

**Predicting Recidivism in Juvenile Sexual Offenders:
A Multi-Part Examination of
the Psychopathy Checklist and Risk and Protective Factors**

by

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Abstract

This multi-part study examined the relationship between selected variables and recidivism in a large, detained sample ($n = 776$) of juvenile offenders—most of whom were juvenile sex offenders (JSOs) released after completion of a specialized, residential treatment program. In Study 1, the predictive accuracy of The Psychopathy Checklist: Youth Version (PCL:YV; Forth, Kosson, & Hare, 2003) was examined for general, violent, and sexual recidivism outcomes in the aggregate sample comprised of 538 JSOs and 222 nonsexually offending juvenile offenders (NSJOs) followed over a 10-year period. Univariate results indicated that PCL:YV scores significantly predicted general and violent recidivism in the aggregate and JSO sample over an average follow-up period of five years; however, only the Antisocial factor significantly predicted violent recidivism in NSJOs. The 13-item (i.e., Cooke & Michie, 2001; 3-factor) and 20-item (i.e., Hare, 2003, 4-factor) models appeared to predict broad recidivism outcomes comparably across the aggregate sample and in JSOs. The 4-factor model and Antisocial factor indicated modest predictive accuracy for sexual recidivism in the JSO sample. In subsequent regression analyses with JSOs, the Antisocial factor added incrementally to the prediction of general and violent recidivism, while the 3-factor model did not. Although the Antisocial factor contributed incrementally to the prediction of sexual recidivism after controlling for age at entry, this contribution disappeared with the addition of the 3-factor model total score. In Study 2, the relationship between recidivism and selected risk and protective factors was examined in the JSO sample. Constructs exhibiting risk and protective effects in the literature were examined and operationalized. Higher Antisocial factor scores and older age entry

demonstrated risk effects while higher Verbal IQ and internalizing (introversive) traits demonstrated protective effects in the general model. No risk or protective factors were significantly associated with sexual recidivism. Potential implications relating to the use of these risk and protective factors in forensic assessment and treatment is discussed.

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List of Abbreviations

ABSOP	Accountability Based Sex Offender Treatment Program
AUC	Area Under the Curve
CD	Conduct Disorder
DYS	Department of Youth Services
JSO	Juvenile Sexual Offender
MAR	Missing at Random
MC	Monte Carlo (integration)
ML	Maximum-Likelihood (estimation)
MLR	Maximum-Likelihood (estimation) with robust standard errors
MMC	Mt. Meigs Complex
MNAR	Missing not at Random
NSJO	Non-Sexually Offending Juvenile Offender
PCL	The Psychopathy Checklist
ROC	Receiver Operating Characteristics

General Introduction

Psychopathy is a serious personality disorder characterized by a unique constellation of affective, interpersonal, and behavioral features (Hare, 1991; 2003). Affectively, psychopathic individuals are lacking in empathy, guilt, and remorse. Interpersonally, they are manipulative, forceful, and unable to form lasting bonds with people. Behaviorally, they are impulsive, irresponsible, sensation-seeking, and delinquent.

When properly assessed, the construct of psychopathy is a powerful predictor of long-term criminality, recidivism, and violence in adult offenders. An extensive literature has found that adults with psychopathic traits reoffend more quickly, more often, and more violently following release from custody than do other offenders (Leistico, Salekin, DeCoster, & Rogers, 2008; Salekin, Rogers, & Sewell, 1996; Walters, 2003). In light of the extensive empirical support for the utility of adult psychopathy in predicting negative outcomes, a growing body of literature has begun to explore the manifestation of psychopathic traits in youth.

Although a variety of different instruments have been developed to measure adolescent psychopathic traits, the gold standard for comparison is the Psychopathy Checklist: Youth Version (PCL:YV; Forth, Kosson, & Hare, 2003)—a downward extension of the leading measure of adult psychopathy—the Psychopathy Checklist Revised (PCL-R; Hare, 1991; 2003). The PCL:YV demonstrates similarities in nomological net, structural homogeneity, interrater agreement, and in item functioning and factor structure to the PCL-R (Neumann, Kosson, Forth, & Hare, 2006; Salekin, 2006; Vincent & Hart, 2002). There is extensive support for the construct

validity of the PCL:YV for delinquency, aggression, institutional misconduct, violence, and certain types of recidivism (Asscher et al., 2011; Catchpole & Gretton, 2003; Edens & Cahill, 2007; Edens & Campbell, 2007; Gretton, Hare, & Catchpole, 2004; Leistico et al., 2008).

Despite considerable empirical support for the utility of the PCL:YV, researchers remain cautious about applying the construct to youth. Accordingly, the developers of the PCL:YV and other child and adolescent psychopathy measures emphasize the developmental challenges of assessing these traits in younger populations (Forth & Book, 2007; Frick, 2002; Lynam, 2002). Similarly, they have explicitly warned against the use of cut-off scores to classify youth (Forth & Book, 2007; Forth et al., 2003) and the serious consequences of labeling a youth as “psychopathic,” which include, for example, more severe sentencing and negative juror perception of risk and dangerousness in forensic settings (see Edens, Guy, & Fernandez, 2003).

In light of this research, it is clear that the assessment of adolescent psychopathic traits has major implications for risk assessment in delinquent youth. Recent meta-analytic findings indicate that psychopathy, when assessed by PCL-based measures, in particular, is a significant predictor of general¹ recidivism outcomes in both adults and adolescents (Asscher et al., 2011; Leistico et al., 2008). An emerging literature has suggested that such traits play an important role in sexual reoffending either directly or indirectly through their relationship with antisociality more generally (Hanson & Morton-Bourgon, 2005). While psychopathic traits have been associated with persistent sexual offending in adult offenders (Quinsey, Rice, & Harris, 1995; Seto & Barbaree, 1999), results are much less consistent in juvenile offenders (Caldwell,

¹ The term “general” recidivism is often used to broadly describe any type of reoffending, and, thus, would necessarily include any sexual offense. This convention is used in the present study. Although most studies use this convention, these distinctions are often not clear in the literature.

Ziemke, & Vitacco, 2008) and even less so in JSO samples (Gretton, McBride, Hare, O'Shaughnessy, & Kumka, 2001; Viljoen et al., 2007). In fact, only a few studies have found associations between sexual reoffending and PCL:YV scores in JSOs (Auslander, 1999; Parks & Bard, 2006)

Given the utility of the PCL:YV for predicting future reoffending, it is not surprising that the PCL:YV is widely used in juvenile justice settings to assess risk. However, the PCL:YV is increasingly being used to assess recidivism outcomes in sex offenders. In light of the stigma associated with both sexual offending and psychopathy and the lack of research with the PCL:YV in this population, assessment in this area must be approached with caution.

Nonetheless, this tendency to use general risk assessment measures like the PCL:YV in risk assessment for JSOs makes empirical and logical sense when considering how JSOs reoffend. Over sixty years of research indicates that JSOs are much more likely to reoffend nonsexually than sexually with recidivism rates much closer to their nonsexually offending counterparts (Caldwell, 2002; McCann & Lussier, 2008; Zimring, 2004). Within this context, there is a demonstrable need to examine the predictive accuracy of relationship between risk factors such as psychopathic traits and nonsexual recidivism outcomes in JSO samples. When compared to non-sexually offending youth, reoffending may have more far-reaching effects for JSOs who—due to recent legislative changes—are subject to complex and onerous registration requirements.

This focus on the assessment of nonsexual reoffending in JSOs also makes sense given the disheartening reality regarding the prediction of future sexual offending—we cannot predict it. At present, no risk assessment measure has demonstrated adequate predictive validity for sexual recidivism outcomes in youth (DiCataldo, 2009). Despite the use and development of otherwise psychometrically sound measures and several studies examining the predictive

accuracy of these measures, predictive accuracy remains elusive, primarily due to the heterogeneity of JSO populations, very low base rates of recidivism, and related methodological limitations (Burkhart & Cook, 2010; Caldwell, 2002; Prentky, Harris, Frizzell, & Righthand, 2000). Similarly, research examining the utility of the PCL:YV in assessing sexual-offense risk has been plagued by conceptual and methodological limitations.

To understand the importance of accurate assessment of risk in JSOs, it is critical to understand the current legal climate. There has been a disturbing trend of public censure towards and therapeutic pessimism regarding JSOs. Eventually, this trend reached its zenith with the enactment of Adam Walsh Child Protection and Safety Act of 2006 [Adam Walsh Act] and the regulations contained in Title I of the Adam Walsh Act—known as the Sex Offender Registration and Notification Act [SORNA]. The Adam Walsh Act is the first body of federal legislation that mandates that certain juvenile offenders appear on public registries [for a detailed review of the Adam Walsh Act and SORNA, see Batastini, Hunt, Present-Koller, and DeMatteo (2011)]. Regulations under SORNA extend harsh punishments, characteristically reserved for adult sex offenders such as public registration, to adolescents. For example, under this law, JSOs who meet certain requirements must register and have their names placed on public registries for 25 years to life. Often these restrictions apply to even the lowest risk juveniles, which may be unnecessary and often have life-altering consequences for these youth (Caldwell et al., 2008). In addition, applying these restrictions to juveniles makes them more visible to law enforcement, which may contribute to increased arrests that, in turn, will likely function to increase risk classification. SORNA also extends the consequences of adolescent behavior into adulthood; thus, displacing juvenile sexual offending from the typical protected realm of the juvenile justice system into the adult system. Under SORNA, JSOs are typically assigned a risk level. Most

states apply more punitive restrictions to those juveniles meeting statutorily defined risk criteria or those assessed as higher risk on one or more risk assessment measures such as the PCL:YV (Caldwell et al., 2008).

Given the importance of risk assessment in JSOs, the focus of research with this population has been on identifying risk factors in order to establish links with future offending. Similarly, given the increasing use of the PCL:YV in risk assessment in adolescent forensic populations, the focus of research in this area has also been on risk factors in order to establish direct links between psychopathy and reoffending (Leistico et al., 2008). At present, risk assessment measures designed specifically for JSOs do not include item content for protective factors. Despite this traditional focus on risk, an evolving interest in strengths-based approaches and other resilience concepts for prevention and treatment has fueled the identification of protective factors in sex offenders (Hanson & Morton-Bourgon, 2005) as well as youth with psychopathic traits (see Salekin & Lochman, 2008; Salekin, Worley, & Grimes, 2010). The hope is that further research regarding protective factors in these areas may provide a better understanding of the role that protective factors might play in mitigating risk through identification, prevention, and treatment.

The primary objectives of the current study are addressed in two parts. Study 1 was designed to examine the predictive validity of the PCL:YV in predicting various general, violent, and sexual recidivism in an aggregate sample of 776 juvenile offenders comprised of both sexually ($n = 538$) and non-sexually offending ($n = 222$) youth. Study 2 was designed to examine the relationship between hypothesized risk and protective factors selected from the literature and general, violent, and sexual recidivism outcomes in the Study 1 sample of JSOs. The research focus was limited to JSOs given the lack of research examining the relationship between

protective factors, psychopathic traits, and recidivism outcomes in JSOs, specifically. Because high PCL:YV scores are expected to be a risk factor for recidivism, Study 2 will also extend the findings from Study 1 by examining the independent contribution of the PCL:YV in an initial investigation of potential risk/protective factors in a JSO sample.

Introduction, method, results, and discussion sections are presented for each study individually. Study 2 is followed by a general discussion section reviewing the primary findings from the studies, strengths and limitations, and broader theoretical and clinical implications.

Study 1: Predictive Accuracy of PCL:YV

In Study 1, selected hypotheses regarding the predictive accuracy of the PCL:YV for recidivism outcomes are tested. The following review of the relevant literature informs this investigation and discusses: (1) the assessment of psychopathic traits, with an emphasis on PCL-based measures; (2) important considerations for risk assessment in JSO populations; and (3) the current empirical literature regarding the ability of PCL-based measures to predict recidivism risk (i.e., general, violent, and sexual) generally.

The Assessment of Psychopathic Traits

General considerations. The measure most frequently used to assess psychopathy in adults is the 20-item PCL-R. Although the PCL-R was intended primarily as a diagnostic tool and not as a risk assessment measure, the PCL-R has been shown to be a robust predictor of general antisocial behavior including violent and general recidivism (Gendreau, Goggin, & Smith, 2002; Hemphill, Templeman, Wong, & Hare, 1998; Salekin et al., 1996) as well as institutional misconduct (Guy, Edens, Anthony, & Douglas, 2005) in adult offenders. The PCL-R consists of a semi-structured interview and a 20-item clinical rating scale that is designed to evaluate psychopathic traits and behaviors rated on a three-point ordinal scale based on the degree to which the individual's presentation manifests those traits and behaviors ranging from 0 meaning "absent" and 1 meaning "partially or possibly present" and 2 meaning "present." The total score, ranging from 0 to 40, is used as a continuous indicator of the extent to which a person matches the clinical construct of psychopathy. In general, a PCL-R score of 30 or more indicates the presence of psychopathy in adults, although lower cut-off levels have been suggested and/or

operationalized for other populations and settings (Hare, 1998; Salekin et al., 1996). Overall, the PCL-R has excellent psychometric properties in terms of inter-rater reliability, internal consistency and test-retest reliability (Spain, Douglas, Poythress, & Epstein, 2004).

As noted earlier, the PCL:YV is currently the leading measure of adolescent psychopathic traits.² Although often characterized as a *direct* downward extension of the PCL-R, the items of the PCL:YV were developmentally modified to permit identification of deviance relative to adolescent norms and contexts in which adolescents function (Forth, 2005). Similar to the PCL-R, the PCL:YV is a 20-item measure that uses a three-point ordinal rating scale and yields a total score ranging from 0-40. However, to address the ethical concerns noted earlier, the PCL:YV manual does not provide a cut-off score for labeling a child or an adolescent as “psychopathic” as does the PCL-R and, in fact, explicitly warns against doing so (Forth et al., 2003).

Dimensional conceptualizations of psychopathy. In both adult and adolescent populations, psychopathy has traditionally been conceptualized as a unitary construct operationalized by total scores on one or more assessment measures. As research examining the structural validity of adult psychopathy measures has increased, there has been a growing trend towards a dimensional conceptualization of the construct. Until recently, the dominant structural model of both the PCL-R and PCL:YV has been the two-factor model (Hare et al., 1990; Harpur, Hakstian, & Hare, 1988). More recent factor analytic studies with both the PCL-R and PCL:YV have found that 3- and 4-factor models have acceptable fit and may be more appropriate than

² Consistent with a developmental perspective, most researchers in this area use different conventions when describing adolescents with these traits. That is, they are described as an adolescent “with psychopathic traits” rather than an adolescent “psychopath.”

the traditional two-factor model (e.g., Cooke & Michie, 2001; Jones, Cauffman, Miller, & Mulvey, 2006; Neumann, Kosson, Forth, & Hare, 2006; Salekin, 2006; Sevecke, Pukrop, Kosson, & Krischer, 2009). (See Table 1 for a comparison of the two models). The 4-factor model proposes that psychopathy is best understood across four dimensions reflecting specific traits and behaviors: the Interpersonal (e.g., conning, pathological lying), Affective (e.g., callousness, failure to accept responsibility), Lifestyle (e.g., impulsive, parasitic, irresponsible), and Antisocial (e.g., poor behavioral controls and items that reflect serious, persistent, varied, generalized rule-breaking behavior) dimensions. By comparison, the 3-factor model proposed by Cooke and Michie (2001) is identical to the 4-factor model except that it excludes five items comprising the Antisocial dimension, leaving the Interpersonal, Affective, and Lifestyle and resulting in a 13-item total score. The primary argument behind this exclusion is that the criminal and rule-breaking behavior captured by the Antisocial items is not a requisite feature of Cleckley's original conceptualization of psychopathy (Skeem & Cooke, 2010). The theoretical and empirical debate regarding the validity of the fourth factor continues and is beyond the scope of this review (Hare & Neumann, 2010; Skeem & Cooke, 2010.) At this time, there is no consensus on which model offers superior incremental validity in comparative studies (Stockdale, Olver, & Wong, 2010; Walters, Knight, Grann, & Dahle, 2008).

Risk Assessment in Juvenile Offenders

General considerations. Before considering the empirical research regarding the use of the PCL:YV to assess recidivism risk in general juvenile offenders, and in particular, JSOs, it is helpful to understand general considerations related to forensic assessment in juvenile offenders. According to Vincent and Grisso (2005), the assessment of adolescents in forensic settings requires a developmental perspective guided by several key considerations. First, identifying

mental disorders in youth is extremely complicated given the normal developmental processes and changes inherent to the adolescent period. Further, the theory of “age relativity” suggests that adolescent behaviors that may appear to be symptoms of disorders may actually be developmentally normative at one stage and atypical at another (Vincent & Grisso, 2005). Greater levels of discontinuity and change in symptoms and disorders are more common in adolescents and complicate long-term prediction and decision-making. Developmental principles such as equifinality, multifinality, and heterotypic continuity indicate that there will be great variability in prognosis—some presentations will persist into adulthood while others will not (see Cicchetti & Rogosch, 1996, 2002). Second, mental disorders show higher levels of comorbidity in youth. That is, adolescents who have a mental disorder are very likely to have more than one. This considerable diagnostic “overlap” challenges the ability to make discrete diagnoses or recommendations for treatment (Vincent & Grisso, 2005). Third, due to these developmental challenges, adolescent assessments are likely to have a shorter “shelf life” than adult assessments and require more frequent readministrations. Fourth, most negative outcomes (e.g., violence, delinquency, and reoffending) are not “caused” per se by mental health disorders, but many of these disorders may affect the risk of these negative outcomes. Finally, seriousness of mental health problems affects risk in two ways. Some mental health disorders are serious because they are severe and require immediate attention while others are serious because they are pervasive. In forensic settings, context may be critical to determining seriousness. For example, at intake, levels of anxiety and distress may be inflated for incarcerated youth due to the stressful consequences resulting from incarceration (e.g., separation from parents and peers). As noted earlier, the developers of the PCL:YV considered these developmental challenges when adapting

it from the PCL-R, but these challenges remain universal to the assessment of adolescents generally.

Specific considerations for juvenile sex offenders.

Common misconceptions regarding JSOs. Through the vehicle of SORNA legislation, JSOs, are experiencing very *adult* consequences. Researchers have argued that this draconian treatment for JSOs is not based on research but on commonly held misconceptions and generalizations about this population that often influence the opinions of the empirically uninformed (see Letourneau & Miner, 2005; Zimring, 2004). First, it is often assumed that JSOs comprise a readily identifiable, homogenous population of delinquent youth. In actuality, current empirical evidence suggests that JSOs represent an extremely heterogeneous population with diverse backgrounds, comorbid psychopathology, and history of antisocial behaviors (Caldwell, 2002; White & Frick, 2010), which makes effective classification extremely difficult. Second, and most importantly, it is assumed that JSOs will likely continue to offend sexually as adults. In fact, JSOs have more in common with other juvenile offenders than they do with adult sex offenders, and while some JSOs do eventually sexually reoffend in adulthood, the vast majority does not (Zimring, 2004). Lastly, it is often assumed that JSOs are at exceptionally high risk for sexual recidivism, but this is not the case. In fact, JSOs are six times more likely to reoffend nonsexually than sexually, with general recidivism rates falling between 2.8% and 90% across studies, and sexual recidivism rates falling between 14 and 29% (Caldwell, 2002). In fact, in his review, Zimring (2004) concluded that existing research provides “solid evidence that young [sex] offenders are much less likely than adult [sex] offenders to commit further sex offenses and that known rates of sex reoffending for juveniles are also *very low* in absolute terms” (p. 62, italics added). Thus, JSOs are not delinquent *specialists*, limiting themselves to sexual offenses,

but instead are a heterogeneous group of delinquent *generalists* whose sexual offending is but just one facet of a broader pattern of offending (DiCataldo, 2009; Lussier, 2005; Zimring, 2004).

Risk factors for recidivism in juvenile sex offenders. The primary goal of recidivism studies conducted with JSOs is to reduce the heterogeneity in this population by identifying those risk factors that differentiate those JSOs who reoffend sexually or violently, from those who do not (Busch et al., 2009; Långström, 2002; Långström & Grann, 2000; Zagar & Grove, 2010). Low base rates of recidivism frustrate this goal by limiting the predictive ability of any risk assessment measure. In addition, other methodological concerns—such as inconsistent operational definitions of recidivism (i.e., arrest versus reconviction), different lengths of follow-up, and sample type (i.e., treatment versus no treatment)—may contribute to low base rates and the lack of significant findings (Caldwell et al., 2008; DiCataldo, 2009; Parks & Bard, 2006). Nonetheless, there has been a growing body of research regarding risk factors for future offending in JSOs (e.g., Busch et al., 2009; Fanniff & Becker, 2006; Seto & Lalumière, 2010; Worling & Långström, 2003). However, given that JSOs are more likely to reoffend nonsexually, research examining recidivism risk in this population often considers risk factors for general recidivism as well (Långström, 2002).

This research has led to the development of several standardized risk assessment tools used specifically to examine risk for sexual reoffending in JSOs. The three most widely cited measures of juvenile sexual offending risk are as follows: the Juvenile Sexual Offender Assessment Protocol-II (J-SOAP-II; Prentky & Righthand, 2003), the Estimated Risk of Adolescent Sexual Offense Recidivism (ERASOR; Worling & Corwen, 2001), and the Juvenile Sexual Offense Recidivism Risk Assessment Tool-II (J-SORRAT-II; Epperson, Ralston, Fowers, & DeWitt, 2005). As noted earlier, none of these measures has demonstrated adequate predictive

accuracy for sexual recidivism—primarily due to low base rates (Burkhart & Cook, 2010; Caldwell, 2002; Prentky et al., 2000). In fact, these low base rates have essentially functioned as a “predictive barrier” that must be overcome to advance the field (DiCataldo, 2009; p.84). Despite the limited support for the ability of risk assessment measures for sexually offending youth, under SORNA, many states base risk determinations largely on scores from these measures as well as general risk assessment instruments such as the PCL:YV that are not heavily studied in sexually offending populations (Caldwell et al., 2008).

Overall, in light of the current limitations of JSO-specific measures, the heterogeneity of JSOs, their similarities with general juvenile offenders, and the increased focus on the assessment of nonsexual recidivism, it is not surprising that the use of general risk assessment measures like the PCL:YV is becoming more common. Nonetheless, very little research has actually examined the predictive accuracy of these general risk measures, including the PCL:YV, for sexual recidivism or for any recidivism outcomes in JSO-only samples. Despite limited support for the use of the PCL:YV in this manner, under the current statutory rubric of SORNA and its progeny, some states base risk determinations on scores obtained from general risk assessment instruments such as the PCL:YV (Caldwell et al., 2008). Given the ethical concerns associated with the PCL:YV and the potentially grave consequences of labeling a youth as a “psychopathic sex offender” (Edens et al., 2003), further research is needed to inform the use of the PCL:YV related to sexual offenders and offending.

Predictive Accuracy of Psychopathic Traits

Prediction of general and violent recidivism outcomes in general offenders.

Psychopathy, as measured by PCL-based measures, has been shown to be a robust predictor of violent and general recidivism in adult offenders, showing incremental validity over well-

established predictors such as previous criminality and substance use disorder (Hare, Clark, Grann, & Thornton, 2000). The most recent meta-analysis by Leistico et al. (2008) examined the relationship between PCL measures, institutional misconduct, and recidivism across 95 recidivism studies involving a total of 12,186 adults (and 2,553 adolescents). Consistent with several prior meta-analyses in adult samples, they found that the PCL-R and its progeny significantly predicted violent and general recidivism (Gendreau et al., 2002; Hemphill et al., 1998; Salekin et al., 1996; Walters, 2003), as well as institutional misconduct (Guy et al., 2005).

Similarly, recent comprehensive meta-analytic reviews in adolescent samples indicate that psychopathic traits are predictive of both general and violent, and to a lesser extent, nonviolent recidivism. For instance, in a meta-analysis of 21 studies, Edens, Campbell, and Weir (2007) examined the relationship between psychopathy (as measured by PCL:YV or modified PCL-R scores) and different types of recidivism within primarily adolescent samples comprised of both males and females. Results indicated that total scores on PCL-based measures were significantly associated with general ($r_w = .24, k = 20$) and violent ($r_w = .25, k = 14$) recidivism. These authors also found that psychopathy generally was more predictive for males, specifically with respect to violent recidivism. The Leistico et al. (2008) meta-analysis discussed earlier found similar results, indicating that PCL-based measures have predictive utility regardless of age.

The most recent meta-analysis of 53 studies examining the predictive utility of psychopathy measures found similar results to Leistico et al. (2008) and Edens et al. (2007) prior studies (Asscher et al., 2011). This meta-analysis by Asscher and colleagues (2011) extended the methodology of Edens et al. (2007) and included both delinquency and recidivism whereas Edens et al. (2007) only focused on recidivism. Moreover, unlike Edens et al. (2007), which

focused mainly only on studies using the PCL:YV, Asscher et al. (2011) included a variety of psychopathy assessment measures. These authors found that psychopathic traits were moderately associated with associated general and violent recidivism, reporting effect sizes of .21 and .22, respectively. Notably, results for the relationship between psychopathic traits and recidivism indicated that effect sizes were largest when PCL-based measures were used. The authors posited several reasons for these results including that item content included in PCL-based measures relating to antisocial behavior (i.e., the Antisocial factor) may capture aspects more closely related with recidivism and interview-based assessments of psychopathy such that PCL-based measures may be better at capturing psychopathic traits than self-report measures (Asscher et al., 2011).

Given the debate regarding the factor structure of the PCL:YV, it is surprising that so little research has examined the predictive accuracy of various models by examining factor scores. The results of meta-analytic reviews consistently indicate that, in adolescents, the features associated with the Lifestyle and Antisocial dimensions of psychopathy are significantly more predictive of general and violent recidivism than those features associated with the Interpersonal and Affective dimensions (Edens et al., 2007; Leistico et al., 2008; Parks & Bard, 2006). Likewise, this finding is consistently observed in populations comprised primarily of adults (Gendreau et al., 2002; Hemphill et al., 1998; Salekin et al., 1996). Comparatively, current findings suggest comparable for the 3- and 4-factor model total scores (e.g., Stockdale et al., 2010). Notably, several recent studies (e.g., Vincent, Odgers, McCormick, & Corrado, 2008; Walters et al., 2008) have found that the Antisocial factor indicates incremental predictive utility relative to the other three factors (i.e., Interpersonal, Affective, and Lifestyle).

In sum, the PCL:YV demonstrates utility in predicting general and violent recidivism in juvenile offenders and provides incremental validity in prediction relative to other recidivism-related measures and risk factors. However, the extant research remains inconsistent, which may be attributable to methodological issues. For example, most studies using PCL-based measures have scored the measure based on file review, which may contribute to decreased scoring reliability. At the dimensional level, the Antisocial factor appears to be more predictive of both general and violent recidivism, but further research examining factor scores and comparing the incremental predictive utility of the 3- and 4-factor models is needed to elucidate this dimensional perspective. In addition, the use of the PCL:YV is further complicated by the lack of temporal stability in certain dimensions and the general developmental challenges of risk assessment in adolescents. The period of adolescence defined by constant developmental change, which has caused some researchers to characterize them as “moving targets” (Grisso, 1998). Furthermore, the use of the PCL:YV in juvenile offenders is already quite controversial given the potential harm that may result from the use of higher scores to label youth as “psychopathic” (Edens, Skeem, Cruise, & Cauffman, 2001). Nonetheless, given that the PCL:YV is increasingly being used in the juvenile justice system to predict both types of re-offense risk in adolescents, additional research examining the ability of the PCL:YV to predict general recidivism outcomes is needed.

Psychopathic traits, sexual offenders, and general and violent recidivism outcomes.

Prediction of recidivism outcomes in adult sex offenders. Despite the increasing use of PCL measures in sex offender samples, very few studies have examined the utility of psychopathy in predicting recidivism outcomes in sex offenders. However, more research has been conducted with adult sex offenders relative to JSOs. In adult sex offender samples, the

PCL-R demonstrates good predictive accuracy for nonsexual recidivism outcomes. A recent meta-analysis of 82 recidivism studies by Hanson and Morton-Bourgon (2005) examined risk factors in studies involving a total of 29,450 adult and adolescent sex offenders. Among adult sex offenders, specifically, problems with self-regulation (combined Lifestyle and Antisocial factor scores from the PCL-R) and high PCL-R total scores were among the strongest predictors of any type of reoffending. These authors also found that PCL-R total scores were one of the strongest predictors of any type of recidivism ($d = .67$, 9 studies).

In adults, the PCL-R has also been found to be predictive of sexual recidivism outcomes. Hanson and Morton-Bourgon (2005) found that, in addition to sexual deviance, an antisocial orientation (i.e., antisocial personality, antisocial traits, history of rule violation) was the primary predictor of violent (including violent sexual) recidivism with a mean effect size of .54. In a recent multi-measure study, Olver and Wong (2006) examined the long-term predictive utility of the PCL-R among three different aggressor types of adult sex offenders (i.e., child molesters, rapists, and mixed offenders) across a 15-year period. ROC analyses indicated that sexual and violent sexual recidivism by rapists was significantly predicted by the PCL-R. The PCL-R produced the largest AUC of those measures examined for sexual recidivism by rapists. The PCL-R significantly predicted sexual (but not violent sexual) recidivism in child molesters. None of the measures examined in the Olver and Wong (2006) study significantly predicted recidivism for offenders with both child and adult victims. In general, current results suggest that the PCL-R significantly predicts both nonsexual and sexual recidivism outcomes in adult sex offender populations, but victim- and offense-specific variables may be uniquely relevant for sexual recidivism. Notably, recidivism studies with adult sex offenders typically have much higher base rates of sexual reoffending that facilitate prediction.

Prediction of general and violent recidivism outcomes in juvenile sex offenders.

Research in JSO samples examining risk factors for reoffending, including the PCL:YV, typically focuses on sexual recidivism outcomes. Given that JSOs are more likely to reoffend generally than sexually (McCann & Lussier, 2008), however, this focus appears to be misplaced. Therefore, understanding how the PCL:YV predicts nonsexual (i.e., general, violent, nonviolent, etc.) recidivism is equally, if not more, important in this population. Only a handful of studies have examined the predictive accuracy of the PCL:YV for general and violent recidivism outcomes in JSO samples. These results indicate that the predictive accuracy of the PCL:YV for general recidivism outcomes is comparable in JSO and NSJO populations. For example, in a sample of 220 JSOs released from an outpatient sex offender treatment program, Gretton et al. (2001) found that PCL:YV total scores were significant predictors of total violent, nonviolent, and general recidivism. In fact, when paired with penile plethysmographic (PPG) evidence of sexual arousal, PCL:YV scores were a particularly robust predictor of general recidivism. In a 2009 study, Viljoen, Elkovitch, Scalora, and Ullman (2009) examined the predictive validity of the PCL:YV in a sample of 193 adolescents discharged from a residential sex offender treatment program. They found that the PCL:YV significantly predicted nonsexual violence, any violence, and any reoffending.

Psychopathic traits and sexual recidivism.

Sexual recidivism in general juvenile offenders. Given the heterogeneous makeup of JSOs, researchers have suggested that risk factors for sexual recidivism in general juvenile offenders may translate to JSOs (e.g., Hanson & Morton-Bourgon, 2005). There are several meta-analytical studies examining risk factors of sexual recidivism in general juvenile offenders (Cottle, Lee, & Heilbrun, 2001; Hanson & Morton-Bourgon, 2005; Heilbrun, Lee, & Cottle,

2005; McCann & Lussier, 2008); however, only a handful of studies have examined psychopathic traits or associated constructs (e.g., antisociality) as risk factors. As noted earlier, in the Hanson and Morton-Bourgon (2005) meta-analysis mentioned earlier, these authors found that antisocial orientation operationalized broadly to include (antisocial personality, antisocial traits, history of rule violation) was identified the major predictor of violent nonsexual recidivism ($d = .51$) and violent (including sexual) recidivism ($d = .54$) in both adults and adolescent offenders.

The Edens et al. (2007) review discussed earlier also examined the relationship between psychopathic traits and sexual recidivism in adolescents. The authors identified only two relevant studies and found that PCL-based total scores were only negligibly related to sexual recidivism (mean Cohen's $d = .14$) in adolescents. The most recent meta-analysis by McCann and Lussier (2008) included 18 studies involving juvenile offenders and specifically examined psychopathy and antisociality as risk factors for sexual recidivism. Consistent with Edens et al. (2007), McCann and Lussier (2008) found that psychopathic traits were not significantly related to sexual recidivism and attributed this to the lack of relevant studies. Consistent with findings by Hanson and Morton-Bourgon (2005), they found that antisociality significantly predicted sexual recidivism ($n = 10$, mean $ES = 0.10$, $p < .001$). Notably, however, the authors operationalized this construct very broadly to include eight associated risk factor, which included, for example, antisocial personality traits, psychopathy, and drug use. Given the breadth of factors, it is difficult to clarify the type of antisociality captured in this study and its relationship with the Antisocial factor of the PCL:YV. Similarly, the authors included the two studies examining PCL-R scores within the larger examination of antisociality, which contributed to overlapping constructs.

In a notable individual study, Caldwell et al. (2008) compared the predictive utility of various risk assessment measures, including the PCL:YV and specific juvenile sexual offending measures such as the J-SOAP-II in a sample of general juvenile offenders. The PCL:YV was the only risk assessment measure that significantly predicted violent and general recidivism. However, contrary to hypothesis, the PCL:YV also was the only measure that significantly predicted new felony sex offense charges in this sample. The authors strongly cautioned interpretation of their results. In explaining these unexpected results, the authors noted that prior studies have typically included offenders with lower mean PCL:YV scores, which, they posited, may have reduced predictive power. In contrast, Caldwell et al. (2008) noted that their sample was largely comprised of adolescents with high PCL:YV scores (i.e., median PCL:YV total = 32.1 out of a maximum score of 40), which, according to the study authors, may have enhanced predictive power and influenced results.

Sexual recidivism in JSOs. No meta-analytical studies have examined the relationship between PCL:YV scores and sexual recidivism in a JSO-only sample. Similar to more numerous studies with non-sexually offending youth or mixed samples, studies with JSO samples indicate that the PCL:YV is a predictor of general, but not sexual, recidivism. Only a handful of published studies were identified that have even examined this outcome in JSOs. In fact, no published studies were identified that found PCL:YV total scores to be predictive of sexual recidivism in a JSO sample; however, significant findings have emerged from factor-level examinations. In the study by Gretton et al. (2001) noted earlier, although PCL:YV scores significantly predicted nonsexual recidivism outcomes in a JSO sample, they did not predict sexual recidivism. When paired with PPG evidence, PCL:YV scores were predictive of sexual recidivism. However, when offense history and age at first offense was entered into a stepwise

Cox regression equation, the significant association between PCL:YV scores and future sexual offending disappeared. Similarly, in Viljoen et al. (2009), the authors found that the PCL:YV significantly predicted nonsexual recidivism outcomes in a sample of JSOs discharged from residential treatment, but the PCL:YV did not predict sexual recidivism.

In contrast, isolated studies have found significant relationships between PCL:YV factor scores. In a sample of 124 JSOs, Auslander (1999), using the two-factor model, found that Factor 1 scores (reflected in combined Interpersonal and Affective factor scores) were significantly associated with a *lower* risk of reoffending sexually, while higher total PCL:YV scores were not associated with sexual reoffending. In a later study of the relationship between PCL:YV scores and recidivism in a sample of 156 sexually offending youth, Parks and Bard (2006), using the 4-factor model, found that only the Interpersonal and Antisocial dimensions of the PCL:YV significantly predicted sexual recidivism while the Lifestyle and Antisocial factors were significant predictors of nonsexual recidivism. Thus, despite some success in predicting sexual recidivism in general juvenile offenders (see McCann & Lussier, 2008) and in predicting sexual recidivism at the factor level (e.g., Parks & Bard, 2006), current empirical evidence does not support the use of the PCL:YV in predicting sexual recidivism risk in juvenile offenders (see Caldwell et al., 2008).

In sum, given current inconsistencies and methodological differences across studies, researchers maintain that the use of the PCL:YV for assessment of risk in JSOs for nonsexual as well as sexual reoffending should be approached with extreme caution (Caldwell et al., 2008). Very few studies have supported the predictive accuracy for sexual recidivism in general juvenile offenders (e.g., Caldwell et al., 2008) or JSOs (e.g., Parks & Bard, 2006). Researchers have attributed the lack of significant results to the developmental challenges of measuring

personality traits in youth as well as low base rates of sexual recidivism and related methodological concerns (see Viljoen et al., 2007). Additionally, studies with JSOs may yield lower total PCL:YV scores in general, which, in turn, according to Caldwell et al. (2008), may reduce the predictive power necessary to detect a low base rate phenomenon like sexual recidivism. Conversely, higher mean PCL:YV scores, larger sample sizes, and higher base rates may increase predictive power. Given the current regulatory climate and public perception regarding sexual offending and sexual offenders, the use of the PCL:YV in JSOs is a high stakes proposition. In fact, some researchers have recommended that the PCL:YV should not be used as a predictor—even in adolescents with a history of sexual offenses—given the risk of false positives in light of the potentially grave consequences associated with a high-risk classification under SORNA (see e.g., Vitacco, Caldwell, Ryba, Malesky & Kurus, 2009). Further research regarding the predictive utility of the PCL:YV in JSO samples is needed to supplement the meager existing literature even if only to further dissuade the use of the measure as a predictor of certain recidivism outcomes. To overcome low base rates of sexual reoffending, future studies should attempt to address methodological issues discussed previously to enhance predictive power. Future research regarding the individual factors of the PCL:YV may provide greater insight for the relationship between psychopathic dimensions and recidivism outcomes in JSOs.

The Current Study

The purpose of Study 1 was twofold. The primary objective of this study was to provide a comprehensive examination of the predictive accuracy of the PCL:YV. The first objective was to supplement prior research regarding the predictive accuracy of the PCL:YV for general, violent, and sexual recidivism outcomes by providing information from a large, relatively diverse sample ($n = 776$) of male adolescent offenders over an average follow-up period of 5 years. While prior

studies have indicated that the PCL:YV offers some potential utility in predicting general and violent recidivism in adolescent offender populations, empirical evidence does not support the utility of the PCL:YV in predicting sexual recidivism primarily due to low base rates. In addition, very little research has examined the predictive accuracy of the PCL:YV in a JSO sample. Although most analyses in the current study were conducted using the larger aggregate sample, most analyses focus on JSOs. Additionally, most of the JSOs in the current sample received specialized treatment; thus, this examination provides meaningful information regarding the use of the PCL:YV for risk assessment and treatment in a clinical forensic setting.

Based upon previous literature relating to the PCL:YV and recidivism outcomes generally and, more specifically, in juvenile sexually offending youth, the following hypotheses are offered to support the purposes of Study 1:

Hypothesis 1. Several ROC analyses from Stockdale et al. (2010) will be replicated. The predictive accuracy of the PCL:YV will be examined for general, violent, and sexual recidivism outcomes in various offender groups. Area under the curve (AUC) probability estimates will be above the level of chance, or greater than 0.50 for general and violent recidivism outcomes, but not sexual recidivism outcomes due to extremely low base rates or reoffending.

All PCL:YV factors will significantly predict general and violent, but not sexual, recidivism in the aggregate and JSO samples; however, only the Antisocial factor will uniquely predict these recidivism outcomes relative to other factors.

The 3-factor model (13-item) and 4-factor model (20-item) total scores will demonstrate comparable predictive accuracy for general and violent, but not sexual, recidivism outcomes.

Hypothesis 2. Several regression analyses from Stockdale et al. (2010) will be replicated. Cox regression survival analysis will be conducted to examine predictive accuracy of the

PCL:YV for general recidivism outcomes when controlling for age at entry and unequal follow-up periods. Logistic regression will be conducted to examine similar results for violent and sexual recidivism outcomes. The data analytic strategy used by Stockdale and colleagues (2010) will be followed. First, the predictive accuracy of the individual factors will be examined. Second, the three- and 4-factor models will be compared by examining the relative contribution of the Antisocial factor from the 4-factor model.

It is expected that the Antisocial factor will demonstrate predictive accuracy for general and violent, but not sexual, recidivism outcomes, and will demonstrate incremental variance beyond the 3-factor model total score. The 3-factor model total score will not significantly predict any recidivism outcome.

Hypothesis 3. Kaplan-Meier survival analysis will be conducted to further examine general recidivism outcomes in accordance with the data analytic strategy used in Stockdale et al. (2010). The total score and factor score emerging as significantly predictive from previous analyses will be examined.

It is hypothesized that the PCL:YV 4-factor total score and the Antisocial factor will emerge as these predictors. It is predicted that higher levels of these scores will contribute to faster and more pronounced failure rates for general arrests in the aggregate sample over the follow-up period.

Method

The Treatment Program

The Adolescent Based Sex Offender Program (ABSOP) offers intensive treatment for male adolescents adjudicated for sexual offenses within the state of Alabama. The ABSOP program is operated within the Mt. Meigs correctional complex (MMC) in Mt. Meigs, Alabama. In 1999, the Alabama legislature enacted the Community Notification Act, which requires the mandatory treatment and risk assessment of juveniles adjudicated due to a conviction for a sexual offense. Treatment of these offenders was first offered through the Alabama Department of Youth Services in 1999 (Sandys, Pruss, & Walsh, 2009). The ABSOP program was formally developed in 2002 through a partnership between DYS, the Department of Psychology at Auburn University, and the School of Social Work at the University of Alabama (Burkhart, Peaton, & Sumrall, 2009). A fundamental objective of ABSOP is empirically-informed treatment based on the administration of a comprehensive global assessment for each participant prior to treatment to assist in the development of an individual treatment plan.

DYS designated the MMC as the state treatment facility for all male juveniles adjudicated for commission of a sex offense beginning in 2000. Because the MMC has been identified as a specialized treatment facility by DYS, juveniles originate from all counties in the state, ranging in size between rural, less populated counties to urban, densely populated counties. The MMC includes facilities for male juveniles convicted for non-sexual offenses. The MMC

consist of a total of 13 dormitories with capacity for approximately 312 total adjudicated males. Once adjudicated for their offense, juveniles are transferred to the MMC. Beginning in 2004, JSOs were placed in a housing complex—separate from other adjudicated males—that is designed for new admissions. After an initial adjustment period, JSOs are transferred from the initial complex to one of five dormitories. Within the MMC, JSOs are housed completely separately from the general, non-sexually offending juvenile offender population (NSJOs). Although JSOs may have contact with other adjudicated males in academic or extracurricular activities within the MMC, they do not share living units, treatment programs, or treatment providers at any time during treatment.

Participants

A total of 987 incarcerated male adolescents adjudicated for a criminal offense in the state of Alabama served as initial participants. Included participants were incarcerated at the MMC between September 2000 and August 2011. All participants were male adolescents adjudicated for committing a criminal offense in the state of Alabama. From this sample, 952 individuals met the initial criteria for inclusion in the study. Specifically, 3 individuals were excluded because they refused informed consent to participate in the study; and 26 individuals were excluded because no data were received for their record. Recidivism data were collected for 6 individuals who were ultimately excluded because they had been incorrectly listed as released *prior* to data collection, but it was later identified that they were released *after* data collection. In the full sample, recidivism rates across outcome categories were as follows: general ($n = 457$; 48%), violent ($n = 260$; 27.3%), and sexual ($n = 39$; 4.1%). An additional 45 (4.7%) individuals were arrested for violation of probation or registration violations related to a prior sexual offense.

In the recidivism literature, it is recommended to establish a sufficiently lengthy follow-up period in which to adequately capture recidivism. Although there is wide variability across studies, the general recommendation is between 12 – 36 months (Caldwell, 2002). Based on current recommendations and previous methodology used in Stockdale et al. (2010), a follow-up period of 24 months or 2 years was used. From the full sample of 952 participants, a total of 776 or 81.5% of the full sample had been released from the MMC for a minimum of 2 years.³

These 776 participants comprised the “aggregate” sample used in Study 1, which included JSO ($n = 538$) and NSJO ($n = 222$) participants. (Notably, group membership information was missing for 16 participants, and those individuals were excluded from all offender group comparisons but were included in analyses conducted with the aggregate sample described in Study 1.) The aggregate sample was followed for a mean of 5.44 years ($SD = 2.23$ years; range = 2.1 - 10.52 years) following release. The time to first arrest was quite long, with participants reoffending on average 24.1 months ($SD = 19.1$ months) after release.

Comparison of JSO and NSJO participants. As expected, the detention period for JSOs was significantly longer than for NSJOs. On average, length of stay for JSOs was 540.52 days ($SD = 270.77$ days) compared to 203.32 days ($SD = 181.97$ days) for NSJOs. This difference was expected given that, in most cases, JSOs are mandated for an open-ended treatment period independent of a fixed sentence. Conversely, NSJOs were not treated and instead had relatively fixed time sentences. Thus, for JSOs, release is dependent on “successful

³ A total of 176 individuals did not meet the 2-year minimum criteria. For those individuals excluded, general recidivism rates were low. Of those 176 individuals excluded from the original sample ($n = 952$), only 10 JSOs and 36 NSJOs were arrested for any new offense during that period.

completion” of treatment for, which generally yields a longer length of stay. Among JSOs, the mean age of participants was 15.68 years old ($SD = 1.52$ years) with participants ranging in age from 11 to 19 years old. On average, NSJOs were older with a mean age of 17.10 years old ($SD = .76$) with participants ranging in age from 14 to 19 years old. Racial characteristics were quite different between the groups. For JSOs, the majority of participants identified as Caucasian ($n = 293$; 53.4%) with the remainder identifying as follows: 237 (43.2%) as African American, 6 (1.1%) as Hispanic, 10 (1.8%) as biracial, and 3 (0.5%) as “other.” Conversely, the majority of NSJO participants identified as African American ($n = 146$; 65.8%) with the remainder identifying as follows: 72 (32.4%) as Caucasian, 1 (0.5%) as Hispanic, 2 (0.9%) as biracial, and 1 (0.5%) as “other.” The majority of JSO participants had a mean grade level of 8.7th grade ($SD = 1.65$) with a range between 5th grade and high school graduate or GED completion. As expected given their higher mean age, NSJOs had achieved a higher grade mean level of 9.2 ($SD = 2.27$) but more variability across participants with grade levels ranging from the 2nd grade to high school graduate or GED completion.

On average, NSJOs reoffended sooner than JSOs. That is, 547.41 days ($SD = 494.98$ days) after release compared to 856.37 days ($SD = 613.30$ days) for JSOs. Among NSJOs, recidivism rates across the broad outcome categories were as follows: general ($n = 171$; 77.7%), violent ($n = 112$; 50.5%), and sexual ($n = 3$; 1.4%). Among JSOs, recidivism rates across the broad outcome categories were as follows: general ($n = 235$; 43.7%), violent ($n = 118$; 21.3%), and sexual ($n = 28$; 5.2%). With regard to sexual reoffending, more JSOs were re-arrested for probation violations related to prior sex offenses ($n = 38$; 7.1%) than for new sexual offenses ($n = 28$; 5.2%). Of new sexual offenses, 15 (2.8%) participants committed a serious sexual offense (i.e., Rape, Sodomy, or Sexual Abuse in the first degree). Under new statutory requirements in

the state of Alabama implemented after SORNA, commission of such an offense by an adolescent who is at least 14 years of age requires lifetime registration as a sexual offender.

Procedure

This project was part of a larger grant-funded research program designed to assess JSOs both prior to and after completion of sex offender treatment. As part of this program, all JSOs receiving treatment through ABSOP are administered a comprehensive pre-treatment assessment protocol approximately 5-7 days after entry. To provide information regarding offenders who do not (typically) receive specialized treatment at the MMC, NSJOs recently entering the MMC were periodically selected for pre-treatment assessment and tested approximately 5-7 days after entry. The protocol takes approximately nine to ten hours to administer and includes the administration of a comprehensive clinical interview and a variety of clinician-administered instruments and self-report measures. The selection of assessment measures was informed by an examination on the empirical literature relevant for the treatment of JSOs. Since the beginning of the program in 2000, the assessment protocol has been revised with new measures being added and outdated measures being removed with reference to the empirical literature relevant for this population.

Prior to assessment, each participant was provided with a detailed informed consent form outlining the nature of the assessment and the manner in which their individual data could be used. Participants were informed of efforts to preserve confidentiality including assigning identification numbers on all assessment materials and the secure storage and protection of all assessment materials. Potential JSO participants were informed of their ability to withdraw from the research component of the pre-treatment assessment at any time and suffer no consequences for withdrawing their assent. Potential NSJO participants were informed of their ability to

withdraw from the process entirely without penalty. Prior to each interview, participants were encouraged to respond in an open and honest manner while assessors were instructed to highlight any inconsistent information in a non-confrontational manner between a participant's self-report and available file information. Advanced clinical psychology graduate students conducted the pre-treatment comprehensive clinical interviews. Advanced graduate students also administer all clinician-administered measures such as the PCL:YV. Undergraduate research assistants commonly administered all self-report instruments such as the MACI, IPPA, and SAVE measures, which were used in the current study, in either a group or individual testing environment. All raters received comprehensive training in proper administration and scoring procedures for relevant measures. Additionally, graduate students and previously trained graduate students completed calibration exercises consisting of scoring and coding mock protocols independently and discussing each scoring decision. Calibration exercises were scheduled periodically in order to maintain scoring consistency among interviewers. Upon completion of the pre-treatment assessment clinical interview, advanced graduate student clinicians coded participant responses and entered variable codes into a computer database. Additionally, advanced graduate students collected self-report materials from undergraduate research assistants and entered responses into a computer database.

Materials and Measures

Comprehensive clinical interview and review of file information. The interview is a semi-structured protocol designed to gather information across the following broad domains: relevant demographic variables; family history and adjustment issues; health-related issues and interventions; alcohol and substance history and current usage; educational and vocational history and current functioning; abuse and trauma history; current environmental and contextual

stressors; in-depth history of previous and current criminal activity and charges; history of psychological and psychiatric issues and treatments; and a detailed collection of information related to previous and/or current sexual offending behaviors. Participants were interviewed and all available collateral file information was reviewed in order to supplement and/or verify participant responses. Corresponding variables were coded during the assessment procedure based on the clinical interview and collateral file information.

The Psychopathy Checklist: Youth Version (PCL:YV; Forth et al., 2003). The PCL:YV was used to assess psychopathic traits. The PCL:YV consists of a semi-structured interview and a 20-item clinical rating scale that is designed to evaluate psychopathic characteristics and behaviors in 12- to 18-year-old male and female adolescents. Each item is scored on a 3-point ordinal scale (0, 1, or 2). Scoring is based on the degree to which the personality and behavior for the adolescent matches the item description, with 2 indicating the item applies to the youth, 1 indicating the item applies to a certain extent but not the degree required for a score of 2, and 0 indicating the item does not apply to the youth. Items are scored based on multiple sources including the information gathered from the semi-structured interview and file review. The PCL:YV demonstrates good to excellent psychometric properties, including high interrater reliability (Forth et al., 2003), high internal consistency (Forth et al., 2003; O'Neill, Lidz, & Heilbrun, 2003), high single-rater reliability (Catchpole & Gretton, 2003), and adequate test-retest reliability coefficients (Skeem & Cauffman, 2003).

As discussed earlier, researchers have identified several factor models of the PCL:YV. As discussed previously, the leading factor models for the PCL:YV are the 3- and 4-factor models. The 4-factor model includes the same 13 items contained in the 3-factor model along with the additional items comprising the Antisocial factor. The 3-factor model omits these items entirely.

The 4-factor model has been adopted by the authors of the PCL:YV as the preferred method for obtaining factor scores. Consistent with methods used by Stockdale et al. (2010), the present study will examine the 3- and 4-factor model total scores and the individual scores for each of the four factors. In this study, the total score for the 4-factor model represents a complete 20-item total. Although the 4-factor model of the PCL:YV represents an 18-item total score based on CFA studies (Neumann et al., 2006), research testing criterion-related validity of the measure typically uses the 20-item total score (Stockdale et al., 2010; Vincent et al., 2008).

To evaluate interrater reliability, 25 (4.6%) cases were randomly selected from the current JSO sample and independently rated by another coder trained in the administration of the PCL:YV. Interrater reliability was examined using a one-way random effects model intraclass correlation coefficient (single measure). Higher interrater reliability was observed for PCL:YV total scores (4-factor model) ($ICC = .90$). Interrater reliability tended to be higher for the Lifestyle and Antisocial factors ($ICCs = .90$ and $.91$, respectively), whereas lower levels of agreement were observed for the Interpersonal and Affective factors ($ICCs = .84$ and $.72$, respectively).

Recidivism data. Recidivism data were collected for all JSOs admitted to ABSOP from 2000 to 2011 and all NSJOs who had been selected for assessment. As noted earlier, re-arrest data were obtained from the ACIS as recorded by the National Crime Information Center (NCIC) and the Automation Fingerprint Identification System (AFIS). The recidivism information provided by ACIS was based solely on arrests made within the state of Alabama. Out-of-state arrests are not captured. Recidivism was coded in a binary manner (yes-no recidivism, 1-0) along with entry, release, and arrest dates in order to perform survival analyses. In the present study, *general recidivism* was defined as *any* criminal arrest following the youth's first release from the

MMC into the community. *Violent recidivism* was defined as any new arrest for a violent offense. A violent offense was defined as any offense that involves physical harm, aggression or violence towards a person or animal or is very likely to result in these outcomes.⁴ This offense category includes weapons offenses, forcible sex offenses, and certain property offenses that might include a high likelihood of violence (e.g., Burglary and Arson in the first degree). Unless otherwise specified, in the present study, *sexual recidivism* includes only arrests for *direct sexual offenses* and excludes *administrative sexual offenses*. A *direct sexual offense* includes contact sexual offenses (e.g., rape, sodomy) as well as status (e.g., prostitution), facilitation (e.g., solicitation or promotion of prostitution), and pornography offenses. This definition excludes arrests for various *administrative sexual offenses* such as violations of probation and registration requirements (relating to the original offense) that are more administrative in nature. Recidivism data reported in the current study were obtained on August 4, 2011.

Data Analytic Strategy

Study 1 examines the accuracy of the PCL:YV in predicting general, violent, and sexual recidivism outcomes. Prior to conducting the primary analyses, visual inspection of the data for both samples was conducted for missing values and accuracy of data entry. To define the pattern of missing data, a missing values analysis was conducted. Given the low percentage of missing data for PCL:YV scores (< 5%), cases were deleted listwise in Study 1. All statistical analyses for Study 1 were conducted using SPSS version 21 and R version 2.15.3.

The predictive accuracy of PCL:YV scores over the follow-up period was examined using receiver operator characteristic (ROC) analyses. The ROC is calculated for each score for

⁴ This is a broader coding scheme than used in the Uniform Crime Reports, which codes only these offenses as violent: homicide, forcible rape, robbery, and aggravated assault.

new charges of any offense, any violent offense, any nonviolent offense, and any sexual offense. The procedure yields a plot of sensitivity versus 1–specificity (often called the false-positive rate) that offers a summary of sensitivity and specificity across a range of cut points for a continuous predictor. The area under the curve (AUC) is equivalent to the probability that a recidivist will obtain a higher score on the risk prediction measure than a nonrecidivist (e.g., Rice & Harris, 1995). Unlike other measures of predictive accuracy, the AUC is less influenced by sample size, base rates, and selection ratios. It ranges from 0.50 (no discrimination) to a theoretical maximum of 1 (perfect discrimination). Rice and Harris (2005) recommended that the magnitude of AUCs be interpreted as follows: .55 - .63 = small, .65 - .70 = medium effect size, and .71 and higher = large effect size.

Because ROCs are based solely on ranks, they do not take into account the distribution of risk more globally across the sample and are less sensitive than methods based on global measures of model fit such as logistic regression (Rice & Harris, 2005). Subsequent regression analyses were planned to examine the relationship between the PCL:YV total and factor scores and recidivism outcomes. Independent sample *t*-tests were first conducted to examine group differences between recidivists and nonrecidivists across the various recidivism outcomes. The data analytic strategy used by Stockdale and colleagues (2010) was used for subsequent analyses. First, the independent contribution of the individual PCL:YV factors is examined after controlling for the effects of age at entry. Second, to examine the relative contribution of the 3- and 4-factor models is examined using a hierarchical approach. After controlling for age at entry⁵, the Antisocial factor score is entered in the second block, followed by the 3-factor model total in the final block.

⁵ Due to the lack of variability in the age of JSOs, age was examined as a continuous variable.

At the time the data were analyzed, survival data (i.e., time-to-event) data were available only for general recidivism outcomes. Cox regression survival analysis was used for examining general recidivism outcomes. Unlike logistic regression, Cox regression is a form of survival analysis that accounts for varying time at risk among the participants. Similar to logistic regression, however, it requires an explanatory model. Logistic regression was used to examine violent and sexual recidivism outcomes. Exponentiated regression coefficients (e^B), an odds ratio (OR) representing the predicted change in outcome or hazard for each unit increase in the predictor variable are reported. For both e^B and OR, coefficients above 1.0 indicate a positive relationship to the criterion (Stockdale et al., 2010; Tabachnick & Fidell, 2007). Next, predictive accuracy of the PCL:YV for general recidivism was also examined through Kaplan-Meier survival analysis. This method of survival analysis is used to fit survival data without an explanatory model and is appropriate as a follow-up to Cox procedures, which permit an explanatory model. This analysis was performed to compare general failure rates of youths scoring at different levels of the PCL:YV (i.e., low and moderate) similar to methods used by Stockdale et al. (2010). The survival time variable for all survival analyses was the time between the adolescent's release from custody and the time of arrest for a new general offense, whereas the total follow-up time was used for nonrecidivists (i.e., the date of release through to the outcome collection date).

Results

Descriptive Statistics

Table 2 presents descriptive statistics for PCL:YV factor and total scores, including the four facets and the 3-factor and 4-factor model totals for the aggregate sample ($n = 776$). Total PCL:YV scores for the aggregate sample ranged from 1 to 39 points for the 4-factor model and 0 to 26 for the 3-factor model. Scores for the individual factors ranged from 0 to 10.

Aggregate sample. Descriptive statistics are also provided in Table 2 for offender and racial subgroups with group comparisons using independent sample t -tests. Significant differences were observed between JSOs and NSJOs (with JSOs as reference category) on the Lifestyle $t(733) = -6.37, p < .001; d = -.47$ and Antisocial $t(733) = -8.67, p < .001; d = -.64$ factors as well as the 3-factor $t(733) = -2.51, p < .01; d = -.19$ and 4-factor $t(733) = -5.44, p < .001; d = -.40$ model totals. Thus, at the factor level, when compared to NSJOs, JSOs received significantly lower scores on the behavioral facets of the PCL:YV represented by the Lifestyle and Antisocial factor scores, but no significant differences were observed with respect to the Interpersonal and Affective factor scores. Similarly, significant differences were observed between Minority and White youth (with Minority youth as the reference group) on Affective $t(733) = 4.01, p < .001; d = .29$ and Antisocial $t(733) = 3.23, p = .001; d = .24$ factor scores as well as the 3-factor $t(733) = 2.58, p = .01; d = .19$ and 4-factor $t(733) = 3.67, p < .001; d = .27$ model total scores. Thus, on average, Minority youth obtained significantly higher Affective and Antisocial scores than White youth.

JSO sample. Descriptive statistics are provided in Table 3 for group comparisons of recidivists and nonrecidivists in the JSO-only sample for general, violent, and sexual recidivism outcomes using independent sample *t*-tests. Significant mean differences were observed between recidivists and nonrecidivists across the general and violent subgroups for the 3- and 4-factor model totals. Consistent with prior findings (Edens et al., 2007; Stockdale et al., 2010), the largest effect sizes were observed for the 4-factor model (20-item) total score for the general recidivism subgroup ($t(513) = 5.95, p > .001; d = .52$) followed by the violent ($t(513) = 5.01, p > .001; d = .49$) recidivism subgroup. Significant differences were also observed for the general and violent, subgroups for the Interpersonal, Affective, Lifestyle and Antisocial factor scores as depicted in Table 3 below. These findings were consistent with prior findings (e.g., Edens et al., 2007; Leistico et al., 2008; Parks & Bard, 2006). Consistent with prior results (e.g., Stockdale et al., 2010; Walters et al., 2008), the Antisocial factor uniquely contributed to the prediction of recidivism outcomes. In this comparison, medium effect sizes were observed for the Antisocial factor for the general recidivism ($t(513) = 6.51, p < .001, d = .58$) and violent ($t(513) = 5.54, p < .001; d = .44$) subgroups. Notably, modestly significant mean differences were also observed for sexual recidivism and yielded small effects for the 4-factor model total score ($t(513) = 1.99, p = .05; d = .17$) and the Antisocial factor score ($t(513) = 1.98, p = .05; d = .17$).

Primary Analyses

As noted earlier, the primary analyses were conducted using only those 776 participants who had been released for a minimum of two years. For these analyses, missing PCL:YV values and percentages by group were as follows: aggregate ($n = 32; 4.1\%$), JSO ($n = 23; 4.3\%$), and NJSO ($n = 9; 4.1\%$). The predictive accuracy of the individual four PCL:YV factors as well as the elements of the 3- and 4-factor model total scores were examined. Accuracy was examined

first using ROC analyses in the aggregate, JSO, and NSJO samples. Due to unequal offender group sizes ($n = 538$ and 222 ; JSO and NSJO, respectively) and consistent with study objectives, regression analyses were conducted only with the JSO sample.

Prediction of recidivism by PCL:YV factors.

ROC analyses. ROC analyses were conducted to examine the predictive accuracy of the four PCL:YV factors for general, violent, and sexual recidivism outcomes. Because ROC analyses are less sensitive to relative sample sizes, base rates, and selection ratios, the analyses were conducted for the aggregated sample and the disaggregated sample of JSOs and NSJOs. Due to restricted variability in the NSJO sample, however, it was hypothesized (and generally observed) that ROC results would be nonsignificant for this group when disaggregated.

General and violent recidivism. As depicted in Table 4, each of the four individual PCL:YV factors significantly predicted general and violent recidivism in the JSO sample. All factors significantly predicted general and violent recidivism in the aggregate sample—except the Affective factor. None of PCL:YV factors significantly predicted sexual recidivism in the aggregate sample. The Lifestyle and Antisocial factors demonstrated small to moderate predictive accuracy for general and violent recidivism outcomes (AUCs = .60 to .66) in the aggregate sample. For general and violent recidivism outcomes, the highest accuracy was observed for the Antisocial factor (AUC = .66, $p < .001$) followed by the Lifestyle factor (AUC = .60 to .62, $ps < .001$). The lowest predictive accuracy was observed for the Affective factor (AUC = .54, *ns*) followed by the Interpersonal factor (AUC = .55 to .56, $p < .05$). In fact, the Affective factor predictive of general and violent recidivism outcomes during the follow-up period only within the JSO sample, but not the aggregate sample. Within the JSO and aggregate samples, the Interpersonal factor demonstrated significant predictive accuracy for general and

violent recidivism outcomes over the follow-up period. The Lifestyle and Antisocial factors demonstrated better predictive accuracy than the Interpersonal and Affective factors for both general and violent recidivism outcomes. In addition, although the Lifestyle factor demonstrates higher AUC values than the Interpersonal and Affective factors, there is more overlap across confidence intervals between factors than observed with the Antisocial factor. Thus, the Antisocial factor does indicate superior predictive accuracy to the Interpersonal and Affective factors for general and violent recidivism—whereas the Lifestyle factor does not.

With respect to the disaggregated JSO and NSJO sample, as hypothesized, predictive accuracy for the individual PCL:YV factors was observed only for the JSO sample, with one exception. For the NSJO sample, the Antisocial factor emerged as a significant predictor of violent recidivism, but with a very small effect ($AUC = .58, p = .05$). As expected, the PCL:YV factors demonstrated similar predictive trends for the JSO sample as observed in the aggregate sample with a few notable differences. Consistent with findings in the aggregate sample, the Lifestyle and Antisocial factors demonstrated significant predictive accuracy for general and violent recidivism outcomes in the JSO sample—with the Antisocial factor showing slightly better, but not superior predictive accuracy. In contrast to contrary findings in the aggregate sample, the Affective factor demonstrated significant predictive accuracy for general ($AUC = .56, p < .05$) and violent ($AUC = .57, p < .01$) recidivism in the JSO sample. Most notably, the Antisocial factor demonstrated significant predictive accuracy ($AUC = .62$) for sexual recidivism in the JSO sample. Although effects are small, this result was surprising given low base rates (5.2%) of sexual reoffending observed in the JSO sample.

Regression analyses. Cox and logistic regression was used to examine the predictive accuracy of the four PCL:YV factors with respect to recidivism outcomes in the JSO sample

after controlling for age at entry. As noted earlier, survival data were only available for general recidivism, and the Cox procedure was used only for this data. Logistic regression was used to examine violent and sexual recidivism outcomes. Consistent with Stockdale et al. (2010), the four factors were entered simultaneously in all analyses to examine their unique relationships to recidivism.

General recidivism. Results for general recidivism outcomes are presented in Table 5. Results revealed a significant overall effect with respect to the prediction of general recidivism outcomes in the final model $\chi^2(1, N = 538) = 39.51, p < .001$. In the final model, age (Wald = 10.37, $p < .01$) and the Antisocial factor (Wald = 11.88, $p = .001$) were significant predictors of general recidivism outcomes after controlling for individual differences in follow-up period. Subsequently, an extended Cox model was run to account for the time-dependent effects of age and to determine if the current findings held after controlling for those effects. A time covariate term was added to the model to account for those effects and the contribution of the individual factors was examined. Age at entry and the time covariate were entered in the first block, followed by the individual PCL:YV factors. If the participant was older at the time of entry, he was significantly more likely to be arrested for a new general offense (Wald = 26.26, $p < .001$). This finding suggests that, over time, the risk effects of older age at are more pronounced. In the extended model, Antisocial factor scores again emerged as a significant predictor of general recidivism (Wald = 12.97, $p < .001$) in the second block even after controlling for the time-dependent effects of age and individual differences in follow-up time.

Violent recidivism. Logistic regression was used to examine the predictive accuracy of the individual PCL:YV factors for violent recidivism outcomes in the JSO sample after controlling for age at entry. Results for violent recidivism outcomes indicated a significant net

effect ($-2*\text{Log Likelihood} = 503.00$) $\chi^2 (5, N = 538) = 30.17, p < .001$ and are set forth in Table 6. Age at entry did not emerge as a significant predictor of violent recidivism when added in the first block (Wald = 1.06, $p = .30$) and remained nonsignificant in the second block (Wald = 1.90, $p = .17$). As noted in Table 6, the addition of the four factors in the second block significantly improved prediction of violent recidivism outcomes $\Delta\chi^2 (4, N = 538) = 30.17, p < .001$.

However, as shown in Table 6, only the Antisocial factor (Wald = 16.32, $p < .001$) emerged as a significant predictor of violent recidivism outcomes in the final block. Notably, these results do not account for the time-dependent effects of age at entry and unequal follow-up periods, which may have biased results.

Sexual recidivism. Logistic regression was used to examine the predictive accuracy of the individual PCL:YV factors for sexual recidivism outcomes in the JSO sample after controlling for age at entry. Results revealed a nonsignificant overall effect with respect to the prediction of sexual recidivism outcomes in the final model ($-2*\text{Log Likelihood} = 205.08$) $\chi^2 (5, N = 538) = 6.69, p = .25$. Tables were omitted accordingly. As predicted, age at entry did not emerge as a significant predictor when entered in the first block (Wald = 2.17, $p = .14$) and remained nonsignificant in the second block. There was no relative improvement in prediction from the addition of the four individual PCL:YV factors in the second block $\Delta\chi^2 (4, N = 538) = 4.47, p = .35$. When added together with the remaining PCL:YV factors, the Antisocial factor did not uniquely contribute to prediction.

Prediction of recidivism by PCL:YV factor model

ROC analyses. ROC analyses were conducted to examine the predictive accuracy of the four factors for general, violent, and sexual recidivism outcomes for the aggregate sample and the disaggregated offender samples of JSOs and NSJOs. As noted earlier, it was hypothesized

(and observed) that ROC results would be nonsignificant for the NSJO offender group when disaggregated. Table 7 displays predictive accuracy results from ROC analyses for total scores from the 3- and 4-factor model scores for general, violent, and recidivism outcomes.

As shown in Table 7, the PCL:YV 3- and 4-factor model total scores significantly predicted general and violent, but not sexual, recidivism outcomes in the aggregate sample. The 3- and 4-factor model total scores demonstrated small to moderate predictive accuracy in the aggregate sample for general (AUCs = .60 to .64, respectively) and violent (AUCs = .59 to .6, respectively) recidivism. Results were similar in JSOs for general (AUCs = .60 to .64, respectively) and violent (AUCs = .60 to .65, respectively) recidivism. Notably, however, the 4-factor model significantly, albeit negligibly, predicted sexual recidivism outcomes (AUC = .60, $p = .05$) only in the JSO sample. With respect to the disaggregated NSJO sample, no significant results were observed. Whereas the Antisocial factor had emerged as a significant predictor of violent recidivism for NSJOs, the 4-factor model total score did not. Again, this result was expected to be influenced by the lower group membership for NSJOs when disaggregated.

Although the 4-factor model total score demonstrated slightly higher AUC values for recidivism outcomes in all samples, the confidence intervals for the AUC values overlapped between the 3- and 4-factor models—indicating that neither model demonstrated superior predictive accuracy. This result is consistent with prior research finding higher AUC values for the 4-factor model, but small differences in prediction (Stockdale et al., 2010). In the aggregate sample, predictive accuracy is strongest for the 4-factor model total score with respect to general (AUC = .64, $p < .001$) and violent (AUC = .63, $p < .001$) recidivism outcomes. This result was expected given the predictive accuracy of the Antisocial factor, which is included in the 4-factor model total but omitted from the 3-factor model total.

Regression analyses. Regressions were subsequently conducted to compare the 3-factor and 4-factor models after controlling for age at entry in the JSO sample. Consistent with the strategy used in Stockdale et al. (2012) for comparing the 3- and 4-factor models, the Antisocial factor score was entered first, followed by the 3-factor model total score.

General recidivism. Cox regression was performed to examine general recidivism outcomes. Results are presented in Table 8. Results revealed a significant overall effect with respect to the prediction of general recidivism outcomes in the final model $\chi^2(1, N = 538) = 39.51, p < .001$. Notably, the addition of the 3-factor model total score in the third block did not contribute significantly to the prediction of general recidivism. An extended Cox model was conducted to account for the time-dependent effects of age of entry on the model and to determine if the current findings held after controlling for those effects. As expected based on the prior findings with individual factor scores, the effects of age on general recidivism outcome was found to be significant and time-dependent. Participants older age at entry were more likely to be arrested likely to be arrested for a new general offense (Wald = 26.26, $p < .001$). In the second block, the Antisocial factor emerged as a significant predictor of general recidivism (Wald = 33.20, $p < .001$) and remained significant in the final model after controlling for age at entry (Wald = 13.89, $p < .001$).

Violent recidivism. Logistic regression was used to examine the relative contribution of the two PCL:YV factor models for violent recidivism outcomes after controlling for the effects of age at entry. Results for this analysis indicated a significant net effect $2 * \text{Log Likelihood} = 503.93$ $\chi^2(1, N = 538) = 30.30, p < .001$ and are set forth in Table 9. Age at entry did not emerge as a significant predictor of violent recidivism outcomes in the first block and remained nonsignificant in the final block. As depicted in Table 9, when added in the second block, the

Antisocial factor (Wald = 24.68, $p < .001$) added incrementally to the prediction of violent recidivism $\Delta\chi^2(4, N = 538) = 25.52, p < .001$ after controlling for the effects of age (Wald = 1.83, $p = .20$). As expected, when added in the third block, the 3-factor model total score did not contribute significantly to prediction of violent recidivism (Wald = .01 $p = .95$). As shown in Table 9, the Antisocial factor consistently predicted violent recidivism regardless of the contributions of age and 3-factor model total score, which were nonsignificant. Notably, these results do not account for the time-dependent effects of age at entry and unequal follow-up periods, which may have biased results.

Sexual recidivism. Logistic regression was used to examine the relative contribution of the two PCL:YV factor models for sexual recidivism outcomes after controlling for the effects of age at entry. Results of the final model revealed a nonsignificant overall effect with respect to the prediction of sexual recidivism outcomes ($-2 * \text{Log Likelihood} = 205.34$) $\chi^2(1, N = 538) = 6.43, p = .09$. Tables were omitted accordingly. Again, age did not emerge as a significant predictor when entered in the first block (Wald = 2.17, $p = .14$). Contrary to hypothesis, in the second block, the Antisocial factor (Wald = 4.09, $p < .05$) emerged as a significant predictor of violent recidivism outcomes after controlling for the effects of age and produced a slight relative improvement in the prediction $\Delta\chi^2(4, N = 538) = 4.13, p < .05$ of sexual recidivism. In the third block, the relative contribution from adding the 3-factor model total score was then examined. The addition of the 3-factor model total score (Wald = .12, $p = .73$) in the final block did not contribute significantly to the model. When this score was added, the significant individual contribution of the Antisocial factor (Wald = 1.94, $p = .16$) disappeared. As with violent recidivism outcomes, these results do not account for the time-dependent effects of age and follow-up period.

Kaplan-Meier survival analysis for general recidivism

The PCL:YV scores (total and factor) emerging from the two comparisons described above as the most significant predictors of general recidivism outcomes (i.e., the PCL:YV 4-factor (20-item) total score and the Antisocial factor score) were examined using Kaplan-Meier survival analysis. The analyses were used to track the relative failure rates for groups over the follow-up period based on PCL:YV total scores and Antisocial factor scores—after controlling for individual differences in follow-up. Based on the overall low PCL:YV scores in this dataset, groups were formed using a median split producing two PCL:YV total groups (low, < 15, $n = 248$; moderate, 15+, $n = 267$) and two PCL:YV Antisocial factor groups (low, < 4, $n = 232$; moderate, 4+, $n = 306$)⁶.

Figures 1 and 2 depict higher and faster rates of rearrest for any new offense with an increase in PCL:YV total or Antisocial factor level, respectively. As depicted in Figure 1, for PCL:YV total scores, log rank tests demonstrated significant pairwise differences between the low and moderate groups $\chi^2(1, N = 538) = 30.82, p < .001$. Similarly, Figure 2 shows that the medium Antisocial factor group also had significantly higher general failure rates than the low group $\chi^2(1, N = 538) = 21.12, p < .001$.

⁶ Because the average PCL:YV scores were so low in this sample, a truly “high” group (i.e., 30+) could not be classified. Moreover, this type of classification was inconsistent with recommendations made by the author.

Discussion

A primary objective of Study 1 was to examine the predictive accuracy of the PCL:YV for various recidivism outcomes using univariate ROC and regression analyses to replicate key findings in Stockdale et al. (2010). In Study 1, three hypotheses were examined. Hypothesis 1 posited that the PCL:YV would predict general and violent, but not sexual, recidivism outcomes. Additionally, it was expected that all PCL:YV factors would predict recidivism to some extent, but it was predicted that the Lifestyle and Antisocial factors would contribute uniquely to the prediction of recidivism at the factor level. It also was predicted that the 3-factor (13-item) model and 4-factor (20-item) model total scores would demonstrate comparable predictive utility.

In general, the results of univariate prediction analyses largely confirmed Hypothesis 1. In ROC analyses, the PCL:YV significantly predicted general and violent recidivism outcomes in both the aggregate and JSO samples over a 10-year follow-up period. Given the observed overlap in AUC values and confidence intervals in ROC analyses, the 3- and 4-factor model total scores appeared to predict general and violent recidivism outcomes comparably—confirming Hypotheses 1 and replicating prior findings with the PCL:YV in adolescent (Corrado, Vincent, Hart, & Cohen, 2004; Stockdale et al., 2010; Vincent et al., 2008) and adult (Walters et al., 2008) samples. At the factor level, the Lifestyle, Antisocial, and Interpersonal factor scores consistently predicted general and violent recidivism for both the aggregate and JSO samples. As predicted, the Antisocial factor demonstrated superior predictive accuracy relative to the Interpersonal and Affective factors, but not the Lifestyle factor based on an examination of AUC values and

confidence intervals. Only the Antisocial factor was found to be predictive of recidivism (i.e., violent) outcomes in the disaggregated NSJO sample, which may be attributable to the reduced variability in the NSJO sample in terms of characteristics and outcomes.

Unique effects were observed with the JSO sample in ROC analyses. The Affective factor only predicted recidivism in the disaggregated JSO sample and not the aggregate sample. As discussed below, these effects did not translate to regression analyses. Contrary to Hypothesis 1, the Antisocial factor and 4-factor model total scores did predict sexual recidivism in the JSO sample despite low base rates—but with small effects ($AUC = .60 - .62$). This finding was further examined under Hypothesis 2.

With respect to Hypothesis 2, current results replicated prior results by Stockdale et al. (2010) examining the independent and relative contribution of the various factors to the prediction of youth-adult recidivism outcomes in regression analyses. First, it was hypothesized (and observed, for the most part) that PCL:YV scores would not predict sexual recidivism outcomes in regression analyses. Second, at the factor level, it was expected that the Antisocial factor would emerge as a significant predictor of general and violent outcomes; however, due to inconsistencies in past findings, potential associations with other factors were less clear and predicted to be insignificant except the Lifestyle factor. Third, with respect to the relative contribution of the total model scores examined under Hypothesis 2, it was predicted that the Antisocial factor would demonstrate significant incremental variance for the prediction of general and violent, but not sexual, recidivism beyond age of entry and explain the most variance relative to the 3-factor model total.

At the factor level, regression analyses confirmed the predictive accuracy of the Antisocial factor for general and violent recidivism relative to the remaining PCL:YV factors.

Although these results are inconsistent with Stockdale et al. (2010), which identified the Antisocial and Interpersonal factor as significant predictors of recidivism in a Cox regression analysis, these results were supported by the literature. Outside of the Antisocial factor, the incremental validity of other factors has not been consistently replicated. For example, in a series of Cox regression survival analyses, Vincent et al. (2008) found that the Antisocial and Lifestyle factors were more predictive of recidivism outcomes than the remaining two factors. Moreover, in an analysis of six adult samples, Walters et al. (2008) found that the first three factors demonstrated incremental validity relative to the Antisocial factor in only one sample.

With respect to the relative contribution of the total model scores examined under Hypothesis 2, only the Antisocial factor contributed incrementally to the prediction of general and violent recidivism after controlling for age at entry and emerged as a significant predictor of both outcomes in the final block. Age at entry only predicted general recidivism. As expected, the 3-factor model total did not add incrementally to the prediction of any recidivism outcomes. Consistent with prior research in adolescent and adult samples (e.g., Stockdale et al., 2010; Walters et al., 2008), these results support the unique role of the Antisocial factor in the prediction of general and violent recidivism outcomes. Although Stockdale et al. (2010) found that the 3-factor model total score demonstrated slight, but significant, incremental variance for recidivism outcomes relative to the Antisocial factor, this effect was observed only with respect to short-term youth (i.e., arrested before age 18) recidivism whereas Study 1 examined combined youth-adult recidivism.

Contrary to Hypothesis 2, when entered in as the second block in the model, the Antisocial factor contributed incremental variance in the prediction of sexual recidivism after controlling for age at entry. This result disappeared after the addition of the 3-factor model total

score in the final block. However, this result does not account for unequal follow-up periods, and therefore, must be interpreted with caution. Nonetheless, these results do support prior isolated results with JSOs indicating that antisocial tendencies (reflected by the Antisocial factor) may be a risk factor in JSOs for sexual recidivism (see e.g., McCann & Lussier, 2008), and are consistent with the observed heterogeneity in JSOs and their similar to other juvenile offenders (see Zimring, 2004).

Finally, to examine Hypothesis 3, Kaplan-Meier survival analysis was conducted to examine general recidivism outcomes in the JSO sample based on PCL:YV factor and total score levels. Consistent with Stockdale et al. (2010), only the total score and factor score emerging as significantly predictive from previous analyses were examined. Under Hypothesis 3, it was expected that general failure rates would be faster and more pronounced for participants with higher levels (low versus medium) of PCL:YV scores. Consistent with Hypothesis 3, higher levels of Antisocial factor and 4-factor model total scores contributed to faster and more pronounced failure rates for general arrests in the JSO sample over the follow-up period.

The current results may reflect the dynamic nature of risk and psychopathic features in an adolescent sample. In regression analyses, the Interpersonal, Affective, and Lifestyle factor scores and 3-factor model total scores demonstrated nonsignificant associations with recidivism outcomes. Similar patterns with the Interpersonal and Affective factors, in particular, have been consistently observed in other studies examining the PCL:YV and have been attributed to temporal instability of adolescent psychopathy as a unitary and dimensional construct (Corrado et al., 2004; Stockdale et al., 2010; Vincent et al., 2008). Although the Lifestyle facet was hypothesized to emerge as a significant predictor of recidivism in regression analyses, these nonsignificant results are consistent with prior results in adults and adolescents (Stockdale et al.,

2010; Walters et al., 2008). Vincent et al. (2008) posited that the temporal instability of the Interpersonal and Affective facets contributes to “diminishing associations with violence and antisocial behavior” over time (p. 295). Notably, this potential for change in PCL:YV factor scores was observed in a 2010 study involving a sample of 90 male JSOs treated at the MMC (Newman, 2001). Significant reductions in mean scores were observed for all PCL:YV factors—except the Antisocial factor. The Interpersonal and Affective factor scores demonstrated the highest reductions yielding moderate to large effect sizes, respectively (Newman, 2011). The Antisocial factor—which has demonstrated consistent significant positive associations with recidivism outcomes—is comprised largely of historical items relating to criminal behavior. These item scores change very little over in time unless the individual’s antisocial behavior increases (e.g., more arrests, fights), but baseline remains the same. Thus, this factor is more stable and demonstrates consistent significant positive associations with recidivism outcomes. Moreover, the current results confirm prior findings indicating that interrater reliability is lower for the Interpersonal and Affective factors than the Lifestyle and Antisocial factors (e.g., Stockdale et al., 2010). In sum, the discontinuity and reliability problems observed in the Interpersonal and Affective factors suggest that use of these scores for the prediction of risk (i.e., individually or as part of total score) is problematic.

These results underscore the importance of distinguishing between predicting short-versus long-term risk when using the PCL:YV. Prior studies have found that, in general, the PCL:YV is a better predictor of youth-only (under 18) recidivism outcome followed by combined youth-adult recidivism outcomes, than adult-only (over 18) outcomes (see e.g., Stockdale et al., 2010). Notably, unlike Stockdale et al. (2010), Study 1 examined combined youth-adult recidivism outcomes and did not examine them separately as done in Stockdale et al.

(2010). Therefore, predictive accuracy could be weaker if only adult outcomes were examined, and perhaps, stronger if only youth outcomes were examined. Nevertheless, even those studies utilizing combined youth-adult recidivism outcome measures have found weaker (Cauffman, Kimonis, Dmitrieva, & Monahan, 2009) or even inverse (Edens & Cahill, 2007) associations with the first three factors. Again, the diminishing associations in certain psychopathic dimensions along with the changing nature of risk over the lifespan may weaken the predictive utility of the PCL:YV over longer time periods.

Study 1 has specific strengths and limitations that must be considered when interpreting these results. A notable strength of Study 1 was the use of PCL:YV scores obtained from administration by trained graduate students utilizing both face-to-face contact with youth as well as file reviews. Administration of the PCL:YV is time consuming and requires additional personnel expenses. As a result, most relevant studies have scored the PCL:YV using archival file review only, which may affect the reliability of scores. As noted above, Study 1 results replicated relevant findings from adolescent (e.g., Corrado et al., 2004; Stockdale et al., 2010; Vincent et al., 2008) and adult (Walters et al., 2008) offenders. In addition, the current sample was large and relatively diverse—in terms of both demographic and individual characteristics. To date, there are no published individual studies examining PCL:YV scores in a JSO sample of this size after release from residential treatment. These unique study characteristics provide meaningful information for the use of the PCL:YV for treatment and assessment in forensic samples. Interrater reliability was examined in a small subset of cases ($n = 25$) for the PCL:YV and provides some insight regarding reliability in the current sample.

There were also several limitations present in Study 1. The present study used a group of JSOs. Thus, these findings may not generalize to other groups (e.g., NSJOs, females,

nondetained, no treatment). JSO participants in the current study underwent specialized, intensive long-term treatment in a secured setting. These results also may not replicate to other JSO samples that are in nonresidential or outpatient where less intensive treatment methods are used. Additionally, the effect sizes in Study 1 are relatively small, which may be influenced by the large sample size, lower base rates, and the lower mean PCL:YV scores observed in this sample. Notably, prior research with suggests that JSOs tend to obtain lower mean PCL:YV scores than other offenders (see Gretton et al., 2001; McCann & Lussier, 2008; Viljoen et al., 2009). Because lower mean scores appear to reduce predictive accuracy with the PCL:YV (Caldwell et al., 2008), the lower scores observed in this JSO sample may have limited predictive power for this analysis.

Other limitations relate to study design. Study 1 uses a cross-sectional design, which prevents the examination of developmental trajectories (i.e., change and stability) of PCL:YV scores in relation to outcomes over time. Given the increased discontinuity identified in several PCL:YV factors, longitudinal research is needed to clarify how these traits impacts recidivism outcomes over the lifespan. Although interrater reliability was initially examined in Study 1, more comprehensive information may be needed when interpreting data from a JSO sample. Due to the stigma associated with sexual offenses, JSOs are likely to minimize, distort, or lie about their sexual offending behaviors (Burkhart, Cook, & Summerall, 2008), which may inflate scores on the Affective (e.g., callous, lack of remorse) and Interpersonal (e.g., impression management) items of the PCL:YV at intake and bias results. These scores are based primarily on observation and not easily confirmed through file review, which highlights the importance of the reliability of raters when interpreting results in JSOs. Additionally, study design contributed to unequal offender group sizes (i.e., NSJO and JSO), which affected the feasibility of comparing JSO and

NSJO outcomes. Moreover, non-random NSJO selection may have contributed to bias in results obtained with the NSJO sample. At this time, pre-treatment assessments were administered to all incoming JSOs; however, NSJOs were selected occasionally (not completely at random) for assessment to provide some insight into offender characteristics. Because treatment is mandated for all JSOs, no wait-list or control group sample was available for comparison; thus, no conclusive statements regarding the role or efficacy of treatment can be made. As noted previously, survival data were not available for sexual and violent recidivism outcomes; thus, these results do not account for time-dependent effects including unequal follow-up periods and may be biased. Finally, a median split methodology was used for total and factor scores in the Kaplan Meier survival analysis. This methodology makes categorical divisions that may classify participants with relatively similar scores differently because they are close to the cut line. Future research should explore other statistical approaches.

Study 2—Risk and Protective Factors in Juvenile Sex Offenders

In Study 2, several hypotheses regarding the relationship between risk and protective factors and recidivism outcomes were tested in a large ($n = 538$) sample of JSOs. Study 2 also considers the role of adolescent psychopathic traits and typological differences unique to JSOs in predicting recidivism outcomes. Although the role of both risk and protective factors is considered in the Study 2, this study focuses more on the role of protective factors in line with primary research objectives. The following review provides a helpful background for this examination and (1) describes the evolving role of protective factors in forensic practice, (2) reviews the meaning of key terms in the resilience literature and important methodological considerations associated with this body of research, and (3) provides an overview of selected risk/protective factors, grouped topically, related to psychopathic traits and recidivism and related negative outcomes (e.g., offending, delinquency) with an emphasis on JSO populations.

The Role of Protective Factors in Forensic Practice

Traditionally, the focus of research in forensic samples centers on those factors that increase the risk of negative outcomes such as reoffending and violence (see Leistico et al., 2008; Salekin, Lee, Schrum Dillard, & Kubak, 2010). Very little research has examined factors that may exert protective or promotive influences that actually decrease the likelihood of negative outcomes or ameliorate the effects of risk factors. Over the last twenty years, however, the field of clinical psychology has seen an evolving interest in positive psychology and strengths-based approaches. These approaches focus on positive traits and well-being, which, at

first glance, may appear to be paradoxical for incarcerated samples. However, researchers have emphasized that the identification and enhancement of positive aspects of disordered populations and their environments can provide a valuable contribution to the treatment and reintegration process for forensic populations as well (de Vries Robbé, de Vogel, & Stam, 2012). Over the last decade, clinicians working with forensic samples have been eagerly adopting positive strategies and strengths-based approaches (see e.g., the Good Lives Model; Ward & Brown, 2004) as desirable alternatives to more traditional, risk-focused treatment models (de Vries Robbé et al., 2012).

Although positive factors have received a great deal of interest in the treatment literature, the notion that such factors may have a role in risk assessment is relatively new and virtually nonexistent before this century (de Vries Robbé et al., 2012). The vast majority of assessments in forensic samples focus only on risk (see e.g., de Vries Robbé et al., 2012; Miller et al., 2006; Rogers et al., 2000). Rogers (2000) rejected this approach suggesting that a risk assessment based solely on risk factors without considering situation-specific and protective factors is likely to be one-sided and unbalanced, and, as a result, less accurate. According to Miller (2006), this singular focus on risk factors likely results in therapeutic pessimism—which may negatively impact treatment progress and subsequently lead to the over-prediction of risk. Over-prediction may contribute, in turn, to the wrongful and lengthy detention of forensic patients (Miller, 2006).

While research in this area is still quite limited, there is an emerging body of research that has identified potential protective factors that may mitigate recidivism risk in adolescents (Muñoz, Kerr, & Besic, 2008). Notwithstanding this evolving interest in the role of protective factors in adolescent risk assessment, there is only one standardized risk assessment instrument for youth that includes not only risk factors but also protective factors (i.e., The Structured

Assessment of Violence Risk in Youth [SAVRY]; Borum, Bartel, & Forth, 2005). The only published study of protective factors in JSOs used the SAVRY, which is not specifically designed for use in JSO samples or to measure sexual recidivism. Spice and colleagues (2012) examined six protective items for recidivism (i.e., sexual and nonsexual) derived from the SAVRY in a sample of 193 JSOs followed for an average of 7 years after release from a residential treatment program. These authors identified strong attachment and bonds as measured by the SAVRY to be negatively related to nonsexual recidivism generally, but identified no protective factors for sexual recidivism. Additional research regarding protective factors is needed to inform the balanced risk assessment of juvenile offenders consistent with current recommendations. For JSOs, in particular, additional protective factors research would provide critical insight into both risk assessment and treatment planning that might help ameliorate, and ultimately, prevent risk.

Methodological considerations. Risk and protective factors are components of the broader concept of resilience. Resilience has been defined as patterns of positive outcome in the context of significant risk known to be associated with negative outcomes (Luthar, Cicchetti, & Becker, 2000; Luthar & Zelazo, 2003; Masten, 2001). Resilience is not a static concept, but instead is conceptualized as a dynamic process consisting of a series of ongoing, reciprocal transactions between the child and the environment (Luthar & Zelazo, 2003; Masten, 2001). The central objective of resilience research is to identify protective factors that may be associated with positive adjustment despite exposure to risk factors (Luthar, 2006; Masten, 2001; Rutter, 2000). *Risk factors* are broadly defined as those external or internal characteristics that are associated with or predictive of a negative outcome (Masten & Reed, 2002). *Protective factors*

are generally defined as “those characteristics in a group of individuals or their situation that predicts positive outcome in the context of risk or adversity” (Masten & Reed, 2002, p. 76).

In general, there is considerable debate around the definition, measurement, and interpretation of empirical findings related to protective factors (e.g., Fergusson & Lynskey, 1996; Luthar et al., 2000; Rae-Grant, Thomas, Offord, & Boyle, 1989). One common approach is to emphasize risk and protective factors as merely opposite ends of the same variable (see e.g., Kandel et al., 1988; White, Moffitt, & Silva, 1989). Researchers have further refined the term to distinguish between predictors or correlates of better outcomes in a high risk sample [identified as “compensatory factors” by Garmezy, Masten, and Tellegen (1984)] and the positive end of a risk dimension associated with better outcomes under both high and low risk conditions [identified as “promotive” factors by (Sameroff, 1999)]. Protective factors have also been conceptualized as processes that interact with risk factors in reducing the probability of a negative outcome (Rutter, Giller, & Hagell, 1998). Finally, other researchers have suggested that risk and protective factors demonstrate nonlinear relationships with outcomes (Farrington, 1995; Stouthamer-Loeber et al., 1993). For example, the most recently advanced methodology to identify “direct” protective factors involves trichotomizing variables using elevations of positive environmental conditions or behaviors to consider that the positive and negative ends of a risk/protective variable may have differential significance for outcomes (Pardini, Loeber, Farrington, & Stouthamer-Loeber, 2012).

Scope of the Current Review

The scope of the current review is guided by three primary research objectives. First, in light of the broader research objectives regarding adolescent psychopathic traits, this review will examine the relationship between these traits and risk/protective factors for recidivism and

related outcomes. Relatedly, this review will primarily focus on PCL-based measures; however, given the limited research in this area, other measures of youth psychopathy will be considered and translated, to the extent possible, to a PCL framework utilizing both total and factor scores. Second, although this review will discuss empirical studies investigating risk factors for recidivism, the primary focus will be on identifying potential protective factors for reoffending and related negative outcomes. Given the lack of research with respect to protective factors for recidivism outcomes in juvenile offenders, in particular, JSOs, the following review of the literature will examine protective factors in the broadest sense considering both the risk and protective ends of the spectrum for a given construct. Both main effects and interaction effects noted in the literature will be considered “protective” for this review. Finally, this review will examine risk and protective factors across multiple domains of functioning in order to understand the different levels of influence in order of proximity to the individual. Consistent with leading studies of risk and protective factors (e.g., Pardini et al., 2012), the factors will be classified according to general domains of influence and reviewed accordingly. These domains include: (1) individual, (2) family, and (3) peer/neighborhood. For each factor, the applicable association with adolescent psychopathic traits, recidivism and related outcomes, and juvenile sexual offending will be discussed.

A Review of Selected Risk and Protective Factors

Individual factors. Individual factors such as personality, psychopathology and IQ may play important roles in the development and maintenance of psychopathic traits and the occurrence of associated negative outcomes such as offending.

Temperament and personality. Temperament has been defined as “individual differences in reactivity and self-regulation assumed to have a constitutional basis” (Rothbart & Derryberry,

1981; p.37). In general, personality is the broader term and describes a combination of traits that characterize an individual while temperament is narrower and describes how an individual responds and reacts in his or her environment. Both relate to psychological development and are considered to be highly heritable and stable over time (Ganiban, Saudino, Ulbricht, Neiderhiser, & Reiss, 2008).

According to White and Frick (2010), the characteristics of youth with psychopathic traits most closely resemble a behaviorally uninhibited or fearless temperament. In a recent longitudinal study ($n = 335$), Glenn, Raine, Venables, and Mednick (2009) found that individuals who were less fearful and inhibited at age 3 were significantly more likely to score higher on measures of adult psychopathy at age 28. In a subsequent longitudinal study ($n = 7,000$), Barker, Oliver, Viding, Salekin, and Maughan (2011) found that a fearless temperament was significantly associated with higher levels of conduct problems and Affective psychopathic traits—especially in boys. A behaviorally uninhibited and fearless child is generally more sociable, talkative, and affectively spontaneous in novel situations and around new people settings (Kagan, Reznick, Snidman, Gibbons, & Johnson, 1988). This disinhibition, in turn, makes the individual more prone to exploratory forms of impulsive behavior such as sensation-seeking (Fowles & Dindo, 2006). Specifically, this uninhibited and fearless temperament contributes to emotional underarousal and less anxiety and discomfort following wrongdoing and punishment that may impede the development of conscience and moral emotions (e.g., guilt, shame). Emotional underarousal is a hallmark of severe conduct problems and psychopathy often requires stronger methods of socialization for the child to internalize parental norms for prosocial behavior to permit conscience development (Kochanska, 1993). In contrast, behaviorally inhibited children are typically shy, cautious, withdrawn, timid, and skittish in unfamiliar settings

(Kagan et al., 1988). This temperament has been associated with fewer externalizing behavior problems in early adolescence and with increased parent-child reciprocity (Schwartz, Snidman, & Kagan, 1996). Thus, temperamental and personality variables associated with more inhibition and fearfulness protect against psychopathic traits as well as recidivism.

Research in JSO samples has found that JSOs demonstrate higher levels of anxiety (related to an inhibited and cautious temperament) and lower scores on measures associated with a lack of conscience (related to behaviorally uninhibited and fearless temperament) than do other juvenile offenders (Seto & Lalumière, 2010). Thus, certain temperamental and personality differences observed in JSOs may protect them against negative outcomes such as the development of psychopathy and recidivism.

Psychopathology.

Externalizing problems. Early behavior problems are reliably associated with later antisocial behavior. Externalizing problems such as attention-deficit hyperactivity disorder (ADHD), conduct disorder (CD), and oppositional defiant disorder (ODD) are common correlates of not only adult criminality and violence (Fang, Massetti, Ouyang, Grosse, & Mercy, 2010; Sibley et al., 2011) but also with adult diagnoses of antisocial personality disorder (APSD) and psychopathy (Sevecke, Kosson, & Krischer, 2009). Specifically, childhood CD symptoms impart unique risk for later negative outcomes. Not surprisingly, given that psychopathy is often conceptualized as an extreme form of CD, severe externalizing problems such as CD are highly comorbid with psychopathy, especially the behavioral features of the disorder (Salekin, Leistico, Neumann, DiCicco, & Duros, 2004). CD symptoms also have demonstrated incremental predictive validity for adolescent psychopathic traits after controlling for other externalizing symptoms (Pardini & Loeber, 2008; Sevecke, Kosson, et al., 2009). At the factor level,

externalizing problems appear to be more singularly associated with the Antisocial factor in adult populations but more broadly associated in adolescent populations. In adolescents, stronger associations are typically seen in the Lifestyle and Antisocial dimensions (Pardini & Loeber, 2008; Sevecke, Lehmkuhl, & Krischer, 2009) similar to adults; however, in adolescents, there is also evidence of positive associations with the Interpersonal and Affective dimensions (Pardini & Loeber, 2008; Sevecke, Lehmkuhl, et al., 2009).

With respect to JSOs, specifically, externalizing problems are generally associated with negative outcomes and are predictive of recidivism in this population. Consequently, externalizing problems often figure prominently in standardized risk assessment measures used with this population. As a result, externalizing symptoms including early symptoms of CD are often captured in the item content of many risk instruments used with JSOs (Gerhold, Browne, & Beckett, 2007). Notably, when externalizing symptoms are captured using self-report measures, JSOs endorse higher levels of externalization than other juvenile offenders; however, when using other sources, JSOs demonstrate significantly less externalization than other offenders (Seto & Lalumière, 2010). Thus, JSOs may experience more externalizing problems, but these problems are not as readily perceived by others.

Internalizing problems. In general, although internalizing problems may predict negative outcomes in certain aspects of individual functioning, these problems are often associated with better outcomes with regard to delinquency and violence. Additionally, internalizing problems are more common not only in adolescents with psychopathic traits versus their adult counterparts (Salekin & Lochman, 2008) but also in JSOs versus their nonsexually offending counterparts (Seto & Lalumière, 2010) and may offer protective benefits in both populations. While adults with psychopathic traits are generally characterized by their lack of internalizing problems,

adolescents with these traits diverge from this typical pattern—exhibiting more internalizing symptoms than adults such as symptoms of anxiety, trauma, and depression symptoms (Kubak & Salekin, 2009; Sevecke, Lehmkuhl, et al., 2009). This distinction is important as increased internalizing symptoms have been identified as a positive prognostic indicator for treatment in youth with psychopathic traits (Woody, McLellan, Luborsky, & O'Brien, 1985). At the dimensional level, internalizing symptoms relate more broadly to psychopathic traits in youth across all dimensions and are not limited to the Lifestyle and Antisocial dimensions (e.g., Sevecke, Lehmkuhl, et al., 2009). While some researchers have identified positive associations between PCL:YV scores, these associations have not been consistently identified (e.g., Kubak & Salekin, 2009; Sevecke, Lehmkuhl, et al., 2009).

With regard to of sexual offending, internalizing symptoms are negatively associated with and appear to be protective against future offending (see Katsiyannis, Zhang, Barrett, & Flaska, 2004). Moreover, current meta-analytical findings indicate that internalization, social problems, mood problems, and low self-esteem are more common in JSOs; however, they appear to play a more important role in the onset of sexual reoffending rather than future offending (Seto & Lalumière, 2010). Researchers have suggested that the unique combination of internalizing (along with social, family, and attachment) may lead certain adolescents to initiate sexual contact with much younger children because they do not have the social skills or internal controls necessary to fulfill their sexual or emotional needs in a more age-appropriate and consensual manner (Finkelhor, 1984; Marshall & Barbaree, 1990; Ward & Siegert, 2002). Although these traits are associated with emotional distress and other negative outcomes, they also offer protective benefits against externalization problems and facilitate treatment. Given that

they have only been associated with the onset of sexual offending and not future offending, greater levels of internalizing problems may offer protective benefits in JSOs over time.

Intelligence. In general, intelligence (IQ), in particular, verbal IQ, play an important role in protecting children and adolescents in a variety of high-risk conditions (e.g., Garmezy, 1985; Kandel et al., 1988; White et al., 1989). In general, low IQ, especially verbal IQ, is associated with a higher risk of negative outcomes such as delinquency and antisocial behaviors (White et al., 1989). Enhanced cognitive abilities are generally viewed as a protective factor that contributes to better problem-solving and coping abilities and protect individuals from engaging in antisocial behavior and criminal activity (Garmezy & Masten, 1991; Luthar, 1991). Theoretically, however, these same skills can be used to facilitate manipulation and deceit that could enhance the effectiveness of certain criminal efforts (Salekin, Lee, et al., 2010). Therefore, in this context, greater cognitive abilities could be considered a risk factor.

There has been increasing interest in the potential risk effects of IQ on negative outcomes associated with higher levels of psychopathic traits (e.g., Fontaine, Barker, Salekin, & Viding, 2008; Vitacco, Neumann, & Jackson, 2005). While high IQ has been found to be protective against negative outcomes in at-risk psychopathic adults (Heilbrun, 1979), current results in youth samples remain inconclusive. For example, Muñoz, Frick, Kimonis, and Aucoin (2008) found that IQ, specifically verbal IQ, was positively associated with violent delinquency in youth with higher levels of callous-unemotional traits (associated with the Affective factor) and negatively associated with violent delinquency in youth with lower levels of these traits. Conversely, a recent study of 140 adolescent offenders found that high IQ scores were neither a risk nor a protective factor for reoffending in psychopathic youth (Salekin, Lee, et al., 2010). Moreover, prior research with adult and adolescent samples has found that IQ is differentially

related to the dimensions of psychopathy (e.g., Vitacco et al., 2005). Although the results are inconsistent, higher levels of IQ appears to be positively associated with the Interpersonal and Antisocial dimensions and negatively associated with the Lifestyle dimensions (e.g., Vitacco et al., 2005). The observed pattern of positive associations between IQ and the Antisocial factor, and negative associations with the Lifestyle factor, suggest that intellectual deficits may be primarily related to impulsivity and not antisocial behavior in individuals with higher levels of psychopathic traits. As noted earlier, higher levels of IQ could facilitate increased manipulation and deceit—characteristics associated with the Interpersonal factor. Thus, higher IQ could be a risk or protective factor depending on the psychopathic dimensions and IQ domain under investigation.

Conversely, in sex offender populations, IQ is more uniformly characterized as a protective factor. JSOs display lower scores than their nonsexually offending counterparts on IQ measures, but scores are not significantly different mainly due to methodological limitations (e.g., lack of studies, use of screeners and less reliable measures) noted by researchers (Seto & Lalumière, 2010). For example, a recent study with a sample of adult child molesters found that the combination of low IQ and high psychopathy scores made them more than four times as likely to sexually reoffend than other offenders (Beggs & Grace, 2010). Given current methodological inconsistencies in current studies, however, it is unclear how IQ would influence recidivism in a JSO population. Moreover, the hypothesized risk effects of IQ on psychopathic traits is of particular concern for JSOs. First, those juveniles sexually offending against child victims, may use opportunistic, manipulative, and coercive techniques— involving play—to obtain victim compliance (Seto & Lalumière, 2010), which may be facilitated by IQ, specifically verbal abilities. Second, given that most measures of juvenile sexual offending risk as well as the

PCL:YV are clinician-administered and contain impression management item coverage, higher levels of IQ may increase levels of effective manipulation and affect reliability. Manipulation and impression management are reflected in the item content of the Interpersonal factor and may demonstrate unique associations with Verbal IQ in JSOs.

In summary, both externalizing and internalizing problems may play a significant role in predicting negative outcomes in youth—including recidivism—in light of psychopathic traits and prior sexual offending. Increased externalizing symptoms could have a cumulative effect increasing the dose-effect of psychopathic traits, especially in the Antisocial dimension, and predict more pronounced negative outcomes. This pattern of increased recidivism risk would likely also apply to JSOs. On the other hand, potentially adaptive levels of internalizing symptoms, often observed in JSOs, may buffer against negative outcomes. Moreover, higher levels of IQ would likely play a protective role in most youthful offenders although higher IQ—specifically Verbal IQ—may contribute to more manipulative tendencies and antisocial outcomes and risk effects. Further research is needed to determine the relationship between these variables and psychopathic traits and recidivism outcomes in a JSO sample.

Psychosocial factors. A growing literature has examined the potential risk or protective effects of psychosocial factors including family, peer, and neighborhood variables on negative outcomes associated with adolescent psychopathic traits including recidivism. In fact, psychosocial factors, which are by their very nature dynamic, appear to offer the most potential for positive change in adolescent populations (Salekin & Lochman, 2008). Moreover, these factors may offer the most potential as treatment targets.

Family factors. Family factors may influence psychopathic traits as well as recidivism directly and indirectly, through correlates such as antisocial behavior. Important protective

factors include those associated with the (a) parent- or caregiver-child relationship such as attachment, trust, warmth, and communication, (b) parenting practices and family problems, and (c) early childhood abuse and/or neglect.

Parent-child relationship and attachment. Attachment relationships have been identified as critically important in determining the course of child development, and in particular, in the development of emotion regulation, empathy, and conscience (Kobak & Sceery, 1988; Saltaris, 2002). Insecure early attachment has been identified as an important risk factor for a variety of negative outcomes associated with psychopathy including general offending (Smallbone & Dadds, 2001) while strong attachment and bonds have been shown to be important for successful desistance from initial offending (Ward & Laws, 2010) as well as reoffending (Spice, Viljoen, Lutzman, Scalora, & Ullman, 2012).

Negative attachments have been associated with higher levels of psychopathic traits in adolescent offenders. Kosson, Cytterski, Steuerwald, Neumann, and Walker-Matthews (2002) examined the association between psychopathic traits and attachment in delinquent adolescents using the PCL:YV and the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987). They found that IPPA parent scores were negatively correlated with PCL:YV total scores ($r = -.33$). Flight and Forth (2007) found a similar result in a sample of 51 incarcerated adolescent offenders. Using the PCL:YV and the IPPA, they found that psychopathic traits were negatively correlated with positive father attachment ($r = -.32$). However, they were unable to find any significant associations between IPPA scores and violence—a noted negative outcome associated with higher PCL:YV scores. At the factor 1 level, negative attachment patterns appear to be more associated with the Affective factor, the dimension reflecting greater callousness and a lack of remorse and empathy (Catchpole, 2008).

A growing body of literature has explored attachment in JSOs (Burk & Burkhart, 2003; Marshall & Marshall, 2000; Spice et al., 2012). Insecure attachment is hypothesized to increase the likelihood of sexual offending because poorly attached individuals are more likely to try to fulfill their intimacy needs via offending and also be associated with more negative parent-child relationship factors such as poor communication and satisfaction (e.g., Marshall & Marshall, 2000). Although adult sex offenders are more likely to have insecure attachment patterns (Lyn & Burton, 2004), differences have not been identified in recent meta-analytical analyses examining those few studies examining attachment in JSOs (Seto & Lalumière, 2010). Notably, recent findings by Spice and colleagues (2012) identified strong attachments and bonds as a protective factor for nonsexual recidivism in JSOs. Additional research in this area is needed to determine how attachment relationships relate to psychopathic traits and recidivism in this population.

Parenting practices and family problems. Certain parenting practices and family problems have been shown to place adolescents at risk for the negative outcomes associated with psychopathic traits such as offending and recidivism. Dysfunctional parenting practices (e.g., physical punishment, inconsistent discipline) are powerful risk factors for psychopathic traits and associated negative outcomes, while effective parenting practices are compelling protective factors. At the factor level, dysfunctional parenting practices, specifically physical punishment, are associated with increases in levels of psychopathy across all dimensions, but with notable effects on Affective factor scores (Frick, Kimonis, Dandreaux, & Farell, 2003; Pardini, Lochman, & Powell, 2007; Pardini & Loeber, 2008). These findings are notable. The behavioral features of psychopathy (associated with the Lifestyle and Antisocial dimensions) have been found to be more dynamic and less resistant to intervention (Frick et al., 2003). Thus, parenting practices may be a more appropriate intervention target earlier in life. For intervention later in

development, researchers have recommended that treatment should focus on improving the parent-child relationship, which may offer ameliorative effects on poor parenting practices occurring earlier in development (e.g., Pardini & Loeber, 2008).

With respect to JSOs, in particular, there have only been a few studies examining the role of parenting practices and family problems (Krauth, 1998), even though these are well-established correlates of general delinquency (Loeber & Stouthamer-Loeber, 1998). Based on current meta-analytical research, there is no empirically-supported expectation that JSOs would differ on these familial variables. However, developmental theories related to sexual offending posit that family problems and attachment difficulties play a unique role in the onset of offending in youth (Marshall & Barbaree, 1990; Marshall, Hudson, & Hodgkinson, 1993). Further research considering the impact of parental behaviors and parenting practices and family problems on psychopathic traits in JSOs is needed.

Childhood abuse and/or neglect. Early traumatization through childhood abuse and/or neglect is often regarded as a risk factor for aggression, violent behavior, recidivism, and other negative outcomes (Jaffee, Caspi, Moffitt, & Taylor, 2004; Loeber & Stouthamer-Loeber, 1998). Physical abuse in childhood, in particular, is consistently identified with increased negative outcomes including increased risk of violent criminal behavior in adolescence and adulthood (Lansford et al., 2007; Loeber & Stouthamer-Loeber, 1998), and higher rates of self-reported delinquency as well as involvement in serious and violent delinquent behavior (Kelley, Huizinga, Thornberry, & Loeber, 1997).

Childhood abuse and/or neglect have been hypothesized to be among the most significant pathways in the development of psychopathic traits (McCord & McCord, 1964). Consistent with this hypothesis, both the adult and adolescent literature on psychopathy has identified childhood

abuse and/or neglect as an important potential predictor of levels of psychopathic features in adolescents (O'Neill et al., 2003; Weiler & Widom, 1996). Although many theories have been used to explain the connection, in general, it is the diminished ability to regulate affect, specifically anger, which results from early traumatization that is commonly identified as the most influential for psychopathy (Erwin, Newman, McMackin, Morrissey, & Kaloupek, 2000).

Prior research has identified consistent associations between psychopathic traits and childhood abuse and neglect—especially in male, adolescent samples, and specifically when physical abuse is involved. For instance, Krischer and Sevecke (2008) examined the relationship between early traumatization and psychopathy using the 4-factor model of the PCL:YV in a sample of detained adolescents and a control sample of adolescent students. They found higher levels of traumatization in delinquent juveniles as compared to controls. They found strong associations between PCL:YV total scores and physical abuse in delinquent boys. At the dimensional level, they found that physical abuse was positively associated with Antisocial and Affective scores. These associations with the Antisocial dimension, in particular, may support the hypothesis that male adolescents with a history of early physical maltreatment show more violent and aggressive behavior associated with antisocial tendencies (Gold, Sullivan, & Lewis, 2011).

While no published studies have examined the relationship between psychopathy and early traumatization in JSO populations, a great deal of research has examined the relationship between early traumatization and offending in JSOs. Physical abuse, neglect, and exposure to violence are related to general delinquency (Kitzmann, Gaylord, Holt, & Kenny, 2003; Maxfield & Widom, 1996). As might be expected, most of the research with JSOs has focused on the specific role of sexual abuse in this population. While studies have indicated that all forms of

abuse and general exposure to violence are risk factors for sexual offending, recent meta-analytical findings suggest that sexual abuse is an important risk factor for sexual offending (Seto & Lalumière, 2010). These results suggest that JSOs have more than 5 times greater odds than other juvenile offenders for being sexually abused (Seto & Lalumière, 2010). However, it is important to note that, in this population, the role of sexual abuse is likely complicated by and/or moderated by a variety of factors including victim age, gender, and relationship and abuse-specific factors such as duration and timing of the abuse and the use of violence or force (Hunter, Figueredo, Malamuth, & Becker, 2003; Knight & Prentky, 1993; Worling, 1995). Finally, existing data suggests that if there is a relationship between childhood sexual abuse and juvenile sexual offending, it has more to do with the onset of sexual offending and general reoffending—rather than future sexual reoffending (Seto & Lalumière, 2010).

In summary, family factors may exert both risk and protective influences on negative adolescent outcomes. In adolescents with psychopathic traits, the most powerful protective effects may be seen when a positive parent–child relationship and secure attachment is combined with authoritative parenting practices demonstrated by responsiveness, close monitoring and supervision, effective disciplinary strategies, and clear rules and contingencies—without physical methods. Current research suggests that these variables may hold the greatest promise for protective factors research and intervention science relating to recidivism outcomes and psychopathic traits. In addition, childhood abuse appears to be a potentially powerful risk factor for the emergence of psychopathic traits as well as recidivism. Finally, JSOs may be at increased risk for offending due to higher levels of attachment problems and childhood abuse and/or neglect. Notably, however, it appears that these risk factors are more likely to contribute to the initial onset of offending and nonsexual recidivism, but not sexual recidivism (Seto & Lalumière,

2010). Further research regarding these variables in a JSO sample may provide more insight into risk prevention and treatment in this population.

Peer factors. Another category of psychosocial variables that are associated with a variety of negative outcomes (e.g., general delinquency and recidivism) relate to interactions the individual may have with those outside the home—specifically within peer and community networks. Arguably, peer relationships are more important in adolescence than at any other time in development. While childhood relationships are often based on proximity and shared interest, adolescent relationships involve support, communication, and foster the development of unique social skills that would not be learned otherwise (Laursen, Finkelstein, & Betts, 2001). Peer delinquency, in particular, is a robust predictor of conduct problems in late childhood and adolescence as well as reoffending in youth (Kimonis, Frick, & Barry, 2004; Pardini et al., 2012; Vitaro et al., 2011). Peer rejection has also been identified as a risk factor for negative outcomes in adolescents while strong peer attachment, especially to prosocial others, exert protective effects (see generally, Losel & Bender, 2003). The role of peer rejection is unique in delinquent youth. Current empirical evidence suggests that peer rejection and social difficulties often developmentally precede association with delinquent peers. Aggressive children are first rejected by prosocial peers and then subsequently affiliate with deviant ones (Loeber & Hay, 1994). Peer delinquency, rejection, and victimization have all been associated with antisocial behavior and offending (see Lochman & Wayland, 1994; Pardini, Barry, Barth, Lochman, & Wells, 2006)

Peer delinquency, but not peer rejection, has been associated with adolescent psychopathic traits (Kimonis et al., 2004). Youth with psychopathic traits demonstrate unique responses to peer influence. Kerr, Van Zalk, and Stattin (2012) found that the psychopathic traits—especially grandiose-manipulative traits related to the Interpersonal factor—uniquely

moderated peer influence on delinquency. Specifically, adolescents high on these traits were *less influenced* by peers' delinquency while peers high on these traits were more influential on targeted peers' delinquency. Thus, youth with higher levels of psychopathic traits may actually have dynamic social relationships and use their influence to infect other less delinquent peers if brought together in a social setting or as a part of an intervention program. Because they are less susceptible to negative peer influence, these adolescents may also be less susceptible to positive peer influence than other youth. Very little research has examined the protective effects of peer relationships in JSOs or those with psychopathic traits. However, in a recent study, Muñoz, Kerr, et al. (2008) found that youth who were high on psychopathic traits appeared to be protected from increasing delinquency across the four-year period when they had at least one school, as opposed to neighborhood, friend. This finding may point to a unique role for peer relationships outside of broader community influences.

With respect to JSOs, studies examining peer factors have yielded mixed results. Most studies have found that peer delinquency is a risk factor for general delinquency and reoffending, but JSOs do not tend to display specific differences on this variable when compared to other juvenile offenders (Seto & Lalumière, 2010). Individual studies have found that greater self-reported peer delinquency significantly predicts a juvenile's classification as a sex offender (Sigurdsson, Gudjonsson, Asgeirsdottir, & Sigfusdottir, 2010). Unlike adolescents with higher levels of psychopathic traits and non-sexually offending youth, JSOs display more social difficulties (Seto & Lalumière, 2010). In particular, they exhibit more consistent problems with heterosocial skills (social skills in interactions with opposite-sex peers) and social isolation than other juvenile offenders (Dreznick, 2003). As a result, JSOs may experience more peer rejection and less peer attachment than other juvenile offenders.

Notably, the absence of delinquent peers and attachment to prosocial peers appear to act as protective factors for a variety of negative outcomes. In a sample of 503 high-risk boys living in inner-city neighborhoods taken from the Pittsburgh Youth Study, low peer delinquency was identified as a direct protective factor for violence in adolescents (Pardini et al., 2012). In a large ($n = 940$) community sample of adolescents, identification with a prosocial peer group and less peer delinquency indicating protective effects in the face of risk (Fergusson & Lynskey, 1996).

In summary, these findings suggest that deviant peer relationships may act to increase risk for recidivism. Peer rejection may be less meaningful in youth higher on psychopathic traits, but may be more powerful in other delinquent youth, in particular, those with social difficulties such as JSOs. Conversely, the presence of fewer delinquent peers and more prosocial or school peers may counteract the risk effects of deviant peer relationships and peer rejection and offer protective benefits in delinquent youth. Further research is needed to examine the role of these factors in a JSO sample.

Neighborhood factors. Neighborhood risk (e.g., poor housing, increased violence, low SES) has been found to be a mediator for a variety of negative adolescent outcomes including delinquency and violence (Hawkins, Farrington, & Catalano, 1998), antisocial behavior (McLoyd, 1998), serious juvenile offending (Farrington et al., 2008; Wikstrom & Loeber, 2000) and recidivism (Chauhan, Reppucci, & Turkheimer, 2009). Children and adolescents living in unsafe or disadvantaged neighborhoods are significantly more likely to witness or experience community violence, interpersonal aggression, and bullying behaviors (Khoury-Kassabri, Benbenishty, Astor, & Zeira, 2004). Longitudinal studies have found that youth who have been exposed to violence are more likely to engage in criminal behavior (Herrera & McCloskey, 2001) later in life. Since schools are located within neighborhoods and are, in turn, influenced by

this exosystem, neighborhood violence may also impact levels of school violence (Nansel, Overpeck, Haynie, Ruan, & Scheidt, 2003). Specifically, boys may be more directly exposed to the effects of neighborhood risk than girls. Boys are more likely to be the victims of direct forms of aggression, violence, and bullying (Ingoldsby & Shaw, 2002; Wang, Iannotti, & Nansel, 2009).

Despite a growing body of research supporting the risk effects of deleterious neighborhoods, there has been virtually no research regarding the potential impact of neighborhood characteristics on psychopathic traits and recidivism in juvenile offenders. Results from Muñoz et al. (2008) noted earlier indicated that having school friends is more protective for future negative outcomes than neighborhood friends. In a longitudinal study of 250 adolescents, Lynam, Loeber, and Stouthamer-Loeber (2008) found that neighborhood variables did not significantly affect the stability of psychopathic traits in youth; however, these authors did not examine recidivism outcomes. Although much more research is needed in this area, it appears that neighborhood variables may be related to psychopathic traits through potential associations with violence and family problems.

With regard to JSOs, a recent meta-analysis did not identify a relationship between the onset of juvenile offending and neighborhood violence (Seto & Lalumière, 2010). While a growing literature supports the association between neighborhood disadvantage and exposure to neighborhood violence and offending in youth generally (Jennings, 2011), current meta-analytical research has not identified a relationship between the onset of juvenile offending and neighborhood violence (Seto & Lalumière, 2010). However, differences between JSOs and other juvenile offenders have been found and indicate that JSOs come from worse neighborhoods and have worse housing than other offenders (van Wijk et al., 2005).

In summary, despite the lack of research in this area, neighborhood characteristics may play an important role in increasing or maintaining levels of psychopathic traits as well as increasing the likelihood of negative outcomes including recidivism in JSOs. Further research in this area is needed to understand the potential risk effects.

The Current Study

The general purpose of Study 2 was to supplement the limited research examining the relationship between selected risk *and* protective factors and various recidivism outcomes in JSOs (Spice et al., 2012). This broader study purposes is marked by three overlapping research objectives. First, although Study 2 examines the relationship between recidivism and risk factors supported by theory and empirical findings, this study focuses primarily on the identification of protective factors. Traditionally, outcomes research with juvenile offenders, including JSOs, focuses almost exclusively on risk factors. Despite an emerging interest in protective factors fueled by the growth in positive psychology and strengths-based approaches, as noted earlier, only one published study was identified that specifically examined the role of protective factors in a JSO sample (Spice et al., 2012). Further research is needed to understand the role of protective factors in the balanced assessment of risk for JSOs.

Second, Study 2 considers risk/protective factors related to all recidivism outcomes in JSOs, but focuses more on those factors relevant for the prediction of broader and nonsexual recidivism outcomes as compared to sexual recidivism. As noted earlier, recent research suggests that JSOs are much more likely to reoffend generally than sexually (Caldwell, 2002). Nonetheless, most studies have examined the relationship between risk/protective factors for sexual recidivism in general juvenile offender or combined samples (see e.g., Cottle et al., 2001; Hanson & Morton-Bourgon, 2005; McCann & Lussier, 2008), while only a few have examined

this relationship in JSO samples (e.g., Gretton et al., 2001; Viljoen et al., 2009). Moreover, significant findings for sex-specific recidivism outcomes remain elusive due primarily to low base rates of sexual reoffending for JSOs (McCann & Lussier, 2008), which were also observed in the current study. Thus, it made logical and empirical sense to shift the research focus to the identification of risk/protective factors for nonsexual (i.e., general and violent) recidivism outcomes. Finally, given the broader objectives of the current research to examine the role of the adolescent psychopathic construct, Study 2 also focused on the relationship between the PCL:YV and risk/protective factors for recidivism and associated negative outcomes.

Based upon current theory and empirical findings outlined in the preceding review of the literature, the following hypotheses are offered to support the objectives of Study 2:

Hypothesis 1. Prior to conducting the primary analyses, bivariate correlations between the selected variables and the PCL:YV will be examined to supplement the literature in this area. Based upon the prior literature relating to adolescents psychopathic traits and potential risk/protective factors, the following specific hypotheses are offered:

1. PCL:YV total and factor scores will be positively associated with measures of externalizing problems.
2. PCL:YV total and factor scores will be generally be negatively associated with variables representing internalizing problems. Any nonsignificant or positive associations would be expected to appear in the Lifestyle or Antisocial factors.
3. PCL:YV total and factor scores will be negatively associated with Verbal IQ scores except that nonsignificant or positive associations may emerge with the Interpersonal or Antisocial factors.

4. PCL:YV total and factor scores will be negatively associated with measures of parental attachment, but positively associated with measures of childhood abuse and family problems.

5. PCL:YV scores will be nonsignificantly or negatively associated with measures relating to peer attachment.

6. PCL:YV total and factor scores will be positively associated with higher scores on measures assessing negative neighborhood characteristics.

Hypothesis 2. In accordance with primary study objectives regarding adolescent psychopathy, PCL:YV scores will be included in the model as a potential risk factor for general, violent, and sexual recidivism. The approach used in Study 1 will be continued; thus, the 3-factor model total score and the Antisocial factor score will be examined separately. Based on prior research, it is expected that only the Antisocial factor will significantly predict general and violent recidivism outcomes.

Hypothesis 3. Based upon the prior literature regarding risk and protective factors for recidivism and psychopathic traits in general juvenile offending populations and JSOs, the following specific hypotheses are offered:

a. Higher scores on measures of externalizing problems will be associated with recidivism.

b. Higher scores on measures of internalizing problems will be negatively associated with recidivism.

c. Higher Verbal IQ scores will be negatively associated with recidivism.

d. Higher scores on measures of parental attachment will be negatively associated with recidivism.

e. Higher scores on measures of family problems and childhood abuse will be positively associated with recidivism.

f. Higher scores on measures of positive peer attachment will be positively associated with recidivism.

g. Higher scores on measures assessing negative neighborhood characteristics will be positively associated with recidivism.

Method

Participants and Procedure

The Study 2 sample consisted of the 538 male JSOs from Study 1. Details regarding JSO participants are described in Study 1. Procedures for this sample were identical to those noted for Study 1.

Materials and Measures

The PCL:YV. The PCL:YV was described in Study 1. Preliminary analyses in Study 1 utilize all PCL:YV scores. Primary analyses are limited to the Antisocial factor and 3-factor model total score.

Recidivism data. The recidivism data were described in Study 1.

The Wechsler Abbreviated Scale of Intelligence (WASI; Wechsler, 1999). The WASI yields a Verbal IQ (VIQ), a Performance IQ, and a Full Scale IQ (FSIQ) based upon subtest scores. Subtests presented on the WASI include Vocabulary, Similarities, Matrix Reasoning, and Block Design. These subtests parallel those found in the Wechsler Adult Intelligence Scale – Fourth Edition (WAIS-IV; Wechsler, 2008). The WASI IQ estimates were measured to correlate highly with the Wechsler Intelligence Scale for Children – Third Edition (WISC-III; Wechsler, 1991) Verbal IQ (.82), Performance IQ (.76), and Full Scale IQ (.87). Empirical data indicates excellent internal consistency (.92 - .97) and test-retest reliabilities (.88 to .93; average 31-day test interval) for the WASI. Additionally, the WASI has been measured to be a reliable and accurate screening measure of general IQ and functioning based upon known group

comparisons. The FSIQ, VIQ, and PIQ scales were initially examined for variable selection in preliminary analyses. Theoretical assumptions and empirical research suggested a unique role for the VIQ scale. In light of this hypothesized relationship and after examination of the results of preliminary analyses yielded nonsignificant and negligible results in univariate analyses for the PIQ and FSIQ scales, respectively, only the VIQ was selected for inclusion.

The Millon Adolescent Clinical Inventory (Millon, 1993). The MACI is a 160-item true-false self-report measure designed to assess a broad range of psychological problems experienced by adolescents ages 13-19. Moderate to strong internal consistency (.73-.91) and test-retest reliability (.57-.92) have been reported (Millon, 1993; Millon & Davis, 1993). Key distinguishing features of the MACI includes its theoretical-substantive validation based on Millon's comprehensive theory of personality (McCann, 1999, 2006). The MACI includes 31 total scales. These scales include a reliability scale, the three validity or Modified Indices scales. The content scales include the Clinical Syndromes, Personality Patterns, and Expressed Concerns scales, with 7, 12, and 8 underlying scales per domain, respectively. The Clinical Syndromes scales were designed to capture the more transient syndromes associated with Axis I diagnoses under the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV; APA, 1994). The Personality Patterns scales are designed to capture the more stable characteristics of DSM Axis II diagnoses and incorporate Millon's theory (McCann, 1997, 1999). Finally, the Expressed Concerns scales are designed to reflect personal concerns experienced by individuals and are not based on DSM diagnostic criteria or Millon's underlying theory of personality. MACI scales reflecting relevant constructs informed by theory and empirical research were selected for variable selection procedures (Hosmer & Lemeshow, 2004). These constructs were selected across the various domains (e.g., individual, family, and

peer/neighborhood). Individual factors were selected from the MACI Personality Patterns and Clinical Syndromes scales while the remaining domain-based factors were selected from the MACI Expressed Concerns scales. As shown in Table 10, the following scales were selected for inclusion: the Introversive and Submissive scales from the Personality Patterns scales; the Anxious Feelings and Delinquent Predisposition scales from the Clinical Syndromes scales; and the Family Discord and Childhood Abuse scales from the Expressed Concerns scales.

Inventory of Parent and Peer Attachment: Mother, Father, Peer Version (IPPA; Armsden & Greenberg, 1987). The IPPA is a self-report, multiscale inventory that assesses adolescents' perceptions of the positive and negative affective/cognitive dimensions of relationships with their parents and close friends. The IPPA consists of 75 items with 25 items in each of the mother, father, and peer sections. Items are scored on the basis of a 5-point Likert-scale response format ranging from 1 (*never*) to 5 (*always*). Higher scores reflect greater attachment. Three dimensions of attachment are measured across the mother, father, and peer sections of the measure: degree of mutual trust, quality of communication, and extent of anger and alienation. Internal consistencies are .87 for mother, .89 for father, and .82 for peer attachments (Armsden & Greenberg, 1987). The parent and peer total scores from the IPPA were used in the present study to measure the constructs of parental and peer attachment, respectively. Based on theoretical and empirical support and significant findings in preliminary analyses, both scales were eligible for inclusion in the primary analyses.

Screen for Adolescent Violence Exposure (SAVE; Hastings & Kelly, 1997). The SAVE is an adolescent self-report scale, which assesses frequency of violence exposure in settings relevant to adolescent adjustment (School, Neighborhood, and Home). The SAVE consists of 32 items, which are administered in a five-point Likert format. Scores range from 0 to

160, with higher scores reflecting greater violence exposure. Three factors have been identified for each setting scale: Traumatic Violence, Indirect Violence, and Interpersonal Aggression. Each of these factors is assessed for each of the School, Neighborhood, and Home domains to yield three individual domain total scores, which are then summed to yield an overall total score. The SAVE has been found to successfully classify low- and high-violence groups, and has demonstrated good internal consistency, test-retest reliability, and validity. The SAVE has obtained significant correlations with both independent violence data and theoretically related constructs (Hastings & Kelley, 1997). The Home, School, and Neighborhood domain total scores were initially examined for inclusion. Based on theoretical and empirical support and significant findings in preliminary analyses, however, only the School and Neighborhood total scores were ultimately selected for inclusion.

Data Analytic Strategy

Missing data. To determine the pattern of missing data in the Study 2 sample, a missing values analysis was conducted using SPSS version 21.0. As noted in Study 1, during the period from 2000 to 2011, measures were selectively added (and sometimes removed) in a staggered fashion to the pre-treatment assessment protocol as the program expanded and assessment objectives were clarified. As a result, many measures in the pre-treatment assessment protocol were missing at least some minimal amount of data. Missing data were identified for all potential predictors in Study 2, ranging from 3% to 23.9% missing across all variables. With respect to those variables selected for inclusion in the primary analyses, missing data occurred most frequently with the WASI VIQ scale with 17.7% ($n = 166$) cases missing, and the IPPA parent and peer total scales with 23.9% ($n = 224$) and 23.2% ($n = 218$) cases missing, respectively. Unfortunately, these scores were critical targets for protective effects based on prior research

with general juvenile offenders (Kandel et al., 1988; Rennie & Dolan, 2010) and JSOs (Spice et al., 2012). Thus, an essential research aim of Study 2 was to address missing data in these variables in order to facilitate the identification of protective effects.

An initial consideration with missing data is the type of missingness that is involved. Initial results from this analysis suggested that the data were either missing at random (MAR; i.e., missingness is associated with variables in the model other than the missing variable) or (MNAR; i.e., missingness is associated with the missing variables themselves, not the observed data). Despite larger amounts of missing data for certain predictors, based on further guidance (Muthén, 2013, message board discussion), it was determined that the data in Study 2 was most likely MAR. If data is MAR, then the function by which data are missing can be characterized by the observed data. Listwise and pairwise deletion are inappropriate when data are MNAR. While multiple imputation methods are better, they are also not generally recommended with MNAR data. Although there is no way of determining whether the MAR assumption holds in any one data set, Collins, Schafer, and Kam (2001) have shown that inaccurately assuming MAR, when data are MNAR, has a minor impact on full-information maximum likelihood (ML) estimates and standard errors, especially when using ML with robust standard errors. Relatedly, with ML, by controlling for the observed variables that predict missingness, the conditional likelihood of the missing values becomes independent of the outcome (Muthén & Muthén, 2012).

In Study 2, missing data for predictor variables used in Study 2 was accommodated using ML estimation with robust standard errors (MLR). This method handles missing data in a single pass and provides an estimate for the variance-covariance matrix using all of the available information from the observed data and offers distinct advantages over the disadvantages of alternative methods listwise deletion (e.g., large standard errors, wasteful) and multiple

imputation (e.g., multiple datasets, complex interpretation, requires bootstrapping; Schafer, 1997; Schafer & Graham, 2002). The MLR estimation was supplemented by Monte Carlo (MC) integration techniques based on recommendations for examining intercorrelated data in large datasets with large parameters (Muthén, 2013, personal communication; Muthén & Muthén, 2012).

Selection of potential risk/protective factors. As alluded to earlier, variable selection was informed by existing theory and empirical research as well as preliminary empirical analysis of the dataset. First, constructs that had been found to be predictors of recidivism or other negative outcomes associated with adolescent psychopathy in previous analyses were selected from specific measures in the assessment protocol (i.e., MACI, IPPA, WASI, and SAVE). Potential predictors were classified into general domains (e.g., individual, family, and peer/neighborhood) similar to previous research in this area (see Pardini et al., 2012). Consistent with research recommendations (see Pardini et al., 2012) certain predictors of early antisocial behavior that are particularly confounded with adolescent psychopathology and concerns were not included (e.g., substance use). As noted previously, variables were selected from a variety of general assessment measures (e.g., IQ, psychopathology) and not risk assessment measures. Offender-specific or individual variables appear to be more relevant for general reoffending in JSOs (Batastini et al., 2011; Spice et al., 2012). Due to low base rates of sexual recidivism, the research focus was to identify risk/protective factors of general, not sexual, reoffending. Accordingly, predictors dependent on offense and victim characteristics—which tend to more relevant for sexual recidivism—were not examined (see Batastini et al., 2011; DiCataldo, 2009)

Next, those variables were subjected to preliminary empirical analyses to determine associations with recidivism outcomes in accordance with recommendations by Hosmer and

Lemeshow (2004). Specifically, after missing values analysis and data cleaning, mean differences for all variables originally considered for inclusion were examined for selected recidivism outcomes. Next, point-biserial correlations and univariate binary logistic regressions were constructed to predict the binary outcome representing recidivism. Based on these results, regression analyses was conducted, and any variable whose univariable test had a value of $p < .25$ was selected as a candidate for the multivariable model along with the PCL:YV variables and age. Results of these analyses were quite extensive and were omitted due to space limitations.

Another objective of the current study was to examine the relationship between various risk/protective factors and recidivism outcome among JSOs. Thus, the role of adolescent psychopathic traits—as measured using the PCL:YV—was further examined in Study 2 consistent with Study 1 objectives. To extend the findings from Study 1, only the Antisocial factor and the PCL:YV 3-factor model (13-item) total score were included as potential risk factors in regression analyses.

Primary analyses. As discussed above, mPlus Version 7.0 was used to conduct MLR estimation of logistic regression models to accommodate missing data in key variables. These methods were used to identify the directional prediction of selected variables (i.e., risk or protective) across recidivism outcomes. As noted, MC integration methods were used in accordance with recommendations. Similar to Study 1, survival data were only available for general recidivism outcomes. Thus, for general recidivism, these procedures were was utilized within a continuous-time survival analysis using the Cox method in accordance with the mPlus manual (Muthén & Muthén, 2012). For violent and sexual recidivism, these procedures were used in the logistic regression model. Notably, logistic regression does not control for individual differences in follow-up time, which may yield biased results.

Despite the benefits of using these advanced methods, there were downsides that affected interpretation. In mPlus, traditional fit statistics like chi-square are not provided when using MLR. For general models, there are no absolute fit statistics. Log likelihood values, which follow a chi-square distribution, can be used to test nested models and be converted into chi-square values (Muthén & Muthén, 2012). Unfortunately, however, MC integration produces log likelihood values with extremely low numerical precision making the testing of nested models using likelihood ratio chi-square tests based on log likelihood differences imprecise (Muthén & Muthén, 2012). This result was observed in the current study. Therefore, in Study 2, nested models were not examined and model fit statistics are not provided. Thus, a sophisticated statistical approach was utilized for a rather simple analysis; however, the results were quite powerful given the difficulty of identifying protective factors in JSO samples (Spice et al., 2012).

Results

Descriptive Statistics

The variables selected for the primary analyses along with the hypothesized function (risk or protective) and the measures, scales, and coding schemes used are organized by domain (e.g., Individual; Family; and Peer/Neighborhood) and are set forth in Table 10. All selected variables are continuous.

Means, standard deviations, and intercorrelations for Study 2 variables are presented in Table 11. In line with primary study objectives relating to the PCL:YV, the relationship between the Study 2 variables and the individual PCL:YV facets and 3- and 4-factor model total scores were examined using bivariate correlations and are shown in Table 12. Next, mean differences between the general and violent subgroups for and associations with Study 2 variables were also examined using independent sample *t*-tests and point-biserial correlations, respectively. Because variables were selected based on associations with nonsexual recidivism outcomes and in light of very unequal group sizes, mean differences between sexual recidivists and nonrecidivists were not examined. Mean differences between the subgroups were examined across each domain of functioning (i.e., Individual, Family, and Peer/Neighborhood).⁷ All means, standard deviations, and *t*-values are presented with the recidivist group as the reference category.

⁷For variables where equalities of variances was not assumed, nonparametric tests (Wilcoxon rank transform test) were also conducted. Identical results were obtained. *T*-tests are reported for uniformity of results. Levene's test is noted if applicable.

Individual factors. Table 13 includes the means, standard deviations, *t* values, and point-biserial correlations for risk/protective factors within this domain for the general and violent recidivism subgroups.

Intelligence. As depicted in Table 13, recidivists indicate significantly lower Verbal IQ scores than nonrecidivists only for the general recidivism subgroup. Verbal IQ scores also demonstrated significant negative associations with general recidivism, but not violent recidivism.

Personality and psychopathology. Scales selected from the Personality Patterns and Clinical Syndromes content scales of the MACI were examined to inform variable selection for personality and psychopathology variables from both internalizing (i.e., Introversive, Submissive, Anxious Feelings) and externalizing (i.e., Delinquent Predisposition) domains. PCL:YV scores also were included in this domain. As seen in Table 13, for the Introversive (inhibited/withdrawn) and Submissive (shy/passive) scales from the MACI Personality Patterns content scales, significant differences were observed between recidivists and nonrecidivists on both scales across the general and violent recidivism subgroups. Significant differences were also observed between recidivists and nonrecidivists with regard to the Anxious Feelings (anxiety) scale from the MACI Clinical Syndromes scales. This scale is a measure of internalizing psychopathology associated with anxiety and general distress (McCann, 1999). Thus, as expected, recidivists scored significantly lower than nonrecidivists on these measures of internalizing temperamental patterns and personality traits. Point-biserial correlations indicated that both internalizing scales demonstrated significant negative associations with general and violent recidivism outcomes. As predicted, recidivists scored significantly higher than nonrecidivists on the Delinquent Predisposition scale, a measure of externalizing

psychopathology strongly associated with CD (McCann, 1999). As observed in Study 1, significant mean between recidivists and nonrecidivists were observed for both PCL:YV Antisocial factor and 3-factor model total scores with recidivists obtaining significantly higher scores. PCL:YV scores also demonstrated significant positive associations with general and violent recidivism outcomes.

Family factors. Various scales from the MACI and IPPA were used to assess potential risk/protective factors within the family domain. The MACI Family Discord and Childhood Abuse scales were used to assess, respectively, conflict and tension in the home and childhood abuse (including physical, sexual, or emotional abuse). The parent total score from the IPPA was used to assess parental attachment. This scale provides information regarding the adolescent's experience of parenting behaviors and parental attachment.

Table 13 includes the means, standard deviations, *t* values, and correlations for risk/protective factors within this domain across general and violent recidivism subgroups. As shown in Table 13, significant mean differences between recidivists and nonrecidivists for both the general and violent subgroups with respect to the MACI Family Discord scale. Consistent with hypothesis, recidivists in these subgroups demonstrated higher pre-treatment levels of family problems than nonrecidivists. However, significant positive associations were only observed for the general recidivism subgroup. No mean differences or associations were observed for the MACI Childhood Abuse scale for general recidivism, and notably these relationships were negatively associated with violent recidivism. Despite these inconsistencies, the variable was retained for the primary analyses based on theoretical and empirical assumptions relevant to the JSO sample. Notably, general recidivists reported significantly lower

IPPA parent scores than nonrecidivists. These scores also were negatively associated with general recidivism, but not violent recidivism.

Peer/Neighborhood factors. Scales from the IPPA and SAVE were used to assess potential risk/protective factors in the peer/neighborhood domain. The SAVE School Violence and Neighborhood Violence total scores provided information regarding the participant's experience with direct and indirect violence at school and in their broader neighborhood, respectively. The IPPA peer total score provides information regarding the strength of the adolescent's attachment to peers and is theoretically associated with more positive parental attachment.

Table 13 includes the means, standard deviations, *t* values, and point-biserial correlations for risk/protective factors within this domain across general and violent recidivism subgroups. In general, recidivists scored significantly higher than nonrecidivists on measures of school and neighborhood violence from the SAVE. Similarly, both SAVE scales were significantly associated with general and violent recidivism outcomes. Conversely, recidivists scored significantly lower on a measure of peer attachment from the IPPA for both the general and violent recidivism outcomes. This scale yields higher scores when prosocial peer contact is endorsed and also targets self-report regarding close friends as compared to broader peer associations. Moreover, at intake, the participants were likely describing peers from home or school, and not those within the MMC. Thus, this result may provide insight regarding the protective effects of less delinquent peers and peer attachment bonds.

Risk/Protective Factors and Recidivism

Logistic and Cox regression analysis, as applicable, with MLR estimation and MC integration methods were used examine the risk/protective effects of the selected variables on various

recidivism outcomes over an average follow-up period of 5 years. Again, survival data were available only for general recidivism, and, accordingly, Cox regression was only used to examine this outcome. Logistic regression was used to examine violent and sexual recidivism outcomes. Tables 14, 15, and 16 depict the results of analyses for general, violent, and sexual recidivism outcomes, respectively. The variables were entered simultaneously to observe the independent effects of the variables on the model. As described previously, model fit statistics could not be interpreted. Results are for the general model only. Standardized results are reported.

General recidivism. As depicted in Table 14, only age at entry ($B = .34$, $OR = 1.30$, $p < .001$) and Antisocial factor scores ($B = .30$, $OR = 1.14$, $p < .001$) significantly predicted general recidivism. As observed in Study 1, the PCL:YV 3-factor model total demonstrated nonsignificant associations general recidivism. Notably, Verbal IQ ($B = -.41$, $p < .001$) scores and Introversive (inhibited/withdrawn) traits ($B = -.41$, $p < .001$) demonstrated significant negative associations with general recidivism, thus, indicating protective effects.

Violent recidivism. As depicted in Table 15, only Antisocial factor scores significantly predicted violent recidivism outcomes. PCL:YV 3-factor model total scores again demonstrated nonsignificant associations with violent recidivism outcomes. Only Verbal IQ scores emerged as a significant negative predictor for violent recidivism outcomes. Introversive and Submissive traits were approaching significance, but ultimately did not significantly negatively predict violent recidivism outcomes.

Sexual recidivism. As depicted in Table 16, no potential risk factor significantly predicted sexual recidivism outcomes. These findings were predicted due to low base rates of offending. The Antisocial factor did not significantly predict sexual recidivism when included as part of a regression model. These results were consistent with observations from Study 1, which

indicated that any risk effects of the Antisocial factor disappeared when other variables after the addition of the 3-factor model total score in the model. Although no protective factors for sexual recidivism were identified, anxiety ($B = -.12$, $OR = .89$, $p = .058$) did indicate negative associations approaching significance with respect to sexual recidivism. This finding is notable given that some exploratory studies of protective factors relax significance criteria $p < .10$ to facilitate identification. However, these results must be interpreted with caution due to methodological limitations related to sample-size bias and rare events such as sexual recidivism.

Discussion

In Study 2, three hypotheses were examined. To investigate Hypothesis 1, the relationship between PCL:YV scores and selected risk/protective factors were examined through bivariate correlations. Further, to provide a broad overview of these relationships to supplement the literature, all PCL:YV scores—the four factors and both total scores—were examined. Consistent with Hypothesis 1, externalizing problems, family discord, and community (school and neighborhood) violence indicated consistent, significant positive associations with these scores. At the individual level, self-reported externalizing problems—specifically CD symptoms—showed the strongest positive associations with PCL:YV scores. This finding is consistent with prior research (e.g., Sevecke, Kosson, et al., 2009; White & Frick, 2010). Older age at entry was not associated with PCL:YV scores and may be attributable to the lack of variability in age at intake in the JSO sample. Consistent with hypothesis, family discord and neighborhood and school violence exhibited moderate correlations with PCL:YV factor and total scores. As predicted, childhood abuse was positively associated with PCL:YV total and factor scores—except for the Interpersonal and Affective factors. These results support recent research identifying positive associations between childhood abuse and the behavioral features of psychopathy reflected in the Lifestyle and Antisocial factors (e.g., Gold et al., 2011; Krischer & Sevecke, 2008).

In general, Verbal IQ, internalizing problems, and parental and peer attachment were negatively associated with PCL:YV scores, but there were some exceptions at the factor level. Verbal IQ was significantly negatively associated with all PCL:YV total and factor scores except

the Interpersonal and Antisocial scores. These results support prior research indicating that the PCL:YV facets are differentially associated with Verbal IQ (e.g., Salekin, Neumann, Leistico, & Zalot, 2004; Vitacco, Neumann, & Wodushek, 2008). The current results support prior findings identifying negative associations between IQ and the Affective and Lifestyle factors (e.g., Vitacco et al., 2008) as well as prior research identifying nonsignificant or even positive associations between IQ and the Interpersonal and Antisocial factors (Muñoz et al., 2008; Vitacco et al., 2005; Vitacco et al., 2008). Overall, these findings suggest that further research at the factor level is needed to understand the differential relationships between the PCL:YV dimensions and Verbal IQ.

Additionally, internalizing problems were negatively associated with PCL:YV scores. The strongest inverse associations were observed with PCL:YV scores and submissive traits and anxiety. This finding makes logical and theoretical sense given that internalizing problems have been found to be unrelated, or negatively related, to psychopathy in adults (Schmitt & Newman, 1999) and adolescents (Sevecke, Lehmkuhl, et al., 2009). Introversive traits were nonsignificantly or negligibly negatively associated with PCL:YV scores. Consistent with prior research, stronger inverse associations were observed between internalizing problems and the Lifestyle and Antisocial scores (Benning, Patrick, Blonigen, Hicks, & Iacono, 2005). Findings with respect to parental and peer attachment were slightly less consistent and demonstrated differential relationships at the factor level. Parental attachment was significantly negatively associated with PCL:YV total and factor scores except the Affective and 3-factor model total scores. These findings were consistent with general hypothesis and prior research indicating negative associations between the PCL:YV and IPPA parent scores (Flight & Forth, 2007; Kosson et al., 2002), but did not support prior findings by Catchpole (2008) identifying

associations between the Affective factor and negative attachment patterns. In fact, peer attachment showed significant negative associations with PCL:YV factor and total scores except the Affective and 3-factor model total scores. These nonsignificant associations with the Antisocial factor are consistent with prior research indicating that juvenile offenders with psychopathic traits often report social competence (Barry, Barry, Deming, & Lochman, 2008). Alternatively, current research suggests that these youth may be more indifferent to peer relationships for fulfilling attachment and relational needs (Muñoz et al., 2008), but more motivated to exert antisocial social influence over their peers (Kerr et al., 2012). Future research should use peer measures targeting other salient constructs (e.g., social competence) in addition to the IPPA to explore and compare associations with PCL:YV scores.

To evaluate Hypotheses 2 and 3, independent sample *t*-tests, point-biserial correlations, and regression analyses were conducted. Under Hypothesis 2, findings from Study 1 regarding PCL:YV scores were further investigated. Consistent with Study 1, only the Antisocial factor and 3-factor model were examined. Point-biserial correlations revealed that both the Antisocial and 3-factor model total were significantly associated with recidivism. General and violent recidivists obtained significantly higher scores than nonrecidivists for each score. As expected, the Antisocial factor, but not the 3-factor model total score, emerged as a significant predictor of general and violent recidivism outcomes and accounted for more total variance than age at entry or other risk factors in the general model. Again, significant preliminary results observed for the 3-factor model did not translate to subsequent regression models. As predicted, the Antisocial factor did not emerge as a significant predictor of sexual recidivism outcomes in the general model. Although antisociality is a meaningful predictor of the onset of sexual reoffending, these results reflect the inconsistencies observed when examining sexual (see Seto & Lalumière,

2010). Taken together, the results from Study 1 and Study 2 indicate that the Antisocial factor is a meaningful predictor of general and violent recidivism in this JSO sample. At present, existing research does not support use of the PCL:YV to predict sexual recidivism.

These results were generally consistent with Hypothesis 3. It was hypothesized (and observed in correlational analyses) that Verbal IQ, internalizing problems, and parental and peer attachment would be negatively associated with general and violent recidivism outcomes. General and violent recidivists obtained significantly lower scores than nonrecidivists for these factors except that violent recidivists and nonrecidivists did not differ significantly with regard to Verbal IQ or parental attachment. As expected and consistent with the extant literature, externalizing problems, psychopathic traits, family discord, and school and neighborhood violence were found to be positively associated with general and violent recidivism outcomes (see Cottle et al., 2001; Långström, 2002). General and violent recidivists obtained significantly higher scores than nonrecidivists for these factors except with respect to childhood abuse.

Contrary to hypothesis, childhood abuse demonstrated a significant inverse association with violent recidivism and nonsignificant associations with general recidivism. These negative and weaker associations were also observed with PCL:YV scores. Although unclear, these results may reflect the diminishing predictive associations between childhood abuse to negative outcomes including reoffending due to developmental changes and resilience processes, which may be enhanced by treatment (e.g., Newman, 2011; Whitelock, Lamb, & Rentfrow, 2013). Alternatively, results may be attributable to characteristics of this scale. Although this MACI scale demonstrates good reliability and internal and external validity, it is designed to capture current thoughts and perceptions related to abuse, not past experiences more proximate to the abuse (McCann, 1999).

To evaluate Hypothesis 3, regression analyses were then conducted to further examine preliminary results. Given the dearth of research regarding risk/protective factors in JSO populations and the limited significant findings identified by the only published study in this area (Spice et al., 2012), specific hypotheses were limited for regression analyses. Under Hypothesis 3, it was expected that, in accordance with prior research, older age at instant offense and self-reported CD symptoms would emerge as significant risk factors for recidivism. Older age at entry was identified as a significant risk factor for general, but not violent or sexual reoffending in JSOs. These results replicated Study 2 findings and prior research regarding general recidivism (Cottle et al., 2001; Spice et al., 2012) and were affected by similar methodological limitations noted for Study 1. Although preliminary analyses indicated that CD symptoms described unique variance, these effects did not translate to the regression model. These results may have been attributable to the overlap between CD symptoms and PCL:YV scores, but do suggest that Antisocial scores explain unique variance beyond CD symptoms in a general model. Moreover, these results are consistent with recent results by Spice and colleagues (2012) where nonsignificant associations were observed between CD symptoms and recidivism in exploratory multi-variable research with a JSO sample. Further, significant associations observed between general and violent recidivism and neighborhood and community violence as well as family problems did not translate to regression models. Notably, unlike CD symptoms, exposure to violence and family problems are often not captured by standard risk assessment measures. Given the strength of associations observed for these factors in preliminary results, further research should examine potential risk effects.

With respect to protective factors, the current results supplement prior research indicating that higher IQ, particularly Verbal IQ, is a protective factor for negative outcomes in youth (e.g.,

Jaffee, Caspi, Moffitt, Polo-Tomas, & Taylor, 2007; White et al., 1989). While IQ is consistently negative associated with juvenile delinquency (Farrington et al., 2012), it demonstrates less consistent links with recidivism in juveniles (Beggs & Grace, 2008; Cottle et al., 2001). Notably, however, prior research has indicated that verbal ability is more impaired in delinquents than nonverbal ability (Moffitt, 1993). Further, JSOs demonstrate significantly lower scores than other juvenile offenders on measures of IQ. Thus, increased Verbal IQ may provide enhanced protective effects in this offender population, in particular, which may have contributed to significant findings. Alternatively, the recidivism data may not reflect undetected offenses facilitated by higher levels of Verbal IQ, which may help some JSOs engage in more “successful” antisocial outcomes. Relatedly, recent research indicates that raters score JSOs significantly lower on measures of impression management than other offenders, but JSOs actually self-report higher levels (Seto & Lalumière, 2010). Thus, it is possible that verbally intelligent JSOs are better able than other offenders to convince others of their innocence and evade the consequences (i.e., arrest) of their behavior. Future research in this area should consider both of these issues by examining potential interactions between IQ and other factors in relation to recidivism; specifically, it may be helpful to examine how the combination of Verbal IQ and impression management and related constructs may impact recidivism outcome in JSOs.

Internalizing problems (i.e., internalizing personality traits and anxiety) were negatively associated with recidivism outcomes in preliminary analyses. General and violent recidivists scored significantly lower in these areas than nonrecidivists. In subsequent regression analyses, only introversive traits demonstrated significant protective effects in JSOs for general and violent, but not sexual, recidivism outcomes. Thus, features of the socially withdrawn, avoidant, and anxious temperament characteristics unique to JSOs (Seto & Lalumière, 2010) may be

captured by the item content of the MACI Introversive scale, and, in turn, contribute to enhanced predictive power. Taken together, these findings are consistent with the notion that these traits are more strongly associated with the onset of juvenile sexual offending than sexual reoffending (Seto & Lalumière, 2010). Although not statistically significant, higher anxiety levels at intake were negatively associated ($p = .058$) with sexual recidivism. JSOs consistently score higher on measures of internalization and distress than other offenders (Seto & Lalumière, 2010). The MACI Anxious Feelings scale specifically measures cognitive symptoms of anxiety (e.g., rumination) compared to physiological symptoms of anxiety. These scores may be notably higher at intake due to increased distress, worry, and rumination in reaction to the distressing consequences of offending (e.g., early separation from home and family, incarceration).

In general, these results support prior research indicating that internalization is particularly salient in JSO populations. Further research is needed to clarify the protective influences of internalization in JSOs. Although attachment variables (e.g., peer and parental) did not emerge as significantly protective in regression analyses, preliminary results indicated that they were negatively associated with recidivism outcomes, in particular, general recidivism. Future research should examine these factors to consider how they interact with internalizing traits. Finally, developmental processes as well as treatment affects may further strengthen the protective effects of these factors. Longitudinal research would be helpful to clarify how these associations evolve over time. Finally, Study 2 has specific strengths and limitations⁸ that must be considered when interpreting these results. A specific strength of Study 2 was the

⁸ Other than problems associated with offender groups, virtually all of the strengths and limitations noted in Study 1 are relevant for Study 2 and will not be restated in detail here. Key limitations will be discussed in the final section.

comprehensive and systematic approach used in the selection of variables to inform regression analyses (Hosmer & Lemeshow, 2004). This method of examination may have contributed to the identification of protective factors in a high-risk population in the face of competing and powerful risk factors. As noted previously, the study intentionally focused on constructs obtained from multiple measures widely used in the assessment of adolescents instead of focusing on risk assessment measures (other than the PCL:YV) typically used with sexually offending youth (e.g., J-SOAP-II, J-SORRAT). This design likely facilitated the identification of constructs outside of a discrete measure to encourage multi-modal assessment of juvenile offenders that casts a “wide net” instead of contributing to a “one-size-fits-all” approach (see Burkhart & Cook, 2010; Salekin & Lochman, 2008). Additionally, advanced statistical techniques (e.g., ML estimation with MC integration) were used to account for a relatively large percentage of missing data for certain variables and likely contributed to significant findings. Although these techniques complicated interpretation, they offered notable advantages over listwise deletion, and to a lesser extent, multiple imputation methods when investigating a purely exploratory model.

These results must also be interpreted in light of several limitations. First, Study 2 examined a large, highly correlated dataset to understand important associations. Multiple analyses were conducted using various statistical methods. These methods increase the likelihood of false discovery of pairwise differences. Second, due to interpretation problems caused by the use of certain statistical techniques to account for missing data, nested models were not tested. As a result, model fit statistics could not be examined. These exploratory findings can be used to inform future research with more targeted hypotheses and involving less highly correlated factors. Future research also should use hierarchical approaches to consider the

domain-level influence of these factors consistent with current research in the area (e.g., Pardini et al., 2012). Second, as noted previously, the results regarding violent and sexual recidivism must be interpreted with caution. Cox methods could not be used for these outcomes; thus, individual differences in follow-up time could not be accounted and likely bias results. More specifically, the use of ML estimation in a logistic regression model may have biased results with regard to sexual recidivism outcomes in Study 2. These techniques can suffer from small-sample bias, but bias can emerge in large samples where there is a very low frequency outcome in the sample. Given the low base rates of sexual reoffending, these results should be interpreted with caution. Third, unlike Study 1, many variables used in Study 2 were assessed using self-report and screening measures. Future studies should replicate these findings using self-report measures in addition to measures that consider observed behavior or multiple informants. Full-length measures may explain additional variance and impact prediction than screeners. Similarly, another limitation in Study 1 is the use of several measures (i.e., the MACI, IPPA, and SAVE) that have not yet been subjected to rigorous psychometric evaluation. These results can be used in replication studies to examine relevant constructs using more established measures. Fourth, certain results (i.e., Hypothesis 1) were obtained solely using correlational analysis while remaining results (i.e. Hypothesis 2 and 3) were correlational and only considered main effects. As a result, these results provide a broad overview of risk/protective factors; however the direction of effects is not clear and causal interpretations must be made with caution. Fifth, although Study 2 examined multiple domains of risk/direct protective factors, this examination was clearly not exhaustive. For example, neurocognitive (e.g., amygdala and prefrontal cortex impairment) and biological factors (e.g., young mother, criminal parent) that have been linked to psychopathic traits and recidivism outcomes were not examined (Blair, 2001; 2003; 2010).

Other limitations relate to study design. Longitudinal research is needed to clarify how the change in risk/protective factors over time impacts recidivism outcomes. Moreover, Study 2 does not use recently advanced methods to examine risk factors and “direct” protective factors. Study 2 defined “protective factors” broadly to capture predictors or correlates of better outcomes in a high-risk sample (Stouthamer-Loeber, Wei, Loeber, & Masten, 2004). Study 2 methodology interprets protection only by observing significant negative associations with recidivism outcomes, which does not consider that both positive and negative ends of a protective/risk variable may have differential significance for recidivism. Similarly, Study 2 examines protective factors in terms of their influence on recidivism instead of desistance. This “risk”-based approach restricts the empirical lens through which positive outcomes can be viewed but is the more common approach in the general literature. A desistance outcome measure was also not used due to complicating factors involved in measuring desistance (e.g., calculating multi-leveled scores reflecting time at risk) with available outcome data in despite these current recommendations (Stouthamer-Loeber et al., 2004).

General Discussion

Predictive Accuracy of the PCL:YV

General issues. As discussed earlier, a primary objective of both studies was to investigate the predictive accuracy of PCL:YV total and factor scores in a JSO sample. To date, this is the largest and most comprehensive examination of the predictive accuracy of the PCL:YV in a JSO sample. Results of ROC analyses indicated that all PCL:YV factor scores and both the 3-factor and 4-factor model total scores significantly predicted general and violent recidivism outcomes in JSOs. In general, these results replicate prior ROC results observed in general juvenile offender samples (e.g., Stockdale et al., 2010) in a JSO sample. Notably, however, effect sizes ranged from small to moderate; those observed in Stockdale et al. (2010) ranged from medium to large. Additionally, the 4-factor model total and Antisocial factor scores demonstrated weak predictive ability for sexual recidivism.

Additionally, regression results from Study 1 and 2 extend prior findings (e.g., Stockdale et al., 2010) to support the predictive validity of the Antisocial factor (relative to other PCL:YV factors) for general and violent recidivism outcomes in a JSO sample. In Study 1, the Antisocial factor emerged as a unique predictor of general and violent recidivism relative to the other three PCL:YV factors in both ROC and regression analyses. Additionally, when the relative contributions of the two factor models were compared in regression analyses, the Antisocial factor, emerged as a significant risk factor for general and violent recidivism outcomes for JSOs after controlling for age at entry and the 3-factor model total score. In Study 2, the Antisocial factor, but not the 3-factor model total score, emerged as a significant risk factor for general and

violent recidivism outcomes when examined as part of a larger regression model comprised of both risk and protective factors.

The nonsignificant results observed for the Interpersonal and Affective scores as well as the 3-factor model total score in regression analyses are consistent with prior research observing more discontinuity for these scores (e.g., Stockdale et al., 2010; Vincent et al., 2008). These nonsignificant results were attributed to the discontinuity of the Interpersonal and Affective scores in adolescents over time, but may have been affected by the reduced interrater reliability in these factor scores identified in the current study and prior research (e.g., Stockdale et al., 2010). Further, although the 3-factor model score has been found to add incrementally to the prediction of youth-recidivism (Stockdale et al., 2010), these results were identified for youth (before 18) only. In general, the PCL:YV demonstrates better predictive accuracy for recidivism when examining youth outcomes as compared to longer-term (i.e., adult only or combined youth-adult) outcomes.

Prediction of sexual recidivism. Unexpectedly, the Antisocial factor and 4-factor model total score significantly predicted sexual recidivism outcomes in univariate ROC analyses. Notably, this finding may have been partly attributable to the reduction of the larger JSO sample to set a minimum follow-up period. Although many JSOs were excluded, only 4 sexual recidivists were removed, which increased the base rates slightly from 4.1% to 5.2%. Additionally, effects were very small and these findings did not extend to subsequent logistic regression analyses conducted in Study 1 and 2. When the independent contribution of the individual PCL:YV factors was examined in regression analyses, no PCL:YV factor significantly predicted sexual recidivism. When the relative contributions of the Antisocial factor and the 3-

factor model total score were compared, significant incremental utility observed with the Antisocial factor after controlling for age did not persist in the final model.

Thus, with respect to ability of the PCL:YV to predict sexual recidivism, specifically, these results are inconclusive. These findings provide some support for the limited prior meta-analytical research suggesting that antisociality (reflected by the Antisocial factor) may be a heterogeneous risk factor for sexual recidivism—with significant positive associations observed in both JSO and general juvenile offender samples (see McCann & Lussier, 2008). Nonetheless, observed effect sizes were modest in univariate ROC results (Study 1) and negligible and nonsignificant in subsequent logistic regression results (Study 1 and 2, respectively). These results are consistent with prior significant findings. When comparing ROC and regression results for sexual recidivism, PCL:YV scores demonstrate less “durable” univariate risk effects that are unlikely to persist in regression models (e.g., Gretton et al., 2001). In recidivism studies, statements regarding predictive accuracy require support from significant effects observed in ROC as well as logistic regression (preferably, survival) results (Rice & Harris, 1995). Thus, in light of these considerations and other methodological limitations described earlier, these results do not support the use of PCL:YV scores to predict sexual recidivism outcomes in JSOs. Replication studies in JSO samples are needed to expand on and further clarify these results.

The Antisocial factor. Consistent with a growing body of empirical evidence, the Antisocial factor contributed uniquely to the prediction of recidivism outcomes in Study 1. This result begs the question: what is so special about the Antisocial factor? Critics of the 4-factor PCL:YV model have suggested that the inclusion of the Antisocial factor muddies the waters of the traditional Clecklyan conceptualization of psychopathy because it requires a history of criminal behavior (Skeem & Cooke, 2010). Despite these criticisms, existing research suggest

the Antisocial factor may capture a construct much broader than antisociality (Hare & Neumann, 2010). For example, Stockdale et al. (2010) submitted that the Antisocial factor may reflect a broad factor of *overt* antisociality compared with the more *covert* antisociality (e.g., callousness, deceitfulness) represented by other PCL:YV item content. Similarly, on its face, the item content of the Antisocial factor appears to capture more than a history of delinquent and criminal behavior. For example, the Antisocial factor considers a dynamic measure of anger control (Item 10) that assesses both past and current behavior. Moreover, an item related to criminal versatility (Item 20) is also included. This construct is uniquely related to instrumental aggression—associated with planning, purpose (e.g., to obtain resources such as money, or to gain status), and a lack of affect (Glenn & Raine, 2009; Vitacco, Neumann, Caldwell, Leistico, & Van Rybroek, 2006). This factor also captures information regarding the onset of offending, albeit historical, which uniquely affects risk for youth. For example, earlier onset of behavioral problems [i.e., childhood (Item 12) versus adolescence (Item 18) onset] is associated with worse outcomes (e.g., increased delinquency, offending; Loeber, Burke, & Pardini, 2009). Overall, these results suggest that the Antisocial factor is a meaningful predictor of negative outcomes in youth.

Risk/Protective Factors for Recidivism in JSOs

Protective factors. A primary purpose of Study 2 was to inform the relatively nonexistent protective factors literature in JSOs and provide an alternative methodological approach to the only other relevant study in this area (Spice et al., 2012). In Study 2, risk and protective factors were chosen based on a comprehensive and systematic empirical examination of a large pool of variables that were hypothesized to be related to JSO recidivism based on theoretical assumptions, empirical research, and study objectives related to psychopathic traits. This process is consistent with researcher recommendations to “cast a wide net” to identify

protective factors in under researched areas (Salekin & Lochman, 2008). Further, relevant constructs were operationalized using scores from a multi-modal assessment protocol used to inform treatment in JSOs. This approach permitted a “real-world” examination of measures that are widely used in juvenile justice settings to assess juvenile offenders and functioned to enhance ecological validity of these findings. Similarly, a multi-modal approach using general assessment measures may have facilitated a more risk-neutral focus compared to Spice et al. (2012), which used only items from standard risk assessment measures. Consistent with recommendations by Spice et al. (2012), constructs that tapped the unique typological characteristics of JSOs also were used to leverage predictive power in the current sample and may have contributed to current findings. Although this approach was intended as an initial exploration of protective factors in JSOs, these findings provide initial support the use of typologically-informed techniques to identify protective factors in JSOs. Future research should examine other internalizing symptoms (e.g., anxiety) and parental and peer attachment, which demonstrated significant negative associations with recidivism in preliminary analyses, but not regression analyses. Replication and extension studies are needed to further clarify these findings.

Risk factors. Despite the emphasis on protective factors in Study 2, all selected risk factors were supported by empirical research. Although CD symptoms, childhood abuse, family problems, and community violence emerged as significant predictors of general and violent recidivism outcomes in preliminary analyses, these associations did not appear in subsequent logistic regression and survival analyses. Older age at offense and the Antisocial factor (described earlier) emerged as a significant risk factors for general recidivism outcomes while only the Antisocial factor significantly predicted violent recidivism. The risk effects of older age at entry is consistent with prior research with JSOs indicating that this factor is a predictor of

general recidivism in sexual offenders (Cottle et al., 2001; McCann & Lussier, 2008; Spice et al., 2012). Additionally, longitudinal research examining recidivism outcomes is needed to understand the relationship between risk factors and recidivism over various developmental stages. Certain risk factors may be more relevant for short-term re-offense risk and less so over time while other factors may demonstrate more stable risk effects and be impact recidivism more uniformly over time.

General Issues in Prediction of Sexual Recidivism

Base rates of sexual offending were low in the JSO sample used in both studies (i.e., 5.2%) and were expected (and observed) to impact prediction. A number of specific methodological considerations have been offered to explain the low sexual recidivism rates for JSOs (see e.g., Caldwell et al., 2008; DiCataldo, 2009). The current investigation did seek to address methodological concerns, to the extent possible, to improve prediction. A brief review of these methodological concerns as well as the methodological advantages (and disadvantages) of the present study is helpful to inform the literature in this area.

One methodological advantage of the current study relates to the longer follow-up period. Longer follow-up periods have been found to yield higher base rates (Caldwell, 2002). The current study selected for cases that with a minimum follow-up period of 2 years to allow participants sufficient “time” to reoffend with an average follow-up time of 5 years. As previously noted, in the current study, this method increased the base rate by approximately 1% and may have impacted results. Unfortunately, longer follow-up periods also increase the likelihood for change in risk over the adolescent period; thus, increasing the inaccuracy of risk prediction (Grisso, 1998). Survival analyses that account for individual differences in follow-up period are helpful may address some of these challenges; however, this method does not account

for concurrent changes in other variables. Longitudinal research is needed to more fully understand these dynamic associations over time.

Another methodological advantage relates to the choice of definition of recidivism used in the current study. Recidivism can be recorded using a variety of methods (e.g., self-report, arrests, or reconvictions). Recording recidivism as arrests and reconvictions is more likely to underestimate recidivism rates by failing to identify those individuals who escape detection by third parties while self-report may yield higher rates, but is more unreliable. Compared to arrest data, reconviction data are more likely to underestimate risk because they record recidivism only after plea bargaining and sentence reductions. Despite the use of general arrests, base rates remained low. The limited scope of these records (i.e., in-state), likely further underestimated “true” recidivism rates.

Despite these advantages, certain methodological disadvantages may have impacted the current results. Researchers have found lower base rates of sexual recidivism among treatment samples—specifically those who underwent treatment for their offense (Långström, 2002). The current study used a mandated treatment sample; thus, a no-treatment comparison was not possible. Future research should attempt to compare recidivism rates in treatment versus no-treatment groups to further expand this literature. As noted earlier, the recidivism focus for Study 2 was general and violent recidivism, not sexual recidivism. Offense- and victim-specific variables, which tend to be better predictors of sexual recidivism (Långström, 2002), were not examined and may have contributed to the lack of significant findings.

Limitations and Future Directions

As noted previously, methodological issues in both studies may have affected results. Those issues hypothesized to contribute to low base rates of sexual reoffending may have also

reduced base rates for general and violent reoffending, which also may have impacted results for these outcomes. These studies utilize a cross-sectional design and should be examined using a longitudinal design. The risk/protective factors examined in these studies reflect constructs that develop and change over time—especially within the dynamic developmental period of adolescence. Individual factors (e.g., psychopathology) exist on a continuum that is likely shaped through repeated dose-response exposures between the individual and his environment over the lifespan. Longitudinal designs are required to accurately test the current hypotheses of these nonlinear and time-dependent relationships. Current sample characteristics (e.g., male, JSO, detained, treatment) may limit generalizability of these findings. This sample represents a large group of high-risk and high-need juvenile offenders who are very diverse. This profile adds to the complexity of the sample and increases the number of confounding variables, which may bias results.

Future research utilizing systematic measurement approaches and more well-researched measures is needed to improve upon these results. Study 2 utilized self-report measures that have not been subjected to extensive psychometric evaluation. Study 2 also did not use recently advanced methods for identifying “direct” protective factors (Pardini et al., 2012) and did not consider interaction effects. Further, in Study 2, methodological issues complicated interpretation of regression results and, in turn, substantially limit the utility beyond exploratory purposes. These methods also prevented a domain-based examination of factors, which may provide meaningful information regarding proximal versus distal system influences.

Theoretical and Clinical Implications

Psychopathic traits. These results support the assessment of psychopathy in adolescents despite, but with substantial consideration given to, the ethical concerns attendant to this

construct. The consequences of labeling a youth as a “psychopath” are dramatic and far-reaching. For sexually offending youth, the potential for harm is magnified in the current post-SORNA environment (see Caldwell et al., 2008; Edens et al., 2003). Nonetheless, adolescent psychopathy, as assessed by the PCL:YV, is a powerful construct in youth. It is widely used and quite useful in juvenile offenders for the assessment of general and violent recidivism outcomes (see e.g., Caldwell et al., 2008). Therefore, it is critical that researchers continue to examine the appropriate use and interpretation of the measure in forensic practice. Likewise, it is important to remember that the PCL:YV measures a psychological construct, not a legal one. It was solely designed to assess the presence of adolescent traits that are consistent with the development of a severe personality disorder, which can have disastrous consequences for the individual and society if left untreated. Thus, despite the ethical concerns surrounding the construct, it may be more unethical not to assess these traits in youth.

Although the PCL:YV can be a valuable tool to inform forensic assessment and treatment planning, current research supports several recommendations for the use of the PCL:YV in juvenile offenders. First, use of the PCL:YV requires a thorough understanding of the unique developmental challenges involved in assessing both risk and psychopathology in adolescents (see Vincent & Grisso, 2005). Similar to other adolescent mental health disorders, adolescent psychopathy demonstrates significant comorbidity with other disorders across both internalizing and externalizing dimensions (see Sevecke, Lehmkuhl, et al., 2009) and increased levels of discontinuity and change, which may be more pronounced in certain features of the disorder (e.g., Vincent et al., 2008) and over longer periods of time (e.g., Stockdale et al., 2010). These findings are consistent with developmental principles and empirical findings in personality research, and are actually expected with an adolescent measure of personality (see Vincent &

Grisso, 2005). However, these developmental challenges must be accounted for in risk assessment and treatment planning. The current results support the conclusion that the PCL:YV provides powerful *descriptive* information useful for the assessment of short-term risk, but should not be used in long-term decision making (Stockdale et al., 2010). Similarly, these results support the proposition that the “shelf life” of risk assessments in youth may be much shorter than in adults—requiring more frequent readministrations (Stockdale et al., 2010; Vincent & Grisso, 2005).

Second, when used for decision-making purposes in forensic settings, the PCL:YV should be used to assess psychopathic traits only in connection with those outcomes for which predictive validity is supported by empirical research applicable to the relevant adolescent population. With respect to recidivism, specifically, at this time the existing research supports the use of the PCL:YV to assess the short-term re-offense risk for JSOs and other juvenile offenders for general and violent, but not sexual, recidivism. Relatedly, the PCL:YV is useful only as a *component* of a multi-modal risk assessment, it should not be used as a standalone measure of risk. The current results support prior findings that the predictive accuracy of the PCL:YV is reduced in regression models with other risk factors (e.g., Gretton et al., 2001). In general, the PCL:YV was not designed specifically for the assessment of re-offense risk, and this “off-label” use should be supported by evidence from other empirically supported assessment measures.

Third, PCL:YV scores should be examined from a dimensional perspective. Despite growing evidence suggesting that the individual factors contribute uniquely to the prediction of recidivism outcomes, researchers have been reluctant to challenge the primacy of the unitary construct of psychopathy represented by the total score (see e.g., Hare & Neumann, 2010; Stockdale et al., 2010). Nevertheless, existing research, developmental psychopathology

principles, and relevant ethical and legal concerns support the notion that psychopathy should be examined as a dimensional rather than a unitary construct in adolescents. From an ethical standpoint, the mere use of total scores contributes to the use of adult cut-off scores. While the PCL:YV authors have cautioned against the use of adult cut-off scores (e.g., 30) for the purpose of classifying individuals with “high” levels of these traits, these cut-offs are commonly used in research conducted to translate the “downward extension” of the PCL-R construct to youth (see Gretton et al., 2001). Total scores also miss the subtle yet powerful developmental differences found in youth noted above, which further affects accuracy. For example, total scores including higher scores on the less stable Interpersonal and Affective factors would likely overestimate long-term risk in juvenile offenders. In contrast, total scores that omit the more stable Antisocial factor (i.e., the 3-factor model total) would likely underestimate this risk. Contrary to Stockdale and colleagues’ (2012) suggestion, with adolescents, it may be that the whole (i.e., PCL:YV total scores) *does not* equal the sum of its parts (i.e., individual PCL:YV factor scores).

One solution may be the development of an empirically-supported “dimensional profile” that can be utilized to interpret the psychopathic features broadly represented by total scores. Unfortunately, very little research has examined the use of psychopathic dimensions. As discussed previously, use of factor scores from an ordinal measure may contribute to convergence and reliability issues that may affect assessment and interpretation of scores. Future research examining factor scores is needed to improve the psychometric literature regarding these scores.

Additionally, a dimensional approach facilitates treatment. As suggested by Salekin, Worley, and Grimes (2010), researchers could use factor scores to compare outcomes in a component parts versus combined type manner (similar to ADHD) to determine which

psychopathic dimensions are in need of treatment. This approach facilitates evidence-based practice approaches, which recommend targeted interventions matched to presenting problems. For example, if a youth obtained higher Antisocial and Lifestyle scores but lower Interpersonal and Affective scores, it may be best to first address these behavioral problems before moving on to other objectives in treatment. Treatment of these more stable and earlier-appearing behavioral features of psychopathy may prevent the emergence of the later-appearing and more treatment-resistant interpersonal and affective features (Lynam, Derefinko, Caspi, Loeber, & Stouthamer-Loeber, 2007). In general, the primary goal of assessment in juvenile justice settings should be the prevention of risk and the treatment of mental health disorders. The PCL:YV provides information useful for both purposes if used appropriately.

The importance of protective factors. These results suggest that protective factors may help to ameliorate the effects of risk in detained adolescents—including JSOs. This finding has important implications for assessment and treatment in JSOs. The most compelling observation from resilience research in at-risk youth is that resilience is the rule, not the exception (Rutter & Rutter, 1992). In adolescents, in particular, a balanced approach to assessment requires that both risk and protective factors be considered (Rogers, 2000). To echo the view expressed by Lodewijks, de Ruiter, and Doreleijers (2010), “we can safely conclude that protective factors should be an inextricable part of all risk assessment instruments used with youth” (p. 584).

Indeed, the current results support the critical role of protective factors in the assessment of juvenile offenders. These results also may be helpful to inform the construction of multi-modal assessment protocols used to describe risk or the development of a risk assessment measure designed for JSOs that contains protective items. Future research examining potential offense-specific factors that may impact recidivism in JSO samples in addition to these offender-

based characteristics is needed. The current results provide only correlational insight into the relationship between psychopathic traits and risk/protective factors in JSOs; however, consistent with prior research, protective factors demonstrated differential associations with the four psychopathic dimensions. These results suggest that certain internalizing traits and attachment to others could serve as potential protective factors in later studies of JSO samples with psychopathic traits. Finally, longitudinal research would also be helpful in understanding how these associations evolve over time and among offenders. For example, some protective factors may be critical at certain time points in certain types of JSOs (e.g., child versus peer perpetrators), but inactive in other contexts and with other types of offenders. Conversely, some risk factors may be temporarily enhanced in adolescence and later weaken due to maturational and other effects.

These results also have significant implications for forensic treatment in JSOs. The general conclusion is that protective factors are essential to treatment. By introducing these factors into the treatment equation, clinicians can leverage the power of existing strengths to counteract risk effects. No studies have directly examined the role of protective factors in JSO treatment. However, a related review by Worling and Langton (2012) examining treatment effectiveness across JSO treatment programs in secured settings found lower recidivism rates with treatments that emphasized individual characteristics as well as family supports. These prior findings are consistent with the existing protective factors research in JSOs supporting the protective influence of individual factors such as internalization (Study 2) and family factors such as parental attachment identified by Spice et al. (2012). Factors that are central to current treatment programming at ABSOP, which utilizes, among other approaches, cognitive-behavioral, family and multi-family therapy, and strengths-based techniques. Despite some

pessimism regarding treatment effectiveness in JSOs, the authors of a recent meta-analytical review of 10 studies found that “the results were surprisingly encouraging, suggesting that treatments for male adolescent offenders appear generally effective ($r = .37$)” (Walker, McGovern, Poey, & Otis, 2005, p. 281). Hopefully, the use of protective factors in treatment can help maximize these results and increase therapeutic optimism for successful treatment outcomes for JSOs.

Conclusion

The successful mental health assessment and treatment of juvenile offenders requires a developmental perspective and an appreciation of individual differences. If used in an ethical and discretionary manner, the PCL:YV can be used to inform short-term general and violent recidivism risk in juvenile offenders and direct treatment targets. Given the ethical concerns associated with the PCL:YV, specifically in JSOs, additional precautions should be taken. Use of the PCL:YV should be supported by frequent readministrations, multi-modal assessment of risk and protective factors, a dimensional framework that emphasizes factor scores, and additional research with specific offender groups. In short, these methods support the notion that the focus of risk assessment is risk prevention, not risk prediction. Protective factors highlight the benefits of a developmentally-informed approach and are essential to the balanced assessment of risk and treatment needs with juvenile offenders—specifically JSOs who are in desperate need of some good news. Unfortunately, the implementation Adam Walsh Act has led to a major shift in focus from treatment to punishment and classification for sexually offending youth. As these policies and restrictions rapidly evolve, additional research regarding both risk and protective factors is desperately needed to inform evidence-based assessment and treatment approaches for sexual offending.

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APPENDIX: TABLES

Table 1.

Comparison of PCL:YV Factor Models

Cooke and Michie three-factor model		Hare and Neumann four-factor model	
<i>Item</i>	Arrogant, Deceptive Interpersonal Style	<i>Item</i>	Interpersonal
1	Impression management	1	Impression management
2	Grandiose sense of self worth	2	Grandiose sense of self worth
4	Pathological lying	4	Pathological lying
5	Manipulation for personal gain	5	Manipulation for personal gain
	Deficient Affective Experience		Affective
6	Lack of Remorse	6	Lack of Remorse
7	Shallow Affect	7	Shallow Affect
8	Callous/lacking empathy	8	Callous/lacking empathy
16	Failure to accept responsibility	16	Failure to accept responsibility
	Impulsive, Irresponsible Behavior		Lifestyle
3	Stimulation seeking	3	Stimulation seeking
9	Parasitic orientation	9	Parasitic orientation
13	Lacks goals	13	Lacks goals
14	Impulsivity	14	Impulsivity
15	Irresponsibility	15	Irresponsibility
			Antisocial
		10	Poor anger control
		12	Early behavior problems
		18	Juvenile delinquency
		19	Revocation of conditional release
		20	Criminal versatility

Note. Item titles are those used in the Psychopathy Checklist: Youth Version (PCL:YV) by

Forth, Kosson, & Hare, 2003. Item 17 (Unstable interpersonal relationships) is omitted from both factor models.

Table 2.

Descriptive Statistics for PCL:YV Scores in Study 1

PCL:YV score	Aggregate ^a		JSOs		NSJOs		White		Min.	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Interp.	2.21	1.99	2.20	2.02	2.21	1.89	2.07	2.05	2.33	1.92
Affective	3.66	2.15	3.72	2.13	3.51	2.19	3.31	2.09	4.00 ^c	2.14
Lifestyle	4.30	2.38	3.98 ^b	2.36	5.13	2.24	4.20	2.41	4.40	2.35
Antisocial	4.45	2.76	3.94 ^b	2.69	5.74	2.49	4.08	2.77	4.79 ^c	2.70
3-factor	10.17	5.20	9.90	5.26	10.85	4.97	9.57	5.19	10.72 ^c	5.14
4-factor	16.22	8.09	15.28	8.14	18.60	7.46	14.95	8.15	17.40 ^c	7.85

Note. PCL:YV = Psychopathy Checklist: Youth Version; JSO = juvenile sex offender; NSJO = juvenile non-sexual offender; 3-factor = PCL:YV 3-factor model total score; 4-factor = PCL:YV 4-factor model total score; Interp. = PCL:YV Interpersonal; Affective = PCL:YV Affective; Lifestyle = PCL:YV Lifestyle; Antisocial = PCL:YV Antisocial.

^a Total sample includes 16 cases with missing JSO/NSJO designation and restricts for 2-year follow-up period. ^b JSOs significantly lower than NSJOs ^c Minority youth significantly higher than White youth.

Table 3.

Comparison of PCL:YV Scores by JSO Recidivism Subgroups

	<u>General Recidivism</u> (Recidivists/Nonrecidivists)			<u>Violent Recidivism</u> (Recidivists/Nonrecidivists)			<u>Sexual Recidivism</u> (Recidivists/Nonrecidivists)		
	<i>M</i>	<i>SD</i>	<i>t</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>M</i>	<i>SD</i>	<i>t</i>
Interp.	2.47/ 2.04	2.01/ 2.03	2.43*	2.58/ 2.14	1.99/ 2.02	2.05*	2.48/ 2.19	2.08/ 2.00	1.25
Affective	3.97/ 3.56	2.10/ 2.15	2.25*	4.15/ 3.62	2.03/ 2.15	2.32*	4.06/ 3.68	2.00/ 2.14	1.12
Lifestyle	4.64/ 3.60	2.41/ 2.36	4.90***	4.77/ 3.87	2.57/ 2.37	3.45 ^a	4.39/ 4.00	2.79/ 2.40	1.07 ^b
Antisocial	5.02/ 3.49	2.74/ 2.57	6.51***	5.42/ 3.83	2.78/ 2.64	5.54***	5.19/ 4.11	2.48/ 2.75	1.98 ^c
3-factor	11.08/ 9.19	5.22/ 5.35	4.03***	11.51/ 9.63	5.36/ 5.31	3.29 ^a	10.94/ 9.88	5.65/ 5.33	1.48
4-factor	18.12/ 13.86	8.00/ 8.14	5.95***	19.20/ 14.81	8.18/ 8.15	5.01***	18.89/ 15.57	8.40/ 8.31	1.99 ^c

Note. Base rates for offending in the JSO sample ($n = 538$) were as follows: General Recidivism = 42.1%; Violent Recidivism = 20.1%; Sexual Recidivism = 5.0%. PCL:YV = Psychopathy Checklist: Youth Version; JSO = juvenile sex offender; 3-factor = PCL:YV 3-factor model total score; 4-factor = PCL:YV 4-factor model total score; Interp. = PCL:YV Interpersonal; Affective = PCL:YV Affective; Lifestyle = PCL:YV Lifestyle; Antisocial = PCL:YV Antisocial.

^a $p = .001$. ^b Unequal variances assumed. ^c $p = .05$

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 4.

ROC Analyses of PCL:YV Factors for Recidivism Outcomes

	Interpersonal		Affective		Lifestyle		Antisocial	
	AUC	95% CI	AUC	95% CI	AUC	95% CI	AUC	95% CI
Total								
General	.55*	.51, .60	.54	.50, .58	.62***	.58, .66	.66***	.62, .70
Violent	.56*	.51, .60	.54	.50, .59	.60***	.55, .64	.66***	.62, .70
Sexual	.52	.46, .59	.55	.46, .65	.51	.39, .62	.51	.41, .61
JSOs								
General	.57**	.52, .62	.56*	.50, .60	.63***	.58, .68	.66***	.61, .71
Violent	.57*	.51, .63	.57*	.52, .63	.60 ^a	.54, .66	.66***	.59, .70
Sexual	.57	.47, .61	.56	.46, .65	.56	.44, .69	.62*	.52, .72
NSJOs								
General	.50	.40, .59	.53	.44, .62	.51	.41, .60	.53	.44, .63
Violent	.54	.46, .61	.52	.44, .60	.51	.43, .59	.58 ^b	.50, .66
Sexual	.31	.20, .42	.49	.01, .98	.54	.22, .86	.56	.05, .84

Note. *ns* for total, JSO, and NSJO samples are as follows: Aggregate sample ($N = 776$). JSO sample ($n = 538$). NSJO sample ($n = 222$). PCL:YV = Psychopathy Checklist: Youth Version; Interpersonal = PCL:YV Interpersonal; Affective = PCL:YV Affective; Lifestyle = PCL:YV Lifestyle; Antisocial = PCL:YV Antisocial; AUC = area under the curve; CI = confidence interval.

^a $p = .001$ ^b $p = .05$

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 5.

Cox Regression of PCL:YV Factors for JSO General Recidivism

Variable	<i>B</i>	Wald	e^B (95% CI for e^B)
Block 1			
Age	.19**	8.04	1.21 (1.06, 1.38)
Block 2			
Age	.22 ^a	10.37	1.25 (1.09, 1.43)
Interpersonal	-.09	1.24	.92 (.79, 1.07)
Affective	.07	.65	1.07 (.91, 1.26)
Lifestyle	.09	.72	1.09 (.89, 1.34)
Antisocial	.21 ^a	11.88	1.37 (1.15, 1.64)

Note. All variables standardized before entry. PCL:YV = Psychopathy Checklist: Youth

Version; Interpersonal = PCL:YV Interpersonal; Affective = PCL:YV Affective; Lifestyle =

PCL:YV Lifestyle; Antisocial = PCL:YV Antisocial; CI = confidence interval; LL = log

likelihood.

Block 1 $\Delta\chi^2 = 8.11, p < .01$.

Block 2 $\Delta\chi^2 = 31.69, p < .001$.

^a $p = .001$.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 6.

Logistic Regression of PCL:YV Factors for JSO Violent Recidivism

Variable	<i>B</i>	Wald	e^B (95% CI for e^B)
Block 1			
Age	.11	1.06	1.12 (.90, 1.39)
Block 2			
Age	.16	1.90	1.17 (.94, 1.48)
Interpersonal	-.09	.47	.92 (.70, 1.19)
Affective	.12	.72	1.12 (.94, 1.47)
Lifestyle	-.05	.09	.95 (.87, 1.31)
Antisocial	.62***	16.32	1.85 (1.37, 2.50)

Note. All variables standardized before entry. PCL:YV = Psychopathy Checklist: Youth

Version; Interpersonal = PCL:YV Interpersonal; Affective = PCL:YV Affective; Lifestyle =

PCL:YV Lifestyle; Antisocial = PCL:YV Antisocial; CI = confidence interval; LL = log

likelihood.

Block 1 $\Delta\chi^2 = 1.06$, *ns*, -2LL = 533.18, R^2 (Cox & Snell) = .02, R^2 (Naegelekerke) = .03

Block 2 $\Delta\chi^2 = 30.17$, $p < .001$, -2LL = 503.00, R^2 (Cox & Snell) = .06, R^2 (Naegelekerke) = .09

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 7.

ROC Analyses of PCL:YV Factor Models for Recidivism Outcomes

Subgroup	4-factor model (20 item)		3-factor model (13 item)	
	AUC	95% CI	AUC	95% CI
Aggregate^a				
General	.64***	.60, .69	.60***	.56, .64
Violent	.63***	.60, .69	.59***	.54, .63
Sexual	.53	.43, .63	.53	.43, .63
JSOs				
General	.66***	.61, .71	.61***	.57, .66
Violent	.66***	.60, .71	.61 ^b	.54, .65
Sexual	.60 ^b	.47, .67	.58	.45, .66
NSJOs				
General	.54	.47, .62	.53	.45, .61
Violent	.57	.50, .64	.54	.47, .62
Sexual	.41	.05, .76	.44	.05, .84

Note. *ns* for total, JSO, and NSJO samples are as follows: Aggregate sample ($N = 776$). JSO

sample ($n = 538$). NSJO sample ($n = 222$). PCL:YV = Psychopathy Checklist: Youth Version; 3-

factor = PCL:YV 3-factor model total score; 4-factor = PCL:YV 4-factor model total score;

AUC = area under the curve; CI = confidence interval.

^a Aggregate sample includes 16 cases with missing group membership classification.

^b $p = .001$

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 8.

Cox Regression of PCL:YV 3-Factor Total and Antisocial Factor for General Recidivism

Variable	<i>B</i>	Wald	e^B (95% CI for e^B)
Block 1			
Age	.19**	8.04	1.21 (1.06, 1.38)
Block 2			
Age	.21**	9.18	1.23 (1.08, 1.41)
Antisocial	.36***	30.32	1.43 (1.26, 1.62)
Block 3			
Age	.21**	9.20	1.23 (1.08, 1.41)
Antisocial	.34***	16.62	1.40 (1.19, 1.64)
3-factor total	.03	.15	1.03 (.88, 1.21)

Note. All variables standardized before entry. PCL:YV = Psychopathy Checklist: Youth Version; Antisocial = PCL:YV Antisocial factor; 3-factor = PCL:YV 3-factor model total score; CI = confidence interval; LL = log likelihood.

Block 1 $\Delta\chi^2 = 8.11, p < .01$

Block 2 $\Delta\chi^2 = 29.62, p < .001$

Block 3 $\Delta\chi^2 = .15, p = .69$.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 9.

Logistic Regression of PCL:YV 3-Factor Total and Antisocial Factor for Violent Recidivism

Variable	<i>B</i>	Wald	e^B (95% CI for e^B)
Block 1			
Age	.11	1.06	1.12 (.90, 1.39)
Block 2			
Age	.15	1.66	1.16 (.93, 1.45)
Antisocial	.58***	27.91	1.79 (1.44, 2.22)
Block 3			
Age	.15	1.66	1.16 (.93, 1.45)
Antisocial	.59***	17.90	1.80 (1.37, 2.36)
3-factor total	.01	—	1.00 (.76, 1.30)

Note. All variables standardized before entry. PCL:YV = Psychopathy Checklist: Youth

Version; Antisocial = PCL:YV Antisocial factor; 3-factor = PCL:YV 3-factor model total; CI = confidence interval; LL = log likelihood.

Block 1 $\Delta\chi^2 = 1.06$, *ns*, -2LL = 533.18, R^2 (Cox & Snell) = .02, R^2 (Naeglekerke) = .03

Block 2 $\Delta\chi^2 = 29.24$, $p < .001$, -2LL = 503.94, R^2 (Cox & Snell) = .06, R^2 (Naeglekerke) = .09

Block 3 $\Delta\chi^2 = .004$, *ns*, -2LL = 503.94, R^2 (Cox & Snell) = .06, R^2 (Naeglekerke) = .09\

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 10.

Risk/Protective Factors, Measurement, and Coding Scheme

Domain/Variable	Influence	Measure	Scale Information	Coding scheme
Individual factors				
<i>Intelligence</i>				
Verbal IQ	Protective	WASI	Verbal IQ	50-160
<i>Psychopathology</i>				
Inhibited/withdrawn	Protective	MACI	Introversive (PP)	0-115
Shy/passive	Protective	MACI	Submissive (PP)	0-115
Anxiety	Protective	MACI	Anxious Feelings (CS)	0-115
CD	Risk	MACI	Delinquent Predisposition (CS)	0-115
Antisocial factor	Risk	PCL:YV	Antisocial factor	0-3 (0-10)
3-factor total	Risk	PCL:YV	3-factor (13 item) total	0-3 (0 -20)
Parent/Family factors				
Family discord	Risk	MACI	Family discord (EC)	0-115
Childhood abuse	Risk	MACI	Childhood abuse (EC)	0-115
Parental attachment	Protective	IPPA	Parent total	28-140
Peer/Neighborhood factors				
Peer attachment	Protective	IPPA	Peer total	25-125
Neighborhood violence	Risk	SAVE	Neighborhood total	0-128
School violence	Risk	SAVE	School total	0-128

Note. All measures are continuous. PCL:YV = Psychopathy Checklist Youth Version; WASI = Wechsler Abbreviated Scale of

Intelligence; MACI = Millon Adolescent Clinical Inventor; IPPA = Inventory of Parent and Peer Attachment; SAVE = Screen for

Adolescent Violence Exposure; PP = Personality Patterns; CS = Clinical Syndromes; EC = Expressed Concerns.

Table 11.
Means and Standard Deviations for, and Intercorrelations for Study 2 Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age	—													
2. VIQ	-.07	—												
3. Introv.	-.20***	-.13**	—											
4. Subm.	-.03	.05	.09*	—										
5. CD	.12**	-.01	-.34***	-.64***	—									
6. Anxiety	-.08	.02	.25***	.75***	-.75***	—								
7. Antisocial	.09*	-.11*	-.09*	-.42***	.43***	-.45***	—							
8. 3-factor	-.01	-.12**	.01	-.38**	.30**	-.32***	.57***	—						
9. Family discord	.09*	.01	-.17***	-.63***	.55***	-.58***	.37***	.32***	—					
10. Child. abuse	-.04	.05	.38**	-.09*	-.13**	.02	.07	.07	.29**	—				
11. Parent Attach.	-.02	-.04	-.12***	.22***	-.13**	.21***	-.12***	-.09*	-.28**	-.19***	—			
12. Peer Attach.	.02	.10*	-.19**	.10*	-.01	.04	-.08	-.09*	.02	-.06	.44**	—		
13. School violence	.12**	.01	.05	-.36***	.31***	-.32***	.37***	.22***	.30***	.18**	-.05	.04	—	
14. Neigh. violence	.19***	-.10*	--	-.45***	.44***	-.43***	.49***	.29**	.38***	.12**	-.11**	-.01	.77**	—
<i>M</i>	16.14	82.91	51.92	58.75	65.56	61.32	4.48	10.20	62.76	42.54	97.46	87.89	23.53	35.91
<i>SD</i>	1.53	13.45	18.85	16.223	19.54	21.56	2.75	5.19	20.14	26.48	21.12	18.85	18.30	27.68
<i>Range</i>	11, 20	50, 129	1, 110	4, 112	2, 112	4, 112	6, 115	8, 115	9, 101	0, 116	29, 138	29, 158	0, 10	0, 26

Note. PCL:YV = Psychopathy Checklist: Youth Version; MACI = Millon Adolescent Clinical Inventory; SAVE = Screen for Adolescent Violent Exposure; IPPA = Inventory of Parental and Peer Attachment; WASI = Wechsler Abbreviated Scale of Intelligence; VIQ = WASI Verbal IQ; Introv. = MACI Introversive; Subm. = MACI Submissive; CD = MACI Delinquent predisposition; Anxiety = MACI Anxious Feelings; Antisocial = PCL:YV Antisocial factor; 3-factor = PCL:YV 3-factor model total; Family discord = MACI Family discord; Child abuse = MACI Childhood abuse; Parent attach = IPPA Parental attachment; Peer attach = IPPA Peer attachment; School violence = SAVE School violence; Home violence = SAVE Home violence.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 12.

Bivariate Correlations for PCL:YV Scores and Risk/Protective Factors

Variable	Interpersonal	Affective	Lifestyle	Antisocial	4-factor total	3-factor total
Protective factors						
Verbal IQ	.03	-.15**	-.16 ^a	-.08	-.13**	-.12*
Introversive	-.05	.04	.01	-.09*	-.04	—
Submissive	-.34***	-.26***	-.46***	-.43***	-.48***	-.44***
Anxiety	-.26***	-.20***	-.45***	-.41***	-.44***	-.38***
Parent attach.	-.10*	.03	-.13**	-.18***	-.15**	-.08
Peer attach.	-.10*	—	-.11*	-.20***	-.16**	-.08
Risk factors						
Age	.06	-.06	-.06	-.06	-.03	-.03
CD	.26***	.16***	.36***	.40***	.39***	.33***
Family discord	.29***	.24***	.35***	.36***	.39***	.36***
Child abuse	.05	.06	.12**	.11*	.10*	.10*
School violence	.26***	.14**	.25***	.32***	.32***	.27***
Neigh. violence	.28***	.22***	.33***	.41***	.41***	.34***

Note. PCL:YV = Psychopathy Checklist: Youth Version; MACI = Millon Adolescent Clinical Inventory; SAVE = Screen

for Adolescent Violent Exposure; IPPA = Inventory of Parental and Peer Attachment; WASI = Wechsler Abbreviated Scale

of Intelligence; VIQ = WASI Verbal IQ; Introv. = MACI Introversive; Subm. = MACI Submissive; CD = MACI

Delinquent predisposition; Anxiety = MACI Anxious Feelings; Antisocial = PCL:YV Antisocial factor; 3-factor = PCL:YV

(table continues)

Note (continues). 3-factor model total; Family discord = MACI Family discord; Child abuse = MACI Childhood abuse;
Parent attach = IPPA Parental attachment; Peer attach = IPPA Peer attachment; School violence = SAVE School violence;
Home violence = SAVE Home violence.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 13.

Comparison of Risk/Protective Factors for General/Violent Recidivism Subgroups

Variable	General Recidivism				Violent Recidivism			
	(Recidivists/Nonrecidivists)				(Recidivists/Nonrecidivists)			
	<i>M</i>	<i>SD</i>	<i>t</i>	<i>r^{pb}</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>r^{pb}</i>
Age	15.82/ 15.60	1.58/ 1.52	1.62	.09	15.83/ 15.66	1.54/ 1.55	1.07	.04
Individual								
VIQ	81.21/ 85.27	12.94/ 15.02	-2.92**	-.13*	80.94/ 84.19	12.64/ 14.63	-1.90	-.08
Introversive	51.48/ 57.50	18.31/ 19.22	-3.56***	-.15**	50.93/ 55.90	17.32/ 19.37	-2.40*	-.10*
Submissive	58.76/ 64.00	14.90/ 15.01	-3.90***	-.16**	56.88/ 62.99	13.96/ 15.24	-3.73***	-.18***
Anxiety	62.55/ 70.00	20.11/ 21.20	-4.00***	-.17**	60.94/ 68.27	19.64/ 21.15	-3.22 ^a	-.15**
Antisocial	5.02/ 3.49	2.74/ 2.57	6.52***	.27***	5.42/ 3.83	2.78/ 2.64	5.54***	.22***
3-factor total	11.08/ 9.19	5.22/ 5.35	4.03***	.19***	11.51/ 9.63	5.36/ 5.31	3.30 ^a	.17 ^a
CD	63.69/ 57.34	18.37/ 17.56	3.95***	.14	66.21/ 58.51	17.81/ 17.95	3.93***	.18***
Family								
Family discord	62.75/ 57.22	19.14/ 20.40	3.10**	.17 ^a	64.13/ 58.45	17.61/ 20.48	2.61**	.12
Child abuse	43.86/ 44.72	27.39/ 27.46	-.35	—	40.30/ 45.42	25.05/ 27.93	-1.90*	-.10
Parent attach.	90.74/ 98.72	25.07/ 21.68	-3.25 ^b	-.17 ^a	91.63/ 96.47	23.45/ 23.30	-1.59	-.07

(table continues)

Variable	<i>M</i>	<i>SD</i>	<i>t</i>	<i>r^{pb}</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>r^{pb}</i>
Peer/Neighborhood								
School violence	24.39/ 20.96	16.87/ 18.04	2.21*	.14**	26.23/ 21.46	18.06/ 17.37	2.61**	.16*
Neigh. violence	36.80/ 27.46	25.38/ 24.75	4.21***	.21***	38.27/ 29.78	24.35/ 25.43	3.10**	.19***
Peer attach.	82.63/ 88.53	20.32/ 19.92	-2.85**	-.14**	80.93/ 87.41	19.30/ 20.31	-2.48*	-.12*

Note. Listwise deletion used in analysis. PCL:YV = The Psychopathy Checklist: Youth Version;

WASI = Wechsler Abbreviated Scale of Intelligence; MACI = Millon Adolescent Clinical Inventory; IPPA = Inventory of Parental and Peer Attachment; SAVE = Screen for Adolescent Violent Exposure; VIQ = WASI Verbal IQ; Introversive = MACI Introversive; Submissive = MACI Submissive; Anxiety = MACI Anxious Feelings; Antisocial = PCL:YV Antisocial factor; 3-factor = PCL:YV 3-factor total; CD = MACI Delinquent predisposition; Family discord = MACI Family discord; Child abuse = MACI Childhood abuse; Parent attach. = IPPA Parent attachment; School violence = SAVE School violence; Home violence = SAVE Home violence; Peer attach. = IPPA Peer attachment.

^a $p = .001$. ^b Unequal variances assumed based on Levene's test.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 14.

Cox Regression of Risk/Protective Factors for JSO General Recidivism

	<i>B</i>	e^B (95% CI for e^B)
Risk factors		
Age	.34**	1.30 (1.06, 1.54)
Family problems	.18	1.01 (.99, 1.03)
Childhood abuse	-.01	1.00 (.99, 1.01)
CD	-.07	1.00 (.97, 1.02)
School violence	-.12	.99 (.97, 1.02)
Neigh. violence	.29	1.01 (1.00, 1.03)
Antisocial factor	.30*	1.14 (.99, 1.29)
3-factor total	-.07	.99 (.92, 1.05)
Protective factors		
VIQ	-.41**	.97 (.95, .99)
Introversive	-.41**	.98 (.96, .99)
Submissive	-.16	.99 (.96, 1.02)
Anxiety	-.17	.98 (.93, 1.03)
Parent attach.	-.09	1.00 (.98, 1.01)
Peer attach.	-.14	.99 (.97, 1.01)

Note. *B* is the standardized coefficient. e^B = exponentiated regression coefficients representing

the predicted change in hazard for each unit increase in predictor; CI = confidence interval;

PCL:YV = Psychopathy Checklist: Youth Version; MACI = Millon Adolescent Clinical

Inventory; SAVE = Screen for Adolescent Violent Exposure; IPPA = Inventory of Parental

and Peer Attachment; WASI = Wechsler Abbreviated Scale of Intelligence; Family discord =

MACI Family discord; Child abuse = MACI Childhood abuse; CD = MACI Delinquent

predisposition; School violence = SAVE School violence; Home violence = SAVE Home

violence; Antisocial = PCL:YV Antisocial factor; 3-factor = PCL:YV 3-factor total; VIQ =

WASI Verbal IQ; Introversive = MACI Introversive; Submissive = MACI Submissive;

Anxiety = MACI Anxious Feelings; Parent attach. = IPPA Parental attachment;

(table continues)

Note. (continued) Peer attach. = IPPA Peer attachment.

^a $p = .001$

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 15.

Logistic Regression of Risk/Protective Factors for JSO Violent Recidivism

	<i>B</i>	e^B (95% CI for e^B)
Risk factors		
Age	.06	1.16 (.85, 1.59)
Family problems	.05	1.01 (.98, 1.04)
Childhood abuse	-.12	.98 (.97, 1.05)
CD	.03	1.01 (.96, 1.05)
School violence	.04	1.01 (.97, 1.05)
Neigh. violence	.04	1.01 (.98, 1.04)
Antisocial factor	.20**	1.34 (1.07, 1.67)
3-factor total	-.03	.98 (.87, 1.09)
Protective factors		
VIQ	-.13*	.96 (.93, 1.00)
Introversive	-.10	.98 (.95, 1.01)
Submissive	-.12	.97 (.92, 1.02)
Anxiety	.04	1.02 (.94, 1.09)
Parent attach.	.01	1.00 (.97, 1.03)
Peer attach.	-.12	.97 (.94, 1.00)

Note. *B* is the standardized coefficient. e^B = exponentiated regression coefficients representing

the predicted change in hazard for each unit increase in predictor; CI = confidence interval;

PCL:YV = Psychopathy Checklist: Youth Version; MACI = Millon Adolescent Clinical

Inventory; SAVE = Screen for Adolescent Violent Exposure; IPPA = Inventory of Parental and

Peer Attachment; WASI = Wechsler Abbreviated Scale of Intelligence; Family discord = MACI

Family discord; Childhood abuse = MACI Childhood abuse; CD = MACI Delinquent

predisposition; School violence = SAVE School violence; Home violence = SAVE Home

violence; Antisocial = PCL:YV Antisocial factor; 3-factor = PCL:YV 3-factor total; VIQ =

WASI Verbal IQ; Introversive = MACI Introversive; Submissive = MACI Submissive;

(table continues)

Note. (continues) Anxiety = MACI Anxious Feelings; Parent attach. = IPPA Parental attachment;

Peer attach. = IPPA Peer attachment.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 16.

Logistic Regression of Risk/Protective Factors for JSO Sexual Recidivism

	<i>B</i>	e^B (95% CI for e^B)
Risk factors		
Age	.14	1.43 (.81, 2.55)
Family problems	.02	.98 (.93, 1.04)
Childhood abuse	—	1.00 (.95, 1.04)
CD	-.05	1.01 (.93, 1.09)
School violence	.01	1.01 (.95, 1.07)
Neigh. violence	.01	1.01 (.97, 1.06)
Antisocial factor	.11	1.12 (.80, 1.56)
3-factor total	.03	1.03 (.87, 1.20)
Protective factors		
VIQ	-.02	.98 (.93, 1.04)
Introversive	—	1.00 (.95, 1.04)
Submissive	-.01	1.01 (.93, 1.09)
Anxiety	-.12 ^a	.89 (.80, 1.00)
Parent attach.	-.01	.99 (.94, 1.04)
Peer attach.	-.04	.97 (.90, 1.03)

Note. *B* is the standardized coefficient. e^B = exponentiated regression coefficients representing the predicted change in hazard for each unit increase in predictor; CI = confidence interval;

PCL:YV = Psychopathy Checklist: Youth Version; MACI = Millon Adolescent Clinical

Inventory; SAVE = Screen for Adolescent Violent Exposure; IPPA = Inventory of Parental and

Peer Attachment; WASI = Wechsler Abbreviated Scale of Intelligence; Family discord = MACI

Family discord; Child abuse = MACI Childhood abuse; CD = MACI Delinquent predisposition;

School violence = SAVE School violence; Home violence = SAVE Home violence; Antisocial =

PCL:YV Antisocial factor; 3-factor = PCL:YV 3-factor total; VIQ = WASI Verbal IQ;

Introversive = MACI Introversive; Submissive = MACI Submissive; Anxiety = MACI

Anxious Feelings; Parent attach. = IPPA Parental attachment; Peer attach. = IPPA Peer

attachment.

^a *p* = .058

APPENDIX: FIGURES

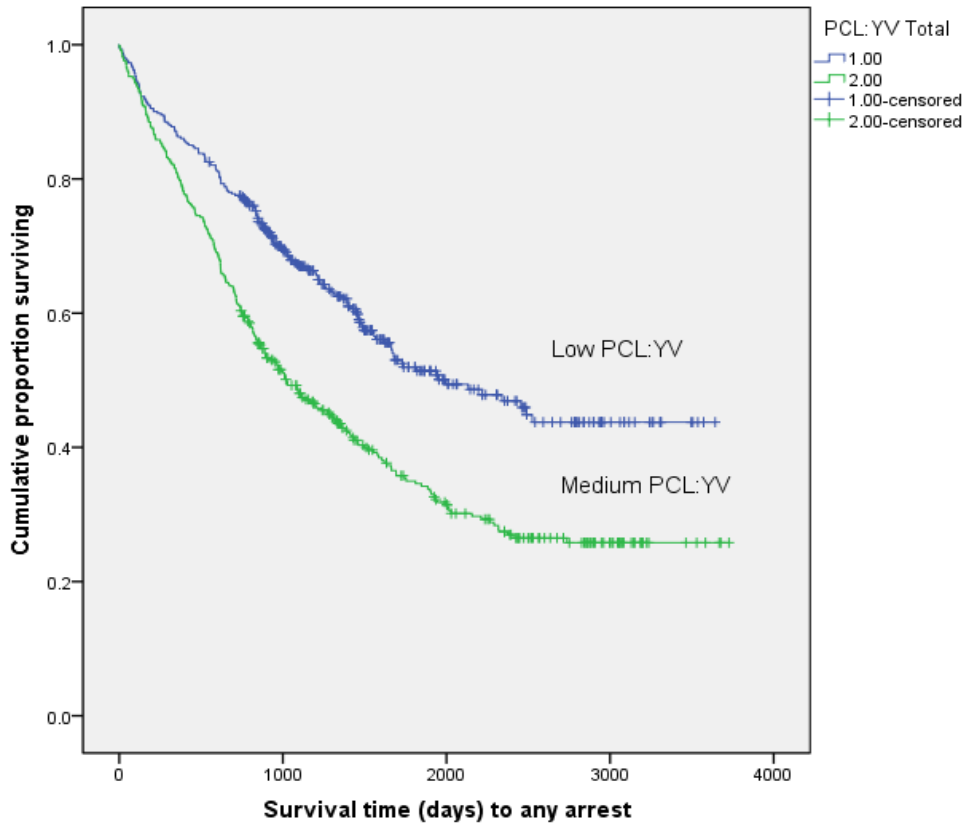


Figure 1. Kaplan-Meier Survival Curves for 4-factor model total score
 General failure rates as a function of PCL:YV (20-item) 4-factor model total score.

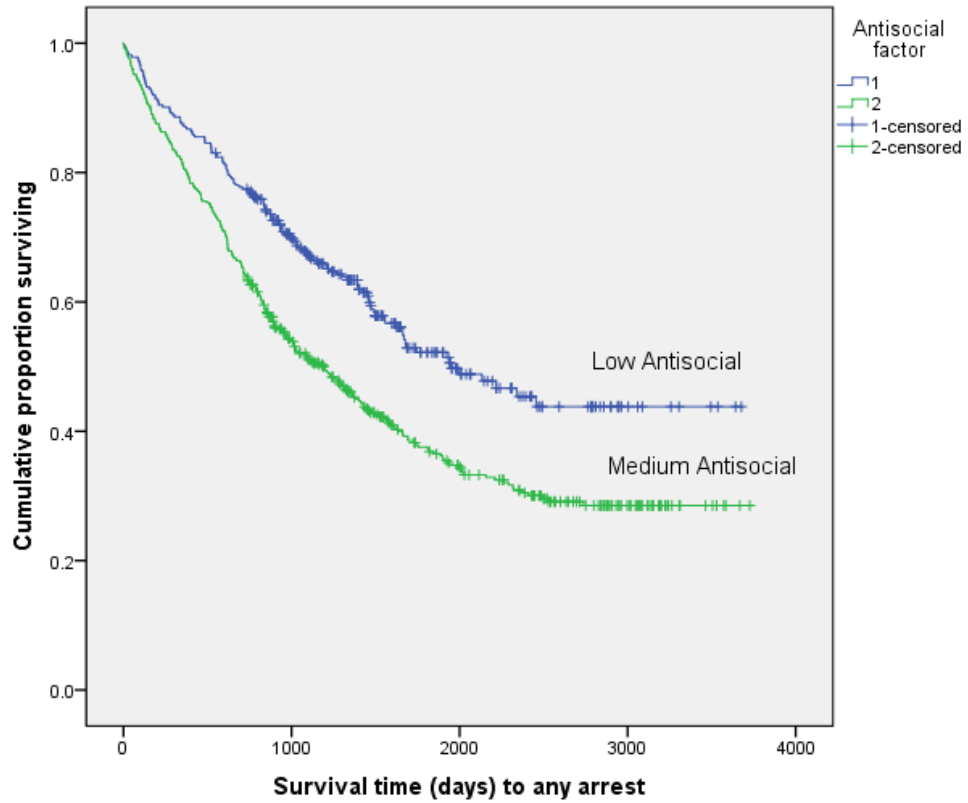


Figure 2. Kaplan-Meier Survival Curves for PCL:YV Antisocial factor score
 General failure rates as a function of PCL:YV Antisocial factor score.