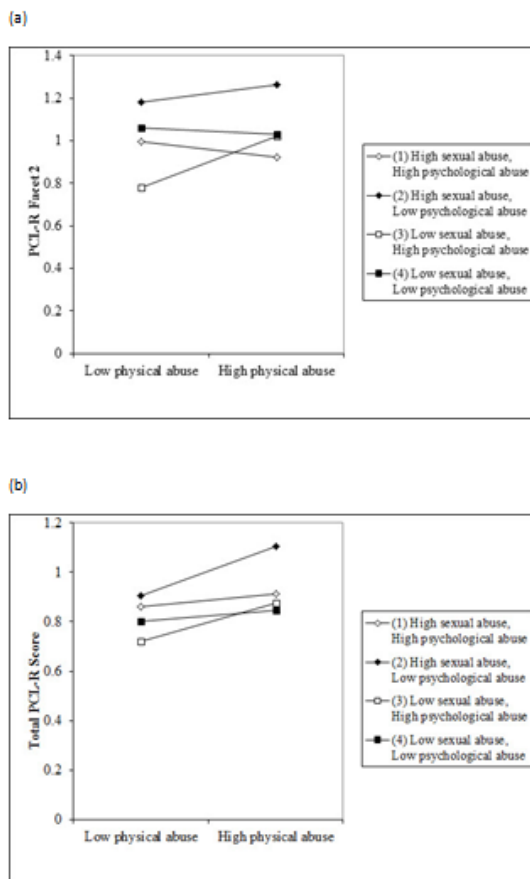


FIGURE 1. Three-way interaction between physical, sexual, and psychological abuse in predicting the Affective facet (a) and the total PCL-R score (b). Dawson & Richter (2006) test for slope difference between Slopes 1 and 3 resulted in $t(389) = -1.72, p = .09$ (a), and $t(389) = 1.97, p = .05$ for slope difference between Slopes 2 and 4 (b).

psychological \times sexual), and the three-way interaction. The dependent measures were the individual facets and the total PCL-R score.

The three clusters of childhood maltreatment emerged overall as significant predictors of all four PCL-R facets and of the total PCL-R score (Table 1). The significant first block standardized β values for each maltreatment type for each dependent measure were the following: physical abuse predicted the Lifestyle and Antisocial facets, $\beta = .14, t(389) = 2.43, p < .05$ and $\beta = .15, t(389) = 2.66, p < .01$, respectively; sexual abuse covaried with the Interpersonal and Lifestyle facets, $\beta = .14, t(389) = 2.65, p < .01$ and $\beta = .13, t(389) = 2.37, p < .05$; and psychological abuse predicted the Affective facet, $\beta = -.22, t(389) = -3.74, p < .001$. All three types of abuse predicted the total PCL-R score, $\beta = .15, t(389) = 2.70, p < .01$ for physical abuse, $\beta = .16, t(389) = 3.12, p < .01$ for sexual abuse, and $\beta = -.14, t(389) = -2.43, p$

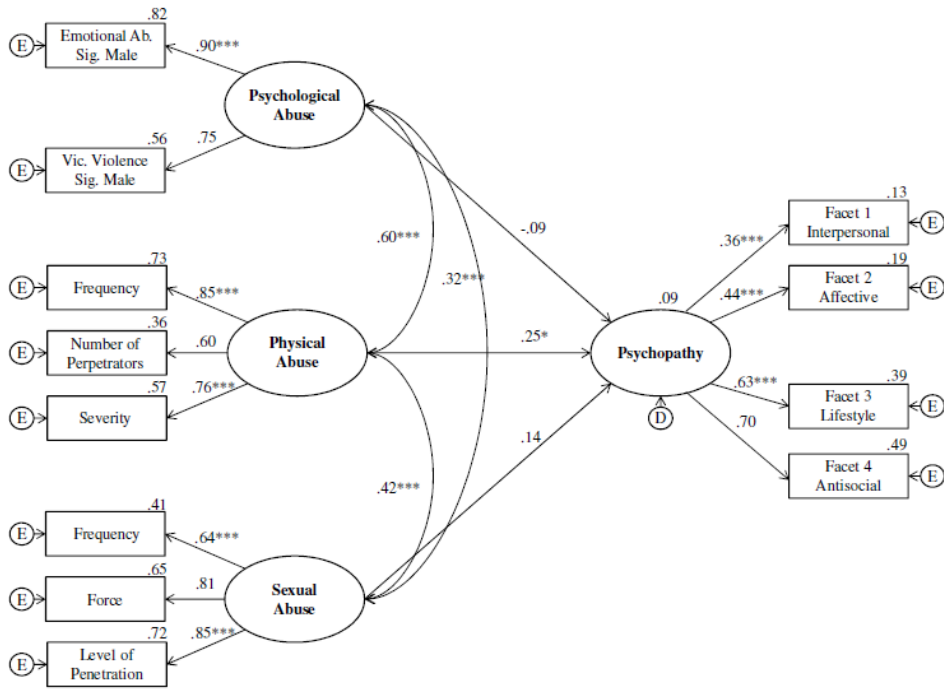


FIGURE 2. Model predicting psychopathy from psychological, physical, and sexual abuse. $n = 305$; $\chi^2(49) = 86.45$, $p = .001$; CFI = .96, RMSEA = .05. Model is good fit to the data. Standardized coefficients are shown. * $p < .05$. *** $p < .001$.

$< .05$ for psychological abuse. It is noteworthy that the relation between the psychological abuse and PCL-R scores was negative.

No significant ΔR^2 values emerged for any of the two-way interactions predicting either the individual facet scores or the total PCL score. The three-way interactions, however, did contribute to the prediction of the Affective facet and total PCL-R scores. Figure 1 depicts the patterns of these three-way interactions.

Next, we analyzed the data using the Analysis of Moment Structures (AMOS) 20.0.0 (Arbuckle, 2011). The final structural equation model (SEM) is depicted in Figure 2. To eliminate the problems associated with the missing data, the sample was reduced to 305 using listwise participant deletion. This reduction in sample size was deemed acceptable, as the data were considered to be missing at random, and subsequent analyses using full information maximum likelihood (FIML) estimation yielded essentially identical results. To improve the fit of the model, the initial model was modified by removing several low-loading observed variables and including covariances between the latent traits. The latent variable psychopathy had 9% of variance explained by its latent trait predictors. For the exogenous variables, 56% of the variance in significant male Vicarious Violence contributed to

measuring Psychological Abuse, as did 82% of the variance in significant male emotional abuse. The variable that covaried to the greatest extent with the latent trait Physical Abuse was the frequency ($R^2 = .73$), whereas the level of penetration had the highest loading on the Sexual Abuse latent trait ($R^2 = .72$). Both the Lifestyle and the Antisocial facets of psychopathy had higher loadings on latent variable Psychopathy ($R^2 = .39$ and $R^2 = .49$, respectively), compared to the Interpersonal ($R^2 = .13$) and the Affective ($R^2 = .19$) facets. The overall fit of the model to the data was good, $\chi^2(49) = 86.45$, $p = .001$; CFI = .96, RMSEA = .05. The numbers shown near the one-headed arrows in the model represent standardized regression coefficients. Physical Abuse was a significant predictor of latent variable Psychopathy ($\beta = .25$, $p = .03$), but the predictions by Psychological Abuse and Sexual Abuse did not reach statistical significance. Psychological, Physical, and Sexual Abuse all covaried significantly (all $ps < .001$). Models that excluded the latent trait of Psychopathy and attempted to predict the facets directly from developmental antecedents were less successful and did not yield adequate fit statistics.

DISCUSSION

Childhood maltreatment is a powerful factor contributing to the development of psychopathology, and it appears also to play an important role in the development of psychopathy. Different abuse subtypes appear to have distinct associations with the specific personality and behavioral manifestations of the syndrome. Moreover, particular combinations of abuse subtypes and their severity seem to be associated with different outcomes. In particular, the results of our study indicate that history of severe physical abuse, coupled with history of severe sexual abuse, may lead to higher PCL-R total scores, even when some important aspects of negative parenting, such as verbal abuse and neglect, are not highly problematic.

The goal of the present study was to determine the relation between different abuse types and the PCL-R facets. Our findings provided evidence for the hypothesized association between childhood maltreatment and PCL-R scores. Specific types of abuse differentially predicted the four facets. In particular, sexual abuse was significantly associated with the Interpersonal and Lifestyle facet scores; history of physical abuse covaried with the Lifestyle and Antisocial facets; and psychological abuse was inversely associated with the Affective facet. Our SEM model indicated that physical abuse played a predominant role in predicting overarching psychopathy.

The role of childhood maltreatment in the etiology of externalizing behaviors has been well substantiated in the empirical literature (e.g., Luntz, & Widom, 1994; Manly, Kim, Rogosch, & Cicchetti, 2001). Manly and colleagues (2001) found that a history of physical abuse in the preschool period predicted externalizing behaviors, aggression, low ego resiliency, and a higher degree of ego undercontrol. Their results suggested that low ego resiliency and ego undercontrol were indicative of impulsive, reactive patterns of behavior. Moreover, they established a link between sexual abuse and externalizing symptoms. Poythress and colleagues (2006) reported a direct

effect of abuse on the Lifestyle facet. Our findings were consistent with these earlier results. Physical abuse predicted psychopathy in the SEM, and in the hierarchical regression analyses it significantly contributed to the prediction of the Lifestyle and Antisocial facets, as well as total PCL-R scores. Sexual abuse emerged as a predictor of the Interpersonal and Lifestyle facets and the total scores, but the pathway between sexual abuse and psychopathy in the SEM was not significant, which is likely due to its substantial covariation with physical abuse. Graham and colleagues (2012) found that whereas both physical abuse and neglect were associated only with higher scores on the Antisocial facet, sexual abuse had a significant impact on PCL-R scores, covarying with the Interpersonal, Lifestyle, and Antisocial facets. In contrast, the SEM results in the present study supported the predictive potency of physical abuse relative to sexual abuse and psychological abuse. The difference in results could be the function of different measures. MASA developmental scales allowed for more detailed assessment of maltreatment, compared to the dichotomous coding used by Graham and colleagues (2012).

Importantly, our findings indicated that childhood maltreatment was associated not only with the Impulsive Antisociality factor (PCL-R Factor 2), but also with the Interpersonal-Affective Features factor (PCL-R Factor 1). These results are consistent with prior findings showing a link between sexual abuse and the interpersonal features of psychopathy (Graham et al., 2012). The association between sexual abuse and interpersonal traits of psychopathy supports the theory that emotional dissociation in reaction to trauma may affect subsequent interpersonal adaptation (Spiegel & Cardeña, 1991). Lack of honesty, superficial charm, and tendency to manipulate others could potentially be understood in the context of coping mechanisms deployed to deal with traumatizing social interactions. It is noteworthy that the Interpersonal facet has been found to covary with high sexualization (Knight, 2012), and sexual abuse covaries with higher sexualization in offender and community samples (Knight & Guay, 2006).

In the present study, the association between psychological abuse and the Affective facet scores was negative. A dissociative response to abuse in general might be expected to blunt emotional responding to others and consequently increase the core interpersonal and affective characteristics of psychopathy (Daversa, 2010; Porter, 1996; Weiler & Widom, 1996). Previous research had not, however, found evidence for this putative connection between the experience of abuse and the affective traits of psychopathy (Graham et al., 2012; Poythress et al., 2006). The results of the present study suggest that the relation between psychological abuse and affective features of psychopathy may in fact be contrary to earlier hypotheses. Developmental exposure to verbal abuse, neglect, and vicarious violence may increase one's affective responses, strengthening interpersonal sensitivity and increasing the feelings of guilt. Further, physical abuse and sexual abuse did not predict the Affective facet, suggesting that for the development of the negative affective traits associated with psychopathy chronic adverse patterns in relationships with the caregivers and between the caregivers themselves may be more critical than reactions to traumatic events. Although they could give rise to a number of maladaptive features, these negative patterns seem to be linked

with lower PCL-R scores. Given the lack of consistent empirical evidence on the role of abuse in the development of psychopathy-related emotional deficits, these results require further validation and cautious interpretation. Interestingly, even though the covariation between emotional abuse and the Interpersonal and Affective facets in Graham and colleagues was not significant, the direction of the relation was also negative.

There is growing evidence on the heritability of CU traits, and it is now believed that the etiology of the interpersonal and affective components of psychopathy may be largely genetically driven, with some impact of non-shared environment in boys, though this developmental pattern does not seem to apply to girls with CU traits ([Fontaine, Rijdsdijk, McCrory, & Viding, 2010](#)). Such data do not mean that the role of environment should be disregarded in future research and interpretations. The impact of experience exerted through G×E interactions could be considerable, and some environmental risk factors, such as emotional or sexual abuse, may be of critical importance in the phenotypic expression of CU traits. Moreover, the DNA variants associated with these traits are still poorly understood. A recent study that was the first to use the genome-wide association (GWA) approach to analyzing variation in CU as a quantitative trait reported estimated heritability to be only 7%, considerably lower than previously established through twin studies ([Viding et al., 2013](#)). G×E interactions are thought to involve extremely complex processes that are difficult to analyze, and exact contributions of genes and environment are not likely to be teased apart in the near future, particularly given the lack of knowledge about the specific molecular genetic correlates and relevant endophenotypes. Behavioral genetics is still a nascent field, and knowledge about the intricate relations between environmental and biological influences on the developing mind remains primitive. It is important to bear in mind that even factors that are assumed to be environmental, such as negative parenting, could be influenced at least partially by passive and evocative genotype-environment (G-E) correlations ([Hicks et al., 2012](#)).

Although one must refrain from causal attributions about maltreatment and later maladjustment in retrospective studies, the extant literature provides some clues about causal directions. Prospective studies (e.g., [Dodge, Bates, & Pettit, 1990](#)) have found that abused children, especially those who were severely physically abused, may acquire maladaptive social information-processing patterns by adopting biased and inadequate ways of dealing with others. Recent literature has emphasized the role of the stress response to childhood abuse trauma and explored the implications for the etiology of psychopathology. There is growing evidence that abuse is a stressor that dysregulates HPA axis functioning and leads to subsequent adverse effects on neurodevelopment ([Neigh, Gillespie, & Nemeroff, 2009](#)). Abuse has been found to contribute to blunted HPA reactivity ([Carpenter, Shattuck, Tyrka, Geraciotti, & Price, 2011](#)) and to lower basal cortisol levels (e.g., [King, Mandansky, King, Fletcher, & Brewer, 2001](#)). Dysfunctions in the HPA systems of antisocial individuals have been hypothesized to contribute to their underarousal and fearlessness ([van Goozen & Fairchild, 2008](#)), but findings about the relation between decreased cortisol reactivity and antisocial behavior and

between lower resting cortisol levels and both CU traits and antisocial behavior have been inconsistent ([Fairchild et al., 2008](#); [Loney, Butler, Lima, Counts, & Eckel, 2006](#)).

Given the cross-sectional nature of this study, we were able to show the associations between the different abuse types and various psychopathic traits, but we were unable to demonstrate causal direction. Further limitations of the present study include the use of a self-report measure, which relies on possibly biased recollections of developmental history, and the use of archival PCL-R ratings. Self-report assessments are vulnerable to dishonest responding and attempts at impression management. The scores on the four MASA scales (Positive Image scale, Negative Emotion Denial scale, Sex Lie scale, and Improbability scale) designed to control for insincere responding indicated that this was not an issue. All responses were confidential, and the participants were protected by a writ of confidentiality, which should have contributed to more honest responding. Retrospective PCL-R scores obtained with the use of files only have shown good alternate-form reliability, particularly for Factor 2 ([Grann, Langstrom, Tengstrom, & Stalenheim, 1998](#)). The use of such ratings in research has been deemed appropriate when extensive and diverse archival data are available ([Grann et al., 1998](#); [Harris, Rice, & Cormier, 1991](#)), as is the case in our study. Archival data may be biased, however, toward providing more detailed information on behavioral versus personality characteristics, and archival rating scores tend to be lower than those obtained through the standard assessment procedure with interviews ([Hare, 2003](#)). It is noteworthy that covariations were found across methods (self-report and archival file ratings) so that method variance was limited, and the study does not suffer from a mono-operation bias ([Shadish, Cook, & Campbell, 2002](#)). Finally, all participants were adult male sexual offenders, largely Caucasian, and thus generalization of the findings requires replication on a different, more diverse sample.

Psychopathy is a complex, little understood phenomenon associated with significant social cost. Despite the extensive research devoted to the study of its etiology, little is known beyond the evidence of its heredity, some neuropsychological markers, and the general influence of psychosocial stressors, such as childhood maltreatment. Addressing the effects of childhood abuse on the four facets of psychopathy as measured using PCL-R, we found further support for the association of childhood maltreatment and the disorder, extending the earlier findings on the distinct effects of the specific subtypes of abuse. Future directions in research should include further analyses of the effects of cumulative abuse and the developmental timing of the abuse, replication of the results on a different sample, and the inclusion of additional predictors, such as assessments of cognitive and emotional deficiencies and specific genetic correlates.

Negative childhood experiences constitute a critical and common factor in the development of physical and mental disorders ([Anda & Brown, 2010](#)). Understanding the ways maltreatment leads to psychopathy, a syndrome with potentially devastating personal and societal consequences, is critically important. Because psychopathy has been notorious for its resistance to treatment ([Reidy, Kearns, & DeGue, 2013](#)), primary prevention

and early management hold the promise of more positive outcomes (Frick & Viding, 2009). Despite the stability of CU traits, such traits can be influenced through targeted parenting practices and treatment, at least for a subset of youths (Hawes & Dadds, 2007; Pardini, Lochman, & Powell, 2007). Identification of preventable risk factors in the etiology of psychopathy is therefore important not only for its contribution to our understanding of the development of the disorder, but also because of the implications for clinical practice and social policy.

REFERENCES

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.
- Anda, R. F., & Brown, D. W. (2010). *Adverse childhood experiences & population health in Washington: The face of a chronic public health disaster*. Washington State Family Policy Council. Retrieved from <http://www.legis.state.wv.us/senate1/majority/poverty/ACEsinWashington2009BRFSSFinalReport%20-%20Crittenton.pdf>
- Arbuckle, J. L. (2011). Amos (Version 20.0.0) [Computer program]. Chicago, IL: SPSS.
- Banducci, A. N., Hoffman, E. M., Lejuez, C. W., & Koenen, K. C. (2014). The impact of childhood abuse on inpatient substance users: Specific links with risky sex, aggression, and emotion dysregulation. *Child Abuse & Neglect*, *38*(5), 928–938. doi:10.1016/j.chiabu.2013.12.007
- Blair, R. J. R. (2010). Neuroimaging of psychopathy and antisocial behavior: A targeted review. *Current Psychiatry Reports*, *12*(1), 76–82. doi:10.1007/s11920-009-0086-x
- Carpenter, L., Shattuck, T., Tyrka, A., Geraciotti, T., & Price, L. (2011). Effect of childhood physical abuse on cortisol stress response. *Psychopharmacology*, *214*(1), 367–375. doi:10.1007/s00213-010-2007-4
- Cleckley, H. (1941). *The mask of sanity*. St. Louis, MO: Mosby.
- Daversa, M. T. (2010). Early environmental predictors of the affective and interpersonal constructs of psychopathy. *International Journal of Offender Therapy and Comparative Criminology*, *54*(1), 6–21. doi:10.1177/0306624x08328754
- Dawson, J. F., & Richter, A. W. (2006). Probing three-way interactions in moderated multiple regression: Development and application of a slope difference test. *Journal of Applied Psychology*, *91*, 917–926.
- Dodge, K. A., Bates, J. E., & Pettit, G. S. (1990). Mechanisms in the cycle of violence. *Science*, *250*(4988), 1678–1683.
- Douglas, K. S., Vincent, G. M., & Edens, J. F. (2006). Risk for criminal recidivism: The role of psychopathy. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 533–554). New York: Guilford.
- Fairchild, G., van Goozen, S. H. M., Stollery, S., Brown, J., Gardiner, J., Herbert, J., & Goodyer, I. (2008). Cortisol diurnal rhythm and stress reactivity in male adolescents with early-onset or adolescence-onset conduct disorder. *Biological Psychiatry*, *64*(7), 599–606.
- Fontaine, N. M. G., Rijdsdijk, F. V., McCrory, E. J. P., & Viding, E. (2010). Etiology of different developmental trajectories of callous-unemotional traits. *Journal of the American Academy of Child and Adolescent Psychiatry*, *49*(7), 656–664. doi:10.1016/j.jaac.2010.03.014
- Frick, P. J., Kimonis, E. R., Dandreaux, D. M., & Farell, J. M. (2003). The 4-year stability of psychopathic traits in non-referred youth. *Behavioral Sciences & the Law*, *21*(6), 713–736. doi:10.1002/bsl.568
- Frick, P., & Viding, E. (2009). Antisocial behavior from a developmental psychopathology perspective. *Development and Psychopathology*, *21*(4), 1111–1131.
- Graham, N., Kimonis, E., Wasserman, A., & Kline, S. (2012). Associations among childhood abuse and psychopathy facets in male sexual offenders. *Personality Disorders*, *3*(1), 66–75.
- Grann, M., Langstrom, N., Tengstrom, A., & Stalenheim, E. G. (1998). Reliability of file-based retrospective ratings of psychopathy with the PCL-R. *Journal of Personality Assessment*, *70*(3), 416–426. doi:10.1207/s15327752jpa7003_2
- Hall, J. R. & Benning, S. D. (2006). The “successful” psychopath: Adaptive and subclinical manifestations of psychopathy in the general population. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 459–478). New York, NY: Guilford.
- Hare, R. D. (1991). *The Hare Psychopathy Checklist-Revised*. Toronto, Canada: Multi-Health Systems.

- Hare, R. D. (2003). *The Hare Psychopathy Checklist-Revised* (2nd ed.). Toronto, Canada: Multi-Health Systems.
- Hare, R. D., & Neumann, C. S. (2005). Structural models of psychopathy. *Current Psychiatry Reports*, 7(1), 57–64.
- Hare, R. D., & Neumann, C. S. (2006). The PCL-R assessment of psychopathy: Development, structural properties and new directions. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 58–88). New York, NY: Guilford.
- Harris, G. T., Rice, M. E. (2006). Treatment of psychopathy: A review of empirical findings. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 555–572). New York, NY: Guilford.
- Harris, G. T., Rice, M. E., & Cormier, C. A. (1991). Psychopathy and violent recidivism. *Law and Human Behavior*, 15(6), 625–637. doi:10.2307/1394207
- Hawes, D. J., & Dadds, M. R. (2007). Stability and malleability of callous-unemotional traits during treatment for childhood conduct problems. *Journal of Clinical Child & Adolescent Psychology*, 36(3), 347–355. doi:10.1080/15374410701444298
- Hicks, B. M., Carlson, M. D., Blonigen, D. M., Patrick, C. J., Iacono, W. G., & McGue, M. (2012). Psychopathic personality traits and environmental contexts: Differential correlates, gender differences, and genetic mediation. *Personality Disorders: Theory, Research, and Treatment*, 3(3), 209–227. doi:10.1037/a0025084
- Kahn, R. E., Frick, P. J., Youngstrom, E. A., Youngstrom, J. K., Feeny, N. C., & Findling, R. L. (2013). Distinguishing primary and secondary variants of callous unemotional traits among adolescents in a clinic-referred sample. *Psychological Assessment*, 25(3), 966–978. doi:10.1037/a0032880
- Kennealy, P. K., Skeem, J. L., Walters, G. D., & Camp, J. (2010). Do core interpersonal and affective traits of PCL-R psychopathy interact with antisocial behavior and disinhibition to predict violence? *Psychological Assessment*, 22, 569–580. doi:10.1037/a0019618
- Kimonis, E. R., Fanti, K. A., Isoma, Z., & Donoghue, K. (2013). Maltreatment profiles among incarcerated boys with callous-unemotional traits. *Child Maltreatment*, 18(2), 108–121. doi:10.1177/107759513483002
- King, J. A., Mandansky, D., King, S., Fletcher, K. E., & Brewer, J. (2001). Early sexual abuse and low cortisol. *Psychiatry and Clinical Neurosciences*, 55(1), 71–74.
- Knight, R. A. (2012, October). *The role of the facets of psychopathy and hypersexuality among sex offending adults*. Paper presented at the 26th annual conference of the Society for Research in Psychopathology, Ann Arbor, Michigan.
- Knight, R. A., & Guay, J. P. (2006). The role of psychopathy in sexual offenders against women. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 512–532). New York, NY: Guilford.
- Lang, S., af Klinteberg, B., & Alm, P. O. (2002). Adult psychopathy and violent behavior in males with early neglect and abuse. *Acta Psychiatrica Scandinavica*, 106, 93–100.
- Larsson, H., Viding, E., Rijdsdijk, F., & Plomin, R. (2008). Relationships between parental negativity and childhood antisocial behavior over time: A bidirectional effects model in a longitudinal genetically informative design. *Journal of Abnormal Child Psychology*, 36(5), 633–645.
- Loney, B. R., Butler, M. A., Lima, E. N., Counts, C. A., & Eckel, L. A. (2006). The relation between salivary cortisol, callous-unemotional traits, and conduct problems in an adolescent non-referred sample. *Journal of Child Psychology and Psychiatry*, 47(1), 30–36. doi:10.1111/j.1469-7610.2005.01444.x
- Luntz, B., & Widom, C. (1994). Antisocial personality disorder in abused and neglected children grown up. *American Journal of Psychiatry*, 151(5), 670–674.
- Lykken, D. T. (2006). Psychopathic personality: The scope of the problem. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 3–13). New York, NY: Guilford.
- Manly, J. T., Kim, J. E., Rogosch, F. A., & Cicchetti, D. (2001). Dimensions of child maltreatment and children's adjustment: Contributions of developmental timing and subtype. *Development and Psychopathology*, 13(4), 759–782.
- MIDSA clinical manual. (2011). Bend, OR: Augur Enterprises.
- Neigh, G. N., Gillespie, C. F., & Nemeroff, C. B. (2009). The neurobiological toll of child abuse and neglect. *Trauma, Violence, & Abuse*, 10(4), 389–410.
- Ogloff, J. R. (2006). Psychopathy/antisocial personality disorder conundrum. *Australian & New Zealand Journal of Psychiatry*, 40(6/7), 519–528. doi:10.1111/j.1440-1614.2006.01834.x
- Pardini, D., Lochman, J., & Powell, N. (2007). The development of callous-unemotional traits and antisocial behavior in children: Are there shared and/or unique predictors? *Journal of Clinical Child and Adolescent Psychology*, 36(3), 319–333.
- Porter, S. (1996). Without conscience or without active conscience? The etiology of psychopathy revisited. *Aggression and Violent Behavior*, 1, 179–189.
- Poythress, N. G., Skeem, J. L., & Lilienfeld, S. O. (2006). Associations among early abuse,

- dissociation, and psychopathy in an offender sample. *Journal of Abnormal Psychology*, *115*(2), 288–297. doi:10.1037/0021-843x.115.2.288
- Reidy, D. E., Kearns, M. C., & DeGue, S. (2013). Reducing psychopathic violence: A review of the treatment literature. *Aggression and Violent Behavior*, *18*(5), 527–538.
- Salekin, R. D. (2006). Psychopathy in children and adolescents: Key issues in conceptualization and assessment. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 389–414). New York, NY: Guilford.
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. New York, NY: Houghton-Mifflin.
- Spiegel, D., & Cardena, E. (1991). Disintegrated experience: The dissociative disorders revisited. *Journal of Abnormal Psychology*, *100*(3), 366–378.
- Teicher, M. H., Samson, J. A., Polcari, A., & McGreener, C. E. (2006). Sticks, stones, and hurtful words: Relative effects of various forms of childhood maltreatment. *American Journal of Psychiatry*, *163*(6), 993–1000. doi:10.1176/appi.ajp.163.6.993
- van Goozen, S. H. M., & Fairchild, G. (2008). How can the study of biological processes help design new interventions for children with severe antisocial behavior? *Development and Psychopathology*, *20*(03), 941–973. doi:10.1017/S095457940800045X
- Viding, E., & McCrory, E. (2012). Genetic and neurocognitive contributions to the development of psychopathy. *Development and Psychopathology*, *24*(3), 969–983.
- Viding, E., Price, T. S., Jaffee, S. R., Trzaskowski, M., Davis, O. S. P., Meaburn, E. L., . . . Plomin, R. (2013). Genetics of callous-unemotional behavior in children. *PLoS One*, *8*(7), e65789. doi:10.1371/journal.pone.0065789
- Vitacco, M. J., Neumann, C. S., & Jackson, R. L. (2005). Testing a four-factor model of psychopathy and its association with ethnicity, gender, intelligence, and violence. *Journal of Consulting and Clinical Psychology*, *73*(3), 466–476.
- Vitacco, M. J., Rogers, R., Neumann, C. S., Harrison, K. S., & Vincent, G. (2005). A comparison of factor models on the PCL-R with mentally disordered offenders: The development of a four-factor model. *Criminal Justice and Behavior*, *32*(5), 526–545. doi:10.1177/0093854805278414
- Waldman, I. D. & Rhee, S. H. (2006). Genetic and environmental influences on psychopathy and antisocial behavior. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 205–228). New York, NY: Guilford.
- Weiler, B. L., & Widom, C. S. (1996). Psychopathy and violent behaviour in abused and neglected young adults. *Criminal Behaviour and Mental Health*, *6*(3), 253–271. doi:10.1002/cbm.99