



# Early maladaptive schemas in relation to facets of psychopathy and institutional violence in offenders with personality disorders

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**Purpose.** Current knowledge suggests that the psychopathy construct is multifaceted in nature, and reflects different underlying pathological mechanisms, including neurobiological dysfunction and maladaptive cognitions. Although many contemporary studies focus on neurobiological aspects of psychopathy, few have addressed the maladaptive cognitions.

**Method.** In this study, we examined facets of Hare's psychopathy construct in terms of their associations with maladaptive cognitions, as defined by Young's cognitive theory of Early Maladaptive Schemas (EMS). Personality disordered offenders ( $N = 124$ ) were assessed with the PCL-R and the Young Schema Questionnaire.

**Results.** The PCL-R Lifestyle and Antisocial Facets were significantly related to EMS Mistrust/Abuse and Insufficient Self-Control, consistent with our hypotheses, and were significantly, but negatively, related to EMS Subjugation. Also as hypothesized, EMS showed no associations with the PCL-R Affective and Interpersonal facets. Contrary to our expectation, EMS did not predict institutional violence.

**Conclusion.** Our findings suggest that schemas relating to mistrust, inadequate self-control/low frustration tolerance, and autonomy/dominance, play a role in the impulsive lifestyle and antisocial behaviour features of psychopathy. Treatments that focus on ameliorating these schemas may lead to better outcomes in psychopathic offenders.

Psychopathy affects about 0.6%–1.2% of the general population (Coid, Yang, Ullrich, Roberts, & Hare, 2009a; Neumann & Hare, 2008) and prevalence rates have been reported consisting of 7.7% for correctional settings in England and Wales (Coid *et al.*, 2009b; 15%–25% of the North-American forensic and correctional samples (Hare, 2003), and 24% of the Dutch forensic psychiatric samples (Hildebrand, Hesper, Spreen, &

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Nijman, 2005). According to Hare (1991), psychopathy can be defined as a constellation of interpersonal, affective, lifestyle, and antisocial characteristics. The personality features of psychopathy, such as lack of remorse, sensation seeking, and pathological lying are associated with a socially deviant lifestyle that includes criminal and violent behaviour. Hare's work on psychopathy resulted in a 20-item clinical rating scale to assess the core characteristics of psychopathy. The Psychopathy Checklist-Revised (PCL-R; Hare, 1991, 2003) has become a diagnostic standard for assessing psychopathy (Lynam & Gudonis, 2005). Recent studies, using structural equation modelling, suggest that the PCL-R can be broken down into four facets: An arrogant and manipulative interpersonal style (Interpersonal facet), deficient affective experience (Affective facet), impulsive and irresponsible behaviour (Impulsive facet), and specific antisocial behaviours (Antisocial facet; Hare, 2003; Neumann, Hare, & Newman, 2007). An alternative, hierarchical three-factor structure has been proposed in which there is less emphasis on criminal behaviour, using 13 PCL-R items divided over three facets: Arrogant and Deceitful Interpersonal Style, Deficient Affective Experience, and Impulsive and Irresponsible Behavioural Style (Cooke & Michie, 2001). The main difference between the four- and three-facets models is the omission of the items related to criminal behaviour (i.e., the Antisocial facet), as scholars hold different views on whether criminality is an integral part or merely a consequence of psychopathy (Hare & Neumann, 2010; Skeem & Cooke, 2010). The PCL-R has shown to be a good predictor of general and violent recidivism (Hemphill, Hare, & Wong, 1998; Leistico, Salekin, DeCoster, & Rogers, 2008).

Previous research suggests differential relationships of the PCL-R facets with external criterion-related domains. For example, the Interpersonal facet of the PCL-R has been associated with instrumental violence, social dominance, low stress reactivity, and higher adaptive functioning (Hall, Benning, & Patrick, 2004; Walsh, Swogger, & Kosson, 2009). Deficient affective experience found in psychopaths, as reflected by the Affective facet, has been associated with neurobiological deficits in the limbic and other brain regions (Blair, 2003; Kiehl *et al.*, 2001; Raine, Lencz, Bihrlé, LaCasse, & Colletti, 2000). The Lifestyle facet, including reactive aggression, has been shown to be associated with early traumatic experiences (Lang, af Klinteberg, & Alm, 2002; Poythress, Skeem, & Lilienfeld, 2006), serotonin dysfunction (Dolan & Anderson, 2003), and suicidal behaviour (Douglas *et al.*, 2008; Verona, Patrick, & Joiner, 2001). The Antisocial facet has been more strongly associated with crime-related behavioural outcome such as institutional violence, and general and violent recidivism than the other facets (Kennealy, Skeem, Walters, & Camp, 2010; Walters & Heilbrun, 2010; Walters, Knight, Grann, & Dahle, 2008).

Although most contemporary research suggests that dysfunctions in specific brain regions is central to psychopathic traits in offenders as measured with the PCL-R (e.g., Kiehl *et al.*, 2001; Tiihonen *et al.*, 2008; see Yang & Raine, 2009), little is known about the contribution of early developmental risk factors, such as childhood trauma, to psychopathic traits (Daversa, 2010). There is evidence from longitudinal studies in community samples that adverse experiences in childhood are associated with psychopathic traits in adulthood (Farrington, 2006; Lang *et al.*, 2002; Weiler & Widom, 1996). For example, in a 20-year follow-up study, Weiler and Widom (1996) compared 652 persons who were a documented victim of abuse and/or neglect during childhood (before the age of 11 years) with a matched control group ( $n = 489$ ) and found that the victims of childhood abuse and/or neglect had significantly higher PCL-R scores than the persons in the matched control group. Similarly, Lang *et al.* (2002) found that victimization in childhood was related to violence and high psychopathy scores in adulthood in a Scandinavian community sample ( $N = 199$ ). Also, results from the Cambridge Study in

Delinquent Development (Farrington, 2006), a 40-year prospective study following 411 males on the development of offending and antisocial behaviour from ages 8–48, suggest that adverse experiences (such as poor parental supervision, emotional and physical neglect) at ages 8–10 predicted high scores on the PCL Screening Version (PCL-SV; Hart, Cox, & Hare, 1995) in adulthood. There is also evidence from cross-sectional studies in offender samples that childhood trauma is associated with higher PCL-R scores (Graham, Kimonis, Wasserman, & Kline, 2012; Koivisto & Haapasalo, 1996; Marshall & Cooke, 1999; Poythress *et al.*, 2006; Weizmann-Henelius *et al.*, 2010). For example, in sample of 223 convicted sex offenders, Graham *et al.* (2012) found that childhood physical abuse and/or neglect based on archived evaluation reports was associated with a higher score on the PCL-R Antisocial Facet. Similar results linking childhood abuse to psychopathic features were found in a study of Poythress *et al.* (2006). In a sample of 615 prisoners and subjects court ordered to residential drug treatment, self-reported childhood abuse was significantly associated with both the PCL-R Impulsive Lifestyle Facet and the Antisocial Facet.

Although Antisocial Personality Disorder (APD) and psychopathy are distinct disorders (Ogloff, 2006), APD shares overlap with the behavioural characteristics (i.e., Lifestyle and Antisocial Facets) of psychopathy (Hare, 2003; Ogloff, 2006). For example, a diagnosis of APD is strongly correlated with PCL-R behavioural characteristics in North-American forensic psychiatric samples ( $r = .59$ ; Hart & Hare, 1989), as well as in Dutch forensic psychiatric samples ( $r = .65$ ; Hildebrand & de Ruiter, 2004). The literature on the relationship between early adverse experiences and APD may be relevant for the PCL-R Lifestyle and Antisocial facets. For example, early adverse experiences have been demonstrated to be a longitudinal risk factor for APD (Luntz & Widom, 1994) and offending in adolescence and/or adulthood (e.g., Lansford *et al.*, 2007; Maxfield & Widom, 1996; Smith & Thornberry, 1995; Thornberry, Ireland, & Smith, 2001). Also, longitudinal studies examining the interaction between genetic and environmental influences have found that childhood abuse is a strong risk factor for APD symptoms and antisocial behaviour in adulthood (e.g., Caspi *et al.*, 2002; Huizinga *et al.*, 2006), and that this relationship was moderated but not limited by genetic traits predisposing individuals towards impulsive, aggressive, and violence-related behavioural problems (Caspi *et al.*, 2002). These findings suggest that early adverse experiences are a risk factor for developing APD symptoms and antisocial behaviour in adulthood, for both individuals with and without the genetic traits towards such behaviour.

Most current interventions aimed at reducing aggressive behaviour and relapse prevention are based on cognitive-behavioural theories of psychopathology (Hollin & Palmer, 2006). Deviant cognitions play an important role in causing and maintaining violent and criminal behaviour. Beck, Freeman, and colleagues (1990) have hypothesized that maladaptive cognitions develop in early childhood under the influences of adverse life experiences and play a central role in personality disorders, including those that are prevalent in forensic settings, such as Antisocial, Borderline, and Narcissistic Personality Disorders. According to Beck and colleagues (1990), highly antisocial individuals are more likely to manifest maladaptive cognitions that emphasize immediate personal satisfaction while minimizing future consequences, and they are more likely to be highly distrusting and have a hostile view of the world in terms of predators and prey. However, thus far, there have been few attempts in the scientific literature to apply or test cognitive models of psychopathy.

Young and colleagues (Young, Klosko, & Weishaar, 2003), building on the work of Beck *et al.* (1990), developed a cognitive theory for personality disorders based on early

maladaptive schemas (EMS; see Table 1). According to Young *et al.* (2003), EMS are chronic, maladaptive patterns of cognition and affect that originate in adverse childhood experiences and early temperament that, in combination with maladaptive coping responses, influence interpersonal interactions and guide behaviour. Young *et al.* (2003) hypothesized that EMS lie at the core of personality disorders, and externalizing behaviours are primarily maladaptive coping responses to EMS. The theory on EMS may also be relevant for personality disordered offenders and to other severe personality disturbances, such as psychopathy (Bernstein, Arntz, & de Vos, 2007; Bernstein *et al.*, in press).

Young *et al.* (2003) stated no specific hypotheses about EMS that may be prevalent in APD or psychopathy. However, following Beck and colleagues (1990) theory on maladaptive cognitions in APD, several authors suggested specific EMS incorporated in the YSQ such as Mistrust/Abuse, Emotional Inhibition, Entitlement and Insufficient Self-Control that may be relevant for aggressive, antisocial behaviour (e.g., Ball & Cecero, 2001; Tremblay & Dozois, 2009). To our knowledge, there has been no study investigating EMS in offenders high on psychopathy and/or violent offenders with personality disorders. However, there has been one study investigating EMS in a sample of DSM-IV cluster B (opiate dependent) personality disordered patients; Ball and Cecero (2001) found support for the relationship between Mistrust/Abuse, Emotional Inhibition, and

**Table 1.** Description of the early maladaptive schemas proposed by Young (1994)

Schema domain and scales	Description
Disconnection/Rejection	
Emotional deprivation	Belief that one's emotional needs will not adequately be met by others
Abandonment	Expectation of being abandoned by significant others
Mistrust/Abuse	Expectation of being abused, mistreated, or cheated by others
Social isolation	Belief of being different for other people, being isolated from the rest.
Defectiveness/Shame	Belief of being defective or inferior in important aspects
Impaired Autonomy/Performance	
Failure to achieve	Belief of being fundamentally inadequate and will inevitably fail
Dependence/Incompetence	Belief of being incompetent in handling daily responsibilities without help
Vulnerability	Belief that emotional or medical catastrophe will be imminent
Enmeshment	Belief that to survive, excessive emotional involvements are necessary
Impaired limits	
Entitlement	Expectation that one is superior, and can act without regard for others
Insufficient self-control	Pervasive difficulty to exercise self-control or frustration tolerance
Other-directedness	
Subjugation	Belief that one must be excessive compliant to avoid anger or abandonment
Self-sacrifice	Belief that one must meet the needs of others, at expense of their own needs
Over-vigilance/Inhibition	
Emotional inhibition	Belief that one must inhibit spontaneous action, feelings or communications
Unrelenting standards	Belief that one must meet very high standards of behaviour and performance

APD symptoms. Also, some support has been found in non-clinical samples for the relationship between the EMS and aggression. For example, one study found an association between Entitlement and self-reported aggressive behaviour in a large non-clinical adolescent sample ( $N = 974$ ; Calvete & Orue, 2011), and two other studies in large undergraduate samples ( $N = 407$ – $848$ ) found significant relationships between self-reported aggression and the EMS Mistrust/Abuse, Insufficient Self-Control, and Entitlement (Calvete, Estevez, de Arroyabe, & Ruiz, 2005; Tremblay & Dozois, 2009).

Overall, this body of literature suggests that early adverse experiences may be a potentially relevant aetiological factor in the development of psychopathy, particularly in its antisocial and impulsive lifestyle components, and thus it is important to examine whether the cognitive sequelae of early adverse experiences, in terms of maladaptive schemas (Beck et al., 1990; Young et al., 2003), are related to psychopathic traits in adulthood. More specifically, the EMS Mistrust/Abuse, Emotional Inhibition, Entitlement, and Insufficient Self-Control are hypothesized to underlie antisocial behaviour in adulthood (Beck et al., 1990). Therefore, in this study the following hypotheses were derived: (1) in light of previous findings (Kennealy et al., 2010; Walters & Heilbrun, 2010; Walters et al., 2008), as well as theoretical considerations (Beck et al., 1990; Young et al., 2003), we hypothesized that EMS Mistrust/Abuse, Emotional Inhibition, Entitlement, and Insufficient Self-Control predicted the PCL-R Impulsive Lifestyle and the Antisocial Behaviour Facets. In contrast, (2) no relationship is expected between EMS and the PCL-R Affective facet. There is evidence that the PCL-R Affective facet has a strong neurobiological basis (e.g., Raine et al., 2000), and that callous–unemotional traits in children have a strong genetic basis (Viding, Blair, Moffitt, & Plomin, 2005). Given the neurobiological basis of psychopaths' affective deficits, we expected that this facet would be essentially independent of the EMS incorporated in the YSQ. Also, (3) we hypothesized that the PCL-R Interpersonal facet would show little or no correlation with EMS because the PCL-R Interpersonal facet reflects deviant coping responses or maladaptive social functioning associated with social dominance and low stress reactivity (Hall et al., 2004), rather than maladaptive cognitive schemas. Finally, (4) we hypothesized that EMS Mistrust/Abuse, Emotional Inhibition, Entitlement, and Insufficient Self-Control will have incremental validity above the PCL-R Impulsive Lifestyle Facet and the PCL-R Antisocial Facet in predicting institutional violence in sample of personality disordered offenders over a follow-up period of 2 years.

## Method

### Sample

Subjects were 124 male offenders, involuntarily admitted to a forensic psychiatric hospital under the Dutch judicial measure of 'TerbeschikkingStelling' imposed on offenders who have committed serious offences, carrying a punishment of at least 4 years imprisonment, and who suffer from a mental disorder according to DSM-IV. Subjects met diagnostic criteria for one or more DSM-IV personality disorder(s). Mean age of the sample was 37.5 years ( $SD = 8.9$ ,  $range = 22$ – $58$ ), and 77.3% of the patients were of Dutch origin. One per cent of the sample was of Eastern European origin, and 21.7% were of non-European origin (e.g., Turkey, Morocco, Brazil). In the sample, 43.5% of the patients were convicted for (attempted) homicide, 18.5% for sexual offences, 28.2% for violent theft, robbery, and assault, and 9.7% for arson. DSM-IV Axis I and Axis II diagnoses were extracted from the patient files, which are based on clinical and/or semistructured interview diagnoses made by psychiatrists and clinical psychologists. The most prevalent

personality disorder (PD) in the sample was a mixed PD or PD Not Otherwise Specified (56.5%), followed by Antisocial PD (32.2%), Borderline PD (16.9%), Narcissistic PD (9.7%), and Paranoid PD (2.4%). Other PDs were not present. Regarding Axis I diagnosis, 78.2% met criteria for at least one substance use disorder, 18.5% met criteria for attention deficit and disruptive behaviour disorders, 12.9% for mood disorders, 9.7% for impulse control disorders, and 7.3% for other DSM-IV Axis I disorder categories.

## Materials

### Young schema questionnaire

The Young Schema Questionnaire (YSQ; Young & Brown, 1994; Dutch version: Sterk & Rijkeboer, 1997; Young & Pijnaker, 1999) is a self-report instrument designed to assess early maladaptive schemas. It consists of 205 items, each rated from 1 (completely untrue) to 6 (describes me perfectly). Subjects have to endorse how well a statement describes them (e.g., I subscribe to the belief: 'Control or be controlled'). The items are divided among 15 subscales in five broad domains (see Table 1). The first domain is labelled *Disconnection/Rejection* and consists of the scales: *Emotional Deprivation, Abandonment, Mistrust/Abuse, Social Isolation, Defectiveness/Shame*. The second domain is called *Impaired Autonomy/Performance* and contains the scales: *Failure to Achieve, Dependence/Incompetence, Vulnerability to Harm, Enmeshment*. The third domain is labelled *Impaired Limits* and consists of the scales: *Entitlement* and *Insufficient Self-Control*. The fourth domain labelled *Other-Directedness*, consists of the scales: *Subjugation* and *Self-Sacrifice*. The last domain is labelled *Over-vigilance/Inhibition*, which consists of the scales: *Emotional Inhibition* and *Unrelenting Standards*. The overall score on each subscale or domain is obtained by calculating the mean of the items in that scale or domain. For all subscales and domains, a higher score reflects a more maladaptive and pervasive core belief. The 15 EMSs emerged as primary factors in a study by Schmidt, Joiner, Young, and Telch (1995) in a student sample ( $N = 1129$ ) and a clinical sample ( $N = 187$ ), and similar factor structure results were obtained by Lee, Taylor, and Dunn (1999) in an Australian clinical sample ( $N = 433$ ). Schmidt *et al.* (1995) also demonstrated that the YSQ primary factors had adequate test-retest coefficients (range of  $r = .50-.82$ ) and adequate internal consistency (range of  $\alpha = .83-.96$ ). Research on the Dutch version of the YSQ in a combined sample of clinical and non-clinical populations shows that the Dutch version has adequate reliability, including test-retest (range of  $r = .68-.86$ ; Rijkeboer, van den Bergh, & Van den Bout, 2005) and internal consistency reliability (range of  $\alpha = .76-.95$ ; Rijkeboer & van den Bergh, 2006). Furthermore, the Dutch YSQ showed good discriminating power, in terms of predicting whether subjects were clinical or non-clinical (88.3% correctly classified; Rijkeboer *et al.*, 2005).

In this study, we combined two separately translated versions of the Dutch YSQ, both of which had been used at different times for the clinical assessment of patients at the hospital. The first version, which was introduced in the centre in 2001, was published in an appendix to the Dutch version of *Schema Therapy: A Practitioner's Guide* (Young & Pijnaker, 1999). The second version was separately translated and validated by Rijkeboer and colleagues (Sterk & Rijkeboer, 1997). It was adopted by the hospital in 2005 because of its strong reliability and validity in other Dutch samples (Rijkeboer & van den Bergh, 2006; Rijkeboer *et al.*, 2005). The two versions differ in semantic sentence structure and item dispersion (e.g., random dispersion vs. ordered by schema domain). In our sample, we found no differences between the two versions in internal consistency (Version 1: range of  $\alpha = .76-.96$ , average  $\alpha = .88$ ; and Version 2: range of  $\alpha = .81-.97$ , average

$\alpha = .89$ ) and item homogeneity (Version 1: range of  $r = .21-.58$ , average  $r = .35$ ; and Version 2: range of  $r = .29-.58$ , average of  $r = .37$ ). Thus, because their psychometric properties appeared to be comparable, we felt justified to combine the data of the two questionnaire versions for this study purposes.

#### *Psychopathy checklist–revised*

The Psychopathy Checklist–Revised (PCL-R; Hare, 1991, 2003; Dutch version: Vertommen, Verheul, de Ruiter, & Hildebrand, 2002) is a 20-item clinical construct rating scale designed to assess psychopathy in forensic populations. Each item is rated on a scale from 0 to 2 (0 = *does not apply*, 1 = *applies to some extent*, 2 = *definitely applies*). The PCL-R provides a dimensional total score between 0 and 40 indicating the degree to which the individual matches the prototypical psychopath. In this study, we report results based on the PCL-R four-facet model (Hare, 2003) given its relationship with antisocial and violent outcome (Kennealy *et al.*, 2010; Walters & Heilbrun, 2010; Walters *et al.*, 2008). The PCL-R four-facet model consists of the alternative three-factor model (Cooke & Michie, 2001) and the Antisocial facet as a fourth facet.

#### **Institutional violence**

In this study, a modified version of the Overt Aggression Scale (OAS; Yudofsky, Silver, Jackson, Endicott, & Williams, 1986) for use in forensic clinical practice was used (Nicholls, Brink, Desmarais, Webster, & Martin, 2006) for measuring institutional violence. The modified version of the OAS expands on the original four categories in the OAS (i.e., verbal aggression, physical aggression against objects, physical aggression against self, and physical aggression against other people) by adding several other categories that may be relevant for forensic patients, such as self-neglect, substance abuse, sexual aggression, unauthorized leave, and suicidal behaviour (Nicholls *et al.*, 2006). Following the categorization of Hildebrand, de Ruiter, and Nijman (2004) of institutional violence in a comparable sample, the following dimensions from the modified version were summed to obtain a score for institutional violence: (1) verbal aggression; (2) physical aggression; and (3) violations of hospital rules (i.e., unauthorized leave and substance abuse). Prior research showed that the modified version of the OAS can be reliably coded (intraclass correlation coefficient = .70; Nicholls *et al.*, 2006). In the sample, 88.7% has demonstrated acts of institutional violence during the follow-up period with an average of 12.0 acts ( $SD = 15.1$ ) per patient.

#### **Procedure**

All patients admitted to the hospital during the period between 1 March 2000 and 2 February 2009 were initially screened for eligibility in this study. Initially, 193 patients were evaluated for participation, which included the presence of at least one DSM-IV personality disorder. Sixty-nine patients with borderline intellectual functioning, psychotic, paraphilic, and autism spectrum disorders were excluded. The resulting sample consists of 124 personality disordered offenders and represents 64.3% of the total sample. Patients completed the YSQ at admission, as part of the hospital intake procedure. PCL-R assessments were performed during the course of treatment ( $M = 1.9$  years after admission,  $SD = 1.8$ ) by two certified and independent raters. In 48.4% of the cases, PCL-R assessments were based on an interview combined with information from the hospital

files containing criminal records, mental health reports, violence risk assessments, medical information, treatment progress reports, and reports from psychiatric nurses, social workers, work- and education supervisors. The PCL-R assessments in the other cases (51.6%) were based on the file-only procedure. For 112 cases, data on interrater reliability for the PCL-R total score were available revealing an average measure ICC of .80.

Official registration of institutional misconduct was used to code aggressive behaviours on the modified OAS scale. Possible antecedents, motive, and a detailed description of the observed misconduct were registered by psychiatric nurses at each occurrence. To classify this misconduct in terms of type and severity, all misconducts were recoded by a rater (a Master's-level research assistant) with the English version of the modified OAS scale (Nicholls *et al.*, 2006). To ensure a prospective design, all misconducts that occurred prior to the assessment of the YSQ and/or PCL-R were eliminated from the analyses. Prior research in a larger sample showed that the modified version of the OAS can be reliably coded in the study setting (intraclass correlation coefficient = .83; Chakhssi, de Ruiter, & Bernstein, 2010). Written informed consent was obtained from the patients prior to the assessments and approval for the study was obtained from the institutional research review committee.

### **Statistical analysis**

Internal consistency was examined using Cronbach's alpha for the YSQ domains as well as for the YSQ scales (EMS). Mean interitem correlations were used as a measure of item homogeneity. Zero-order correlations using Pearson's  $r$  were calculated to examine the relationship between PCL-R facets and EMS. Type I error inflation was controlled by using the Finner correction for multiple comparisons (Finner, 1993). The Finner correction is an adjustment of the Bonferroni correction and uses a sequential rejective procedure that is based on the ordered  $p$ -values of the individual comparisons. The Finner correction has been demonstrated to be less conservative but more powerful than the traditional Bonferroni correction and has a lower Type II error rate (Finner & Strassburger, 2002). Given the paucity of empirical data on EMS in offenders with psychopathic traits, we corrected for multiple comparisons per PCL-R facet. This way, our study may detect significant associations between other EMS and PCL-R facets that may otherwise have gone unnoticed and may provide promising leads for future studies.

Multiple stepwise linear regression analyses were used to examine the relative contributions of the hypothesized EMS to the PCL-R facet scores. Also, multiple stepwise linear regression analyses were used to examine the association between PCL-R facets and institutional violence, and the association between EMS and institutional violence. Hierarchical regression analysis was then used to examine the incremental validity of the hypothesized EMS above PCL-R facets in predicting institutional violence. All statistical analyses were performed using the Statistical Package for the Social Sciences, version 13.0 (SPSS Inc, 2005).

### **Results**

In this sample, the mean PCL-R score was 22.47 ( $SD = 6.61$ ). Fourteen patients had a PCL score  $\geq 30$ , and 44 patients had a PCL score  $\geq 25$ . For the PCL-R facets as defined by Hare (2003), the mean score for the Interpersonal facet was 3.74 ( $SD = 2.08$ ), 5.79 ( $SD = 1.91$ ) for the Affective facet, 5.41 ( $SD = 2.34$ ) for the Impulsive lifestyle facet, and 5.56 ( $SD = 2.64$ ) for the Antisocial facet. For descriptive purposes, means, standard deviations,



internal consistency (Cronbach's alpha), and mean inter-item correlation for the YSQ higher order domains and scales are provided in Table 2. Overall, the internal consistency was high, ranging from  $\alpha = .82$  for the YSQ *Subjugation* scale to  $\alpha = .97$  for the higher order YSQ schema domain *Disconnection/Rejection*. The mean interitem correlations per scale were also satisfactory and ranged from .26 for the YSQ *Other-Directedness* domain to .58 for the YSQ *Emotional Deprivation* scale.

Significant zero-order correlations were found for the PCL-R Impulsive Lifestyle and Antisocial facets with EMS (see Table 3) after Finner correction for multiple comparisons. Inspection of Table 3 shows that for the PCL-R Impulsive Lifestyle facet, 4 of 15 possible correlations with the EMS were significant. The PCL-R Antisocial facet was significantly associated with the *Mistrust/Abuse* schema. The PCL-R Interpersonal facet and Affective facet showed no significant correlations with EMS.

For both the PCL-R Impulsive Lifestyle facet and the PCL-R Antisocial facet, stepwise multiple regression analysis was performed with all the EMS entered as predictors, to examine if the hypothesized EMS would emerge as independent predictors.

For the PCL-R Impulsive Lifestyle facet, the regression analysis revealed that three EMS explained 19.2% ( $r^2$  adjusted) of the variance [ $F(3, 120) = 10.77, p < .01$ ]. It was found that Insufficient Self-Control significantly predicted the PCL-R Impulsive Lifestyle facet [ $\beta = .45, t(120) = 3.64, p < .01$ ], as did Subjugation [ $\beta = -.39, t(120) = -3.50, p < .01$ ] and Mistrust/Abuse [ $\beta = .24, t(120) = 2.17, p = .032$ ]. In other words, high Insufficient Self-Control, high Mistrust/Abuse, and low levels of Subjugation predicted higher PCL-R Impulsive facet scores.

For the PCL-R Antisocial facet, the regression analysis revealed Mistrust/Abuse [ $\beta = .32, t(120) = 2.85, p < .01$ ], Subjugation [ $\beta = -.47, t(120) = -4.12, p < .01$ ],

**Table 2.** Mean scores, standard deviations, item homogeneity, and internal consistency of the YSQ domains in a sample of personality disordered offenders ( $n = 124$ )

Schema domain and scales	Nit	M	SD	$\alpha$	MIC
Disconnection/Rejection	69	2.02	0.81	.97	.31
Emotional deprivation	9	2.46	1.33	.92	.58
Abandonment	18	1.99	0.94	.92	.39
Mistrust/Abuse	17	2.24	1.01	.92	.40
Social isolation	10	1.84	0.90	.85	.40
Defectiveness/Shame	15	1.59	0.76	.90	.38
Impaired autonomy/Performance	49	1.70	0.71	.96	.34
Failure to Achieve	9	1.86	0.99	.89	.50
Dependence/Incompetence	15	1.70	0.76	.90	.40
Vulnerability	14	1.69	0.73	.86	.33
Enmeshment	11	1.58	0.69	.84	.32
Impaired limits	26	2.02	0.74	.91	.27
Entitlement	11	1.98	0.80	.83	.31
Insufficient self-control	15	2.06	0.85	.88	.32
Other-directedness	27	2.20	0.74	.89	.26
Subjugation	10	1.79	0.77	.82	.36
Self-sacrifice	17	2.62	0.87	.86	.27
Over-vigilance/Inhibition	25	2.19	0.83	.90	.27
Emotional inhibition	9	2.10	1.01	.85	.39
Unrelenting standards	16	2.28	0.87	.86	.38

Note. Nit = Number of items;  $\alpha$  = internal consistency; MIC = mean interitem correlation.

**Table 3.** Zero-order correlations between PCL-R facets and EMSs

Schema scales	PCL-R facets			
	Interpersonal	Affective	Impulsive lifestyle	Antisocial
Emotional deprivation	-.03	-.08	.17	.08
Abandonment	-.08	-.05	.19	.13
Mistrust/Abuse	.04	-.02	.32**	.28*
Social isolation	-.03	.00	.24*	.06
Defectiveness/Shame	-.05	-.09	.16	-.02
Failure to achieve	-.10	-.04	.21	-.03
Dependence/Incompetence	-.06	.07	.22*	.09
Vulnerability	.01	.00	.17	.03
Enmeshment	-.01	.07	.18	.04
Entitlement	.01	-.15	.20	.16
Insufficient self-control	-.15	-.02	.34**	.22
Subjugation	-.14	-.14	.04	-.07
Self-sacrifice	.02	-.07	.03	-.05
Emotional inhibition	-.14	-.13	.13	.04
Unrelenting standards	.09	.00	.03	.07

Note. \* $p < .05$ ; \*\* $p < .01$  (two-tailed), all  $p$ -values Finner corrected.

and Insufficient Self-Control [ $\beta = .33$ ,  $t(120) = 2.65$ ,  $p < .01$ ], significantly predicted the PCL-R Antisocial Lifestyle facet, accounting for 17.3% ( $r^2$  adjusted) of the variance [ $F(3, 120) = 9.59$ ,  $p < .01$ ]. Thus, high Insufficient Self-Control, high Mistrust/Abuse, and low levels of Subjugation predicted higher PCL-R Antisocial facet scores.

To examine the assumption that the hypothesized EMS would not be related to the PCL-R Affective and Interpersonal facets, additional multiple regression analyses were performed using the same procedure as above. These analyses revealed no significant overall models (all  $p$ 's  $> .05$ ) and no significant predictors (all  $\beta$ ,  $p$ 's  $> .05$ ) for the PCL-R Interpersonal and Affective facets.

Next, we performed a multiple regression analysis with all the PCL-R facets entered as predictors and institutional violence as the dependent variable. The results showed that only the PCL-R Antisocial Facet emerged as a significant predictor [ $\beta = .20$ ,  $t(119) = 2.05$ ,  $p = .043$ ], but not the other PCL-R facets (all  $\beta$ ,  $p$ 's  $> .05$ ), explaining 12.2% of the variance ( $r^2$  adjusted) in institutional violence [ $F(4, 119) = 5.29$ ,  $p = .001$ ]. Also, a stepwise multiple regression analysis was performed with all EMS entered as predictors and institutional violence as the dependent variable. The results showed that the overall model was not significant and no EMS emerged as a significant predictor. Given these findings, additional analyses to examine the incremental validity of the EMS above the PCL-R Impulsive Lifestyle and Antisocial facet in predicting institutional violence were not performed.

## Discussion

This study examined the association between early maladaptive schemas, psychopathy facets, and institutional violence in an inpatient sample of personality disordered offenders. The findings show that early maladaptive schemas of Mistrust/Abuse, Insufficient Self-Control, and Subjugation were significantly related to the PCL-R Impulsive

Lifestyle and Antisocial facets, consistent with Beck et al.'s (1990) hypotheses on maladaptive cognitions in highly antisocial individuals, and also in line with prior research that severity of APD symptoms is associated with early maladaptive schemas (Ball & Cecero, 2001). These schemas refer to a high level of mistrust and a hostile view of the world in terms of predators and prey (Mistrust/Abuse), to inadequate self-control and low frustration tolerance (Insufficient Self-Control), and to a strong need for autonomy and dominance (the inverse relationship with Subjugation). However, contrary to expectation, no relationship was found between the early maladaptive schema Entitlement and the PCL-R facets. This finding is consistent with previous research in personality disordered patients (Ball & Cecero, 2001), but in contrast to findings from studies examining the association between Entitlement and self-reported aggressiveness in students (Calvete *et al.*, 2005; Tremblay & Dozois, 2009) and adolescents (Calvete & Orue, 2011).

Interestingly, Subjugation emerged as a significant negative predictor in the regression analyses for both the Impulsive Lifestyle and the Antisocial facet, instead of the hypothesized EMS Emotional Inhibition, but was not significantly associated with these facets in the zero-order correlation analyses. This may be explained by the intercorrelation among the EMS (Rijkeboer & van den Bergh, 2006) and, therefore, the partial information provided by the zero-order correlation was not sufficient to assess the unique contributions of the EMS. As suggested by Meehl (1945), theoretically relevant variables, including those variables that may be uncorrelated with the outcome variable in bivariate analyses, should not be dismissed for subsequent multivariate analyses, and may improve the predictive power of the regression model by partialling out invalid variance of the other predictors included in the model. Thus, in addition to the Finner corrected bivariate analyses, we used a multivariate approach to examine the unique associations of EMS with the PCL-R facets, while simultaneously controlling for all other EMS. Subjugation emerged as a significant predictor in both multivariate analyses for the PCL-R facets which suggest that this was not a 'chance' finding and may have theoretical relevance (Paulhus, Robins, Trzesniewski, & Tracy, 2004). An explanation could be that the Subjugation EMS refers to the feeling that one has to be excessively compliant in relationships, at the expense of one's own needs and emotions, to gain self-esteem and to avoid conflict (Young *et al.*, 2003). The opposite, given the negative direction of the association, would probably be best described as individuals who do not want to be subjugated and may rebel against others who are subjugating or coercing them. In other words, they are egocentric (non-compliant in relationships), experience authority as restrictive and arbitrary, prone to override others' needs, and wants resulting in frequent interpersonal conflicts. This description closely resembles the Antisocial, Interpersonal and/or Impulsive lifestyle features of psychopathy, and this could explain why it emerged as a significant predictor.

Consistent with our second hypothesis, our findings showed that the PCL-R Affective facet was independent of EMS. As suggested by Blair (2003), the dysfunctional neural structures, most likely the amygdala, implicated in the affective impairment of psychopathy, probably are a manifestation of genetic traits. Although Young (1994) hypothesized that EMS may develop partially under temperamental influences, no relationship was expected and found between the specific emotional deficits incorporated in the PCL-R Affective facet and EMS domains. As expected in our third hypothesis, we found no relationship between EMS domains and the PCL-R Interpersonal facet.

Our fourth hypothesis was not supported. Although previous research has shown that early adverse experiences are related to antisocial behaviour in adulthood (e.g., Caspi *et al.*, 2002; Weiler & Widom, 1996), their cognitive sequelae, in terms of maladaptive schemas, were not related to institutional violence in our sample. As stated earlier,

externalizing behaviours can be considered as maladaptive coping responses to EMS (Young *et al.*, 2003). The maladaptive coping responses are not as stable as EMS and may change depending on the current life situation and events that activate EMS. Future research should examine whether EMS-related maladaptive coping strategies are related to antisocial behaviour, and/or if the emotional state-related manifestations of EMS, called schema modes, are related to antisocial behaviour. Schema modes account for the rapid changes in mood and behaviour observed in personality disordered patients when EMS are triggered in specific situations (Lobbestael & Arntz, 2010). For example, antisocial patients may 'switch' between states of vigilance and aggression depending on the intensity and/or imminence of the anger triggering event (Lobbestael, Arntz, Cima, & Chakhssi, 2009).

Our findings provide preliminary evidence that maladaptive cognitive schemas, presumably based on early childhood adversity, may play a role in psychopathy, particularly in its antisocial and impulsive lifestyle components. Psychopathic individuals have been described as highly distrusting, viewing the world in terms of predators and prey, victimizers and victims (Beck *et al.* (1990)). Such cognitive schemas may arise under conditions where children are subjected to and/or witness to violence, are left unsupervised and unprotected, and experience instability and deprivation. Abuse and/or neglect experiences and their sequelae, in terms of cognitive schemas, do not play a role in most contemporary models of psychopathy, which tend to emphasize neuropsychological deficits in impulse control, affect recognition/regulation, and conditioned learning (e.g., Blair, 2003).

Our study has several limitations that should be taken into account. First, despite the clinical relevance of our findings, the effect sizes ranged from small to moderate. The largest effects were demonstrated for the Lifestyle facet, where 19% of the variance was explained by the EMS. One explanation of the modest degree of variance explained could be that the variance in YSQ scores in our sample was limited in comparison to what has been found in non-forensic clinical samples (where the *SDs* ranged from 0.75 to 1.26; Rijkeboer *et al.*, 2005), which may be a consequence of forensic patients' well-known tendency to minimize pathology on self-report inventories (Rogers, 1997). Thus, restriction of the range of YSQ scores may have led to an underestimation of the actual relationships between schemas and psychopathic features. Second, data from two versions of the YSQ were used in this study. Our preliminary analyses showed that the versions were psychometrically equivalent and nothing in our results suggested methodological ramifications. However, it would be preferable to use a single version of the YSQ in future studies. Third, we relied on self-report exclusively for the assessment of schemas. Although the Dutch version of the YSQ is extensively validated (Rijkeboer *et al.*, 2005), self-report is an explicit way of accessing cognitive schemas, and future studies should add experimental paradigms such as tests of implicit cognitions. Our findings on the association between psychopathic traits and maladaptive schemas should be interpreted cautiously until they are replicated in larger samples with both explicit and implicit measures. Fourth, we investigated the relationship of schemas and psychopathy in a forensic sample of personality disorder patients. The relationships between these variables might be different in a sample that also included non-offenders with psychopathic features. Finally, our design was correlational in nature and this limits the ability to ascertain whether the associations between EMS domains and psychopathy facets are causally related or merely due to shared developmental factors in childhood. No conclusions can be drawn about the causal role of cognitive schemas in psychopathy without further longitudinal and experimental studies that investigate the mechanisms responsible for these associations.

In conclusion, our findings suggest that maladaptive cognitive schemas may play a greater role in psychopathic traits than has been previously recognized. Future studies should further elucidate the cognitive schemas of personality disordered offenders with psychopathic traits, with the aim of informing more effective treatments for this challenging patient group. Whereas genetically based neuropsychological deficits may not be as susceptible to change, cognitive schemas have proven to be modifiable in a broad range of mental disorders, including externalizing disorders such as substance abuse and borderline personality disorder (e.g., Ball, 2007; Farrell, Shaw, & Webber, 2009; Giesen-Bloo *et al.*, 2006; Nadort *et al.*, 2009). For example, in a randomized clinical trial of borderline personality disordered outpatients ( $N = 86$ ), 3 years of Schema Therapy (ST; Young *et al.*, 2003) proved to be effective in reducing symptoms and improving general functioning (Giesen-Bloo *et al.*, 2006). Almost half of the patients receiving ST were judged to be recovered from borderline personality disorder pathology, and 66% showed clinically significant improvement (Giesen-Bloo *et al.*, 2006). Similar results have been reported in another randomized controlled trial (Farrell *et al.*, 2009) and an open trial (Nadort *et al.*, 2009), in which between 42% and 94% of the patients were judged to have recovered from their borderline personality disorders symptoms or to have made clinically significant improvements.

Treatments which target maladaptive schemas may enable some personality disordered patients with psychopathic traits to develop more balanced and accurate appraisals of other persons' intentions, and to better cope with situations that would otherwise have triggered schema-related aggression. Treatments that focus on reprocessing early traumas may help to lessen the severity of maladaptive schemas by decreasing the intensity of the memories, affects, and cognitions associated with them. Thus, our findings raise the possibility that cognitive, trauma-focused treatments may enable some personality disordered patients with psychopathic features to achieve greater control over antisocial and impulsive behaviour. As a logical next step, these potentially valuable avenues in the treatment of patients with psychopathic traits are now being explored in a randomized clinical trial comparing Schema Focused Treatment with treatment as usual in personality disordered offenders detained under the Dutch TBS-order (Bernstein *et al.*, in press).

## References

- Ball, S. A. (2007). Comparing individual therapies for personality disordered opioid dependent patients. *Journal of Personality Disorders*, *21*, 305–321. doi:10.1521/pedi.2007.21.3.305
- Ball, S. A., & Cecero, J. J. (2001). Addicted patients with personality disorders: Traits, schemas, and presenting problems. *Journal of Personality Disorders*, *15*, 72–83. doi:10.1521/pedi.15.1.72.18642
- Beck, A. T., Freeman, A., & Associates (1990). *Cognitive therapy of personality disorders*. New York: Guilford.
- Bernstein, D. P., Arntz, A., & de Vos, M. E. (2007). Schema-focused therapy in forensic settings. *International Journal of Forensic Mental Health*, *6*, 169–183.
- Bernstein, D. P., Nijman, H. L. I., Karos, K., Keulen-de Vos, M., de Vogel, V., Lucker, T. P., & Arntz, A. (in press). Treatment of personality disordered offenders in the Netherlands: A multicenter randomized clinical trial on the effectiveness of schema therapy. *International Journal of Forensic Mental Health*.
- Blair, R. J. R. (2003). Neurobiological basis of psychopathy. *British Journal of Psychiatry*, *182*, 5–7. doi:10.1192/bjp.182.1.5

- Calvete, E., Estevez, A., de Arroyabe, E. L., & Ruiz, P. (2005). The schema questionnaire-short form-structure and relationship with automatic thoughts and symptoms of affective disorders. *European Journal of Psychological Assessment, 21*, 90–99. doi:10.1027/1015-5759.21.2.90
- Calvete, E., & Orue, I. (2011). Social information processing as a mediator between cognitive schemas and aggressive behavior in adolescents. *Journal of Abnormal Child Psychology, 40*, 105–117. doi:10.1007/s10802-011-9546-y
- Caspi, A., McClay, J., Moffitt, T. E., Mill, J., Martin, J., Craig, I. W., ... Poulton, R. (2002). Role of genotype in the cycle of violence in maltreated children. *Science, 297*, 851–854. doi:10.1126/science.1072290
- Chakhssi, F., de Ruiter, C., & Bernstein, D. (2010). Reliability and validity of the Dutch version of the behavioural status index: A nurse-rated forensic assessment tool. *Assessment, 17*, 158–169. doi:10.1177/1073191109338815
- Coid, J., Yang, M., Ullrich, S., Roberts, A., & Hare, R. D. (2009a). Prevalence and correlates of psychopathic traits in the household population of Great Britain. *International Journal of Law and Psychiatry, 32*, 65–73. doi:10.1016/j.ijlp.2009.01.002
- Coid, J., Yang, M., Ullrich, S., Roberts, A., Moran, P., Bebbington, P., ... Hare, R. D. (2009b). Psychopathy among prisoners in England and Wales. *International Journal of Law and Psychiatry, 32*, 134–141. doi:10.1016/j.ijlp.2009.02.008
- Cooke, D. J., & Michie, C. (2001). Refining the construct of psychopathy: Towards a hierarchical model. *Psychological Assessment, 13*, 171–188. doi:10.1037/1040-3590.13.2.171
- Daversa, M. T. (2010). Early environmental predictors of the affective and interpersonal constructs of psychopathy. *International Journal of Offender Therapy and Comparative Criminology, 54*, 6–21. doi:10.1177/0306624X08328754
- Dolan, M. C., & Anderson, I. M. (2003). The relationship between serotonergic function and the psychopathy checklist: Screening version. *Journal of Psychopharmacology, 17*, 216–222. doi:10.1177/0269881103017002011
- Douglas, K. S., Lilienfeld, S. O., Skeem, J. L., Poythress, N. G., Edens, J. F., & Patrick, C. J. (2008). Relation of antisocial and psychopathic traits to suicide-related behavior among offenders. *Law and Human Behavior, 32*, 511–525. doi:10.1007/s10979-007-9122-8
- Farrell, J. M., Shaw, I. A., & Webber, M. A. (2009). A schema-focused approach to group psychotherapy for outpatients with borderline personality disorder: A randomized controlled trial. *Journal of Behavior Therapy and Experimental Psychiatry, 40*, 317–328. doi:10.1016/j.jbtep.2009.01.002
- Farrington, D. P. (2006). Family background and psychopathy. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 229–250). New York: Guilford.
- Finner, H. (1993). On a monotonicity problem in step-down multiple test procedures. *Journal of the American Statistical Association, 88*, 920–923.
- Finner, H., & Strassburger, K. (2002). The partitioning principle: A powerful tool in multiple decision theory. *Annals of Statistics, 30*, 1194–1213.
- Giesen-Bloo, J., van Dyck, R., Spinhoven, P., van Tilburg, W., Dirksen, C., van Asselt, T., ... Arntz, A. (2006). Outpatient psychotherapy for borderline personality disorder: A randomized trial of schema focused therapy versus transference focused therapy. *Archives of General Psychiatry, 63*, 649–658. doi:10.1001/archpsyc.63.6.649
- Graham, N., Kimonis, E. R., Wasserman, A. L., & Kline, S. M. (2012). Associations among childhood abuse and psychopathy facets in male sexual offenders. *Personality Disorders: Theory, Research, and Treatment, 3*, 66–75. doi:10.1037/a0025605
- Hall, J. R., Benning, S. D., & Patrick, C. J. (2004). Criterion-related validity of the three-factor model of psychopathy: Personality, behavior, and adaptive functioning. *Assessment, 11*, 4–16. doi:10.1177/1073191103261466
- Hare, R. D. (1991). *Hare psychopathy checklist-revised (PCL-R)*. Toronto, Canada: Multi-Health Systems.
- Hare, R. D. (2003). *Hare psychopathy checklist-revised (PCL-R)*. (2nd ed.) Toronto, Canada: Multi-Health Systems.

- Hare, R. D., & Neumann, C. S. (2010). The role of antisociality in the psychopathy construct: Comment on Skeem and Cooke (2010). *Psychological Assessment*, *22*, 446–454. doi:10.1037/a0013635
- Hart, S., Cox, D., & Hare, R. D. (1995). *Manual for the psychopathy checklist: Screening version (PCL:SV)*. Toronto, Ontario, Canada: Multi-Health Systems.
- Hart, S. D., & Hare, R. D. (1989). Discriminant validity of the psychopathy checklist in a forensic psychiatric population. *Psychological Assessment*, *1*, 211–218. doi:10.1037/1040-3590.1.3.211
- Hemphill, J., Hare, R., & Wong, S. (1998). Psychopathy and recidivism: A review. *Legal and Criminological Psychology*, *3*, 141–172. doi:10.1111/j.2044-8333.1998.tb00355.x
- Hildebrand, M., & de Ruiter, C. (2004). PCL-R psychopathy and its relation to DSM-IV Axis I and II disorders in a sample of male forensic psychiatric patients in the Netherlands. *International Journal of Law and Psychiatry*, *27*, 233–248. doi:10.1016/j.ijlp.2004.03.005
- Hildebrand, M., de Ruiter, C., & Nijman, H. (2004). PCL-R psychopathy predicts disruptive behavior among male offenders in a Dutch forensic psychiatric hospital. *Journal of Interpersonal Violence*, *19*, 13–29. doi:10.1177/0886260503259047
- Hildebrand, M., Hesper, B. L., Spreen, M., & Nijman, H. L. I. (2005). *De waarde van gestructureerde risicotaxatie en van de diagnose psychopathie: Een onderzoek naar de betrouwbaarheid en predictieve validiteit van de HCR-20, HKT-30 en PCL-R [The value of structured risk assessment and the diagnosis of psychopathy: A study of the reliability and predictive validity of the HCR-20, HKT-30 and PCL-R]*. Amsterdam, The Netherlands: Expertisecentrum Forensische Psychiatrie.
- Hollin, C. R., & Palmer, E. J. (2006). *Offending behaviour programmes: Development, application, and controversies*. Chichester: Wiley. doi:10.1002/9780470713341
- Huizinga, D., Haberstick, B., Smolen, A., Menard, S., Young, S., Corley, R., ... Hewitt, J. K. (2006). Childhood maltreatment, subsequent antisocial behavior, and the role of monoamine oxidase a genotype. *Biological Psychiatry*, *60*, 677–683. doi:10.1016/j.biopsych.2005.12.022
- Kennealy, P. J., 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
- Kiehl, K. A., Smith, A. M., Hare, R. D., Forster, B. B., Brink, J., & Liddle, P. F. (2001). Limbic abnormalities in affective processing by criminal psychopaths as revealed by functional magnetic resonance imaging. *Biological Psychiatry*, *50*, 677–684. doi:10.1016/S0006-3223(01)01222-7
- Koivisto, H., & Haapasalo, J. (1996). Childhood maltreatment and adulthood psychopathy in light of file-based assessments among mental state examinees. *Studies on Crime and Crime Prevention*, *5*, 91–104.
- 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. doi:10.1034/j.1600-0447.106.s412.20.x
- Lansford, J. E., Miller-Johnson, S., Berlin, L. J., Dodge, K. A., Bates, J. E., & Pettit, G. S. (2007). Early physical abuse and later violent delinquency: A prospective longitudinal study. *Child Maltreatment*, *12*, 233–245. doi:10.1177/1077559507301841
- Lee, C. W., Taylor, G., & Dunn, J. (1999). Factor structure of the schema questionnaire in a large clinical sample. *Cognitive Therapy & Research*, *23*, 441–451. doi:10.1023/A:1018712202933
- Leistico, A. R., Salekin, R. T., DeCoster, J., & Rogers, R. (2008). A large-scale meta-analysis relating the Hare measures of psychopathy to antisocial conduct. *Law and Human Behavior*, *32*, 28–45. doi:10.1007/s10979-007-9096-6
- Lobbestael, J., & Arntz, A. (2010). Emotional, cognitive and physiological correlates of abuse-related stress in borderline and antisocial personality disorder. *Behaviour Research and Therapy*, *48*, 116–124. doi:10.1016/j.brat.2009.09.015
- Lobbestael, J., Arntz, A., Cima, M., & Chakhssi, F. (2009). Effects of induced anger in patients with antisocial personality disorder. *Psychological Medicine*, *39*, 557–568. doi:10.1017/S0033291708005102

- Luntz, B. K., & Widom, C. S. (1994). Antisocial personality disorders in abused and neglected children grown up. *American Journal of Psychiatry*, *151*, 670–674.
- Lynam, D. R., & Gudonis, L. (2005). The development of psychopathy. *Annual Review of Clinical Psychology*, *1*, 381–407. doi:10.1146/annurev.clinpsy.1.102803.144019
- Marshall, L. A., & Cooke, D. J. (1999). The childhood experiences of psychopaths: A retrospective study of familial and societal factors. *Journal of Personality Disorders*, *13*, 211–225. doi:10.1521/pedi.1999.13.3.211
- Maxfield, M. G., & Widom, C. S. (1996). The cycle of violence: Revisited six years later. *Archives of Pediatric and Adolescent Medicine*, *150*, 390–395. doi:10.1001/archpedi.1996.02170290056009
- Meehl, P. E. (1945). A simple algebraic development of Horst's suppressor variables. *American Journal of Psychology*, *58*, 550–554.
- Nadort, M., Arntz, A., Smit, J. H., Giesen-Bloo, J., Eikelenboom, M., Spinhoven, P., ... van Dyck, R. (2009). Implementation of outpatient schema therapy for borderline personality disorder with versus without crisis support of the therapist outside office hours: A randomized trial. *Behaviour Research and Therapy*, *47*, 961–973. doi:10.1016/j.brat.2009.07.013
- Neumann, C. S., & Hare, R. D. (2008). Psychopathic traits in a large community sample: Links to violence, alcohol use, and intelligence. *Journal of Consulting and Clinical Psychology*, *76*, 893–899. doi:10.1037/0022-006X.76.5.893
- Neumann, C. S., Hare, R. D., & Newman, J. P. (2007). The super-ordinate nature of the psychopathy checklist-revised. *Journal of Personality Disorders*, *21*, 102–117. doi:10.1521/pedi.2007.21.2.102
- Nicholls, T. L., Brink, J., Desmarais, S. L., Webster, C. D., & Martin, M. L. (2006). The short-term assessment of risk and treatability (START): A prospective validation study in a forensic psychiatric sample. *Assessment*, *13*, 313–327. doi:10.1177/1073191106290559
- Ogloff, J. R. P. (2006). Psychopathy/antisocial personality disorder conundrum. *Australian and New Zealand Journal of Psychiatry*, *40*, 519–528. doi:10.1080/j.1440-1614.2006.01834.x
- Paulhus, D. L., Robins, R. W., Trzesniewski, K. H., & Tracy, J. L. (2004). Two replicable suppressor situations in personality research. *Multivariate Behavioral Research*, *39*, 303–329.
- 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*, 288–297. doi:10.1037/0021-843X.115.2.288
- Raine, A., Lencz, T., Bihrl, S., LaCasse, L., & Colletti, P. (2000). Reduced prefrontal gray matter volume and reduced autonomic activity in antisocial personality disorder. *Archives of General Psychiatry*, *57*, 119–127. doi:10.1001/archpsyc.57.2.119
- Rijkeboer, M. M., & van den Bergh, H. (2006). Multiple group confirmatory factor analysis of the Young Schema questionnaire in a Dutch clinical versus nonclinical population. *Cognitive Therapy and Research*, *30*, 263–278. doi:10.1007/s10608-006-9051-8
- Rijkeboer, M. M., van den Bergh, H., & Van den Bout, J. (2005). Stability and discriminative power of the young schema questionnaire in a Dutch clinical versus nonclinical population. *Journal of Behavior Therapy and Experimental Psychiatry*, *36*, 129–144. doi:10.1016/j.jbtep.2004.08.005
- Rogers, R. (Ed.) (1997). *Clinical assessment of malingering and deception*. (2nd ed.) New York: Guilford.
- Schmidt, N. B., Joiner, T. E., Young, J. E., & Telch, M. J. (1995). The schema questionnaire: Investigation of psychometric properties and the hierarchical structure of a measure of maladaptive schemas. *Cognitive Therapy and Research*, *19*, 295–321. doi:10.1007/BF02230402
- Skeem, J. L., & Cooke, D. J. (2010). Is criminal behavior a central component of psychopathy? Conceptual directions for resolving the debate. *Psychological Assessment*, *22*, 433–445. doi:10.1037/a0008512
- Smith, C., & Thornberry, T. (1995). The relationship between childhood maltreatment and adolescent involvement in delinquency. *Criminology*, *33*, 451–481. doi:10.1111/j.1745-9125.1995.tb01186.x



- SPSS Inc. (2005). *SPSS 13.0 for windows* [Computer software]. Chicago, IL: SPSS, Inc.
- Sterk, F., & Rijkeboer, M. M. (1997). *Schema-Vragenlijst [Schema-questionnaire]*. Utrecht, The Netherlands: Ambulatorium Utrecht University.
- Thornberry, T. P., Ireland, T. O., & Smith, C. A. (2001). The importance of timing: The varying impact of childhood and adolescent maltreatment on multiple problem outcomes. *Development and Psychopathology, 13*, 957–979.
- Tiihonen, J., Rossi, R., Laskso, M. P., Hodgins, S., Testa, C., Perez, J., ... Frisoni, G. B. (2008). Brain anatomy of persistent violent offenders: More rather than less. *Psychiatry Research: Neuroimaging, 163*, 201–212. doi:10.1016/j.pscychresns.2007.08.012
- Tremblay, P. F., & Dozois, D. J. A. (2009). Another perspective on trait aggressiveness: Maladaptive schemas. *Personality and Individual Differences, 46*, 569–574. doi:10.1016/j.paid.2008.12.009
- Verona, E., Patrick, C. J., & Joiner, T. E. (2001). Psychopathy, antisocial personality, and suicide risk. *Journal of Abnormal Psychology, 110*, 462–470. doi:10.1037/0021-843X.110.3.462
- Vertommen, H., Verheul, R., de Ruiter, C., & Hildebrand, M. (2002). *Hare's Psychopathie Checklist: Handleiding [Dutch version of the Hare psychopathy checklist-revised: Manual]*. Lisse: Swets Test Publishers.
- Viding, E., Blair, R. J. R., Moffitt, T. E., & Plomin, R. (2005). Evidence for substantial genetic risk for psychopathy in 7-year-olds. *Journal of Child Psychology and Psychiatry, 46*, 592–597. doi:10.1111/j.1469-7610.2004.00393.x
- Walsh, Z., Swogger, M. T., & Kosson, D. S. (2009). Psychopathy and instrumental violence: Facet level relationships. *Journal of Personality Disorders, 23*, 416–424. doi:10.1521/pedi.2009.23.4.416
- Walters, G. D., & Heilbrun, K. (2010). Violence risk assessment and facet 4 of the psychopathy checklist: Predicting institutional and community aggression in two forensic samples. *Assessment, 17*, 259–268. doi:10.1177/1073191109356685
- Walters, G. D., Knight, R. A., Grann, M., & Dahle, K. P. (2008). Incremental validity of the psychopathy checklist facet scores: Predicting release outcome in six samples. *Journal of Abnormal Psychology, 117*, 396–405. doi:10.1037/0021-843X.117.2.396
- Weiler, B. L., & Widom, C. S. (1996). Psychopathy and violent behaviour in abused and neglected young adults. *Criminal Behaviour and Mental Health, 6*, 253–271. doi:10.1002/cbm.99
- Weizmann-Henelius, G., Grönroos, M., Putkonen, H., Eronen, M., Lindberg, N., & Häkkinen-Nyholm, H. (2010). Psychopathy and gender differences in childhood psychosocial characteristics in homicide offenders - a nationwide register-based study. *Journal of Forensic Psychiatry & Psychology, 6*, 801–814. doi:10.1080/14789949.2010.506616
- Yang, Y., & Raine, A. (2009). Prefrontal structural and functional brain imaging findings in antisocial, violent, and psychopathic individuals: A meta-analysis. *Psychiatry Research, 174*, 81–88. doi:10.1016/j.pscychresns.2009.03.012
- Young, J. E. (1994). *Cognitive therapy for personality disorders: A schema-focused approach* (2nd ed.). Sarasota, FL: Professional Resource Press.
- Young, J. E., & Brown, G. (1994). *Young schema questionnaire* (2nd ed.). New York: Cognitive Therapy Center of New York.
- Young, J. E., Klosko, J. S., & Weishaar, M. E. (2003). *Schema therapy: A practitioner's guide*. New York: Guilford.
- Young, J. E., & Pijnaker, H. (1999). *Cognitieve therapie voor persoonlijkheidsstoornissen: Een schemagerichte benadering [Cognitive therapy for personality disorders: A schema-focused approach]*. Houten, The Netherlands: Bohn Stafleu Van Loghum.
- Yudofsky, S. C., Silver, J. M., Jackson, W., Endicott, J., & Williams, D. (1986). The overt aggression scale for the objective rating of verbal and physical aggression. *American Journal of Psychiatry, 143*, 35–39.