ADOLESCENT PSYCHOPATHY IN AN ADJUDICATED MALE POPULATION:

THE ROLE OF SENSATION SEEKING, IMPULSIVITY, AND EXTERNALIZING

DISORDERS

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Psychopathy, as conceptualized by Cleckley (1941), describes a constellation of
psychological and behavioral correlates including superficial charm, untruthfulness, lack
of remorse or shame, poor judgment, and failure to learn from experience. Based on
Cleckley's initial work, Hare (1991) developed a two-factor model of psychopathy. The
purpose of this study was to investigate the roles that sensation seeking, impulsivity,
ADHD, conduct disorder, and oppositional defiant disorder have on adolescents
classified as psychopaths. The participants consisted of 79 adjudicated male adolescents
in a maximum-security facility. As hypothesized, adolescent male psychopaths had
higher levels of sensation seeking, impulsivity, conduct disorder and oppositional defiant
disorder. A discriminant function analysis found that sensation seeking, impulsivity,
ADHD, Conduct Disorder, and Oppositional Defiant Disorder was moderately useful in
classifying adolescent psychopathy. The results suggest that behavioral dysregulation is
an important aspect of adolescent psychopathy. The relationship of these data to theories
of adolescent psychopathy is discussed.

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CHAPTER I

INTRODUCTION

Given the increased focus on juvenile justice and risk for future violence,

characteristics that accurately assess individuals likely to reoffend are of the utmost

importance. Current research (Brandt, Kennedy, Patrick, & Curtin, 1997; Forth & Burke,

1998; Frick, O'Brien, Wootton, & McBurnett, 1994) provides convergent evidence that

adolescents classified as psychopathic engage in more violent crimes, greater number of

overall crimes, and have higher recidivism extending into adulthood. The purpose of this

paper is to study various characteristics associated with adolescents classified as

psychopaths in order to achieve a better understanding of traits that are associated with

psychopathy. A second purpose was to analyze differences between psychopathic and

nonpsychopathic adolescents on variables of past violence and externalizing disorders. A

major focus of the introduction is the examination of five clinical constructs, (i.e.,

sensation seeking, impulsivity, attention-deficit/hyperactivity disorder [ADHD], conduct

disorder [CD], and oppositional defiant disorder [ODD]) that have been linked to the

etiology, classification, and validation of psychopathy. These clinical constructs were

selected due to their association with adolescent psychopaths and their difficulties

modulating impulses.

The introduction is organized into two major sections: adult psychopathy and

adolescent psychopathy. The section on adult psychopathy is organized into five main

subsections. First, theoretical constructs of the classification are described in detail with

various definitions and descriptions of traits explained. Second, antecedents of psychopathy are presented, including specific learning deficits and abuse factors. Third, the external validity of the classification of adolescent psychopathy is examined. Specific attention is paid to differences in violent offenses between psychopaths and nonpsychopaths. Fourth, various assessment methods are described, especially the two-factor model, propagated by several researchers (see Forth & Burke, 1998; Hare, 1990). Fifth and finally, the etiology and physiological basis of psychopathy are discussed. The second main section focuses on behavioral dysregulation in the form of the five clinical traits, specifically related to adolescents.

Psychopaths demonstrate a strong propensity for impulsive violence and seeking new experiences (Lynam, 1996, 1998). This propensity suggests that clinical traits (sensation seeking, impulsivity, ADHD, CD, and ODD) require further study in relation to psychopathy. Adolescent psychopathy has been relatively under-studied, despite an extensive literature on adult psychopathy. Thus, little is known in regards to adolescents who manifest psychopathy. Furthermore, it is not sufficient to assume that adolescents who are classified as psychopaths are equivalent to adult psychopaths. Therefore, it is important to develop theory-based classifications, rooted in empirical research, which explains this subgroup of adolescent offenders.

<div align="center">Adult Psychopathy</div>

<u>Theoretical Antecedents of Psychopathy</u>

Cleckley (1941) is an early and very prominent theorist who systematically examined the characteristics of psychopathy. Based on psychodynamic theory, Cleckley

described 16 features most representative of psychopathy including, superficial charm and good intelligence, absence of delusions and nervousness, unreliability, and insincerity (see Appendix A for complete listing). This early formulation of psychopathy provided the framework for future investigators (e.g., Hare, 1980,1985) and enduring debates regarding the exact nature of psychopathy. Prior to Cleckley's (1941) conceptualization, psychopathy was a loosely classified entity without distinct criteria. For example, Humphrey (1941) focused on deficits in affect and emotions but did not elaborate on specific behavioral criteria associated with psychopathy. Given a lack of identifiable criteria, early efforts on the assessment of psychopathy were nonsystematic. Early methods for the determination of psychopathy included free association (Elonen & Woodrow, 1928) and attempts to correlate dominant eyes and handedness with aspects of criminal behavior (Cuff, 1930).

Cleckley's formulation of psychopathy laid the groundwork for the empirical studies by Hare (1985). Hare (1985) developed a two-factor model to explain various traits related to psychopathy. The similarities between Cleckley's conceptualization and Hare's two-factor model were the inclusion of both behavioral and personality characteristics. Traits include glibness/superficial charm, need for stimulation, lying, poor behavioral controls, and impulsivity (see Appendix B for complete listing). Factor 1 is labeled the "selfish, callous, and unremorseful use of others." Factor 2 is labeled "chronically unstable and antisocial lifestyle" (Hare, 1985, 1991). However, differences between Cleckley and Hare also exist. For example, Cleckley's criteria are not divided into factors (Hare, 1985). Additionally, Cleckley's (1941) criteria were focused mainly

on deficits in interpersonal relationships while Hare's two-factor model measures both developmental difficulties (e.g., early behavioral problems) as well as deficiencies in daily living (e.g., pathological lying). In agreement with Cleckley (1941), Zagon (1995) emphasized the importance of including both personality and behavioral characteristics in the classification of psychopathy. He discussed the notion that psychopathy is different from the diagnosis of Antisocial Personality Disorder (APD; American Psychiatric Association, 1994). Zagon's (1995) theory proposed that APD relies solely on observable characteristics (i.e., behavior). However, in psychopathy it is essential to consider the complex interaction between personality and behavioral characteristics and not simply utilize observable behavior (Hare, 1985; Zagon, 1995). This conceptual integration is consistent with the original differentiation between the "ordinary" criminal who breaks the law (i.e., behavioral only) and the individual who has personality characteristics of glibness, callousness, and lack of remorse or guilt but may have never committed a crime.

Psychopathy has been associated with other personality characteristics, such as failure to accept responsibility for actions and shallow affect in the absence of criminal behavior (i.e., personality only; see Hare, Hart, & Harpur, 1993; Harpur, Hare, & Hakstian, 1989). The genesis for much of the current research on psychopathy stems from the conceptualization of psychopathy on both behavioral and personality dimensions. This research also suggests that psychopathy is a separate entity from other personality disorders, specifically APD.

Psychopathy has been viewed in terms of learning deficits. Specifically, empirical research supports the idea that psychopaths have difficulty with avoidance learning (Lykken, 1957; Schmauk, 1970). This research found that psychopaths do comprehend basic societal mores concerning "right" and "wrong" but have major deficiencies in modifying behavior on the basis of past experiences and present contingencies in comparison to nonpsychopaths. Schmauk (1970) discovered psychopaths have difficulty changing their behavior but can do so when the contingencies are salient to their value system. However, researchers (Patrick, 1994; Schmauk, 1970) appear to have more difficulty discovering relevant and appropriate contingencies that act as deterrents to psychopaths.

Other research has focused on childhood abuse as a factor leading to the development of antisocial behavior and psychopathy. In studying whether abused and neglected children would be more likely to manifest the symptoms of antisocial behavior, Luntz and Widom (1994) found support for this hypothesis. The researchers found that males who previously reported being abused would be more likely to be diagnosed with APD than males without experiences of abuse. Participants were matched for demographic variables to control for age and sociodemographic (SES) factors. Interestingly, a similar result was not found for women.

Weiler and Widom (1996) specifically looked at psychopathic behaviors in a sample of 652 abused/neglected individuals and 489 matched controls to determine if psychopathology and psychopathy were related to child abuse. The results revealed that

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individuals who had previously reported abuse had significantly higher scores on the PCL-R. Abused individuals also reported a greater amount of violence in their daily lives. The results suggest that child abuse and/or neglect may be an antecedent or moderating variable in the development of psychopathy. A major limitation of this study is that no separate analyses were conducted on Factor 1 vs. Factor 2 differences. However, the combined results of Weiler and Widom (1996) and Lutnz and Widom (1994) suggest that abuse/neglect is likely related to behavioral manifestations of psychopathy.

In summary, childhood experiences are likely to play a significant role in the development of psychopathy. In this selective review, the capacity to learn prosocial behavior appears impaired in adolescents classified as psychopaths. In subsequent discussions of adolescent psychopathy, different developmental pathways will be examined.

<u>External Validity and Psychopathy</u>

The two-factor model of psychopathy has been the genesis for much research. In a meta-analysis of psychopathy, Salekin, Rogers, and Sewell (1996) examined PCL measures (i.e., PCL, PCL-R, PCL:SV) in relation to recidivism and violence. Across 18 studies, they found mean effect sizes of .79 for violent behavior and .55 for general recidivism. Despite these promising results, Salekin et al. (1996) discuss problems with the current conceptualizations of psychopathy. For example, they observed substantial discrepancies between Cleckley's (1941) original descriptors of psychopathy (see Appendix A) and Hare's current two-factor model (See Appendix B). Furthermore, the use of the PCL instruments has not been adequately validated with all populations,

including females and adolescents (Salekin et al., 1996). Although recent work has allayed some of these concerns (see Brandt et al., 1998; Salekin et al., 1998, 1997), more research is needed to further validate PCL measures on various populations. In summary, Salekin et al. (1996) found the PCL-R to be a useful instrument in the prediction of dangerousness. Furthermore, they found Factor 2 was a slightly better predictor of violence and recidivism than Factor 1.

Hemphill et al., (1998) reviewed correlations between PCL-R total and factor scores and general recidivism and violent recidivism. They found that Factor 2 of the PCL-R was more significantly related to overall reoffending than Factor 1. However, both Factors 1 and 2 equally predicted violent recidivism. Furthermore, overall PCL-R scores were also found to predict sexual recidivism incrementally beyond demographic data, criminal history, or antisocial personality disorder (Hemphill, Hare, & Wong, 1998). The results suggest that PCL measures (PCL, PCL-R, and PCL:SV) are important tools when clinicians attempt to predict dangerousness and recidivism.

Research (Hare & McPherson, 1984; Jutai & Hare, 1983; Rogers & Bagby, 1994) has demonstrated recidivism and aggression are related to psychopathy. Furthermore, psychopathy appears to be the best predictor for institutional aggression, violent recidivism in forensic patients, maladjustment and recidivism in parolees, and initial treatment response.

Studies demonstrated unequivocally that individuals classified as psychopaths commit more crimes and engage in more violent behavior than nonpsychopaths (Jutai & Hare, 1983; Hare & McPherson, 1984). Hare and McPherson (1984) conducted three

separate studies that substantiated these results. The first two studies consisted of a sample of 436 male inmates classified into one of three groups: psychopathic, nonpsychopathic, and mixed offenders. The researchers found psychopaths had a greater number of violent and total criminal charges than non-psychopathic or mixed offenders. The third study utilized the PCL on 227 male inmates from a medium security facility. They examined the following offenses: murder, possession of a weapon, robbery, assault, kidnapping, rape, vandalism, fighting, and other violent crimes. Results indicated a classification of psychopathy predicted an overall increase in total number of violent and nonviolent offenses. However, a primary weakness of this study was criterion contamination because all analyses were retrospective; researchers completing the PCL ratings were aware of offense histories.

Assessment of Psychopathy

Several attempts have been made to develop accurate assessment measures for the classification of psychopathy. Despite these attempts, many questions remain regarding the most efficient way to assess psychopathy. Lilienfeld (1994) addressed two common approaches to the assessment of psychopathy: personality-based and behavior-based approaches. The personality approach is grounded in the initial conceptualizations by Cleckley (1941) that described psychopathy as a constellation of core traits (e.g. dishonesty, impulsivity, and failure to learn from previous behaviors (see Lilienfeld, 1994). The personality-based model does not require illegal or antisocial activities for the classification of psychopathy.

In contrast, the behavior-based approach puts forth the idea that psychopathy consists only of various antisocial behaviors and engaging in these behaviors (e.g., criminal activities, and the reckless disregard for the well being of others) classifies a person as a psychopath (Cloninger, Christiansen, Reich, & Gottesmann, 1978). The behavior-based approach is most similar to APD as categorized in the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition (DSM-IV, American Psychiatric Association, 1994).

Substantial research has been focused on either personality-only or behavior-only based conceptualizations of psychopathy. An integrated approach combining both behavioral and personality data may be the most efficient way to obtain an accurate classification of psychopathy (Hare, 1985; Lilienfeld, 1994). Early studies have utilized heart rate, blood pressure, structured interviews, MMPI, Rorschach, and behavioral observations to classify psychopaths (Hare, 1985). However, none of these standard methods have been able to generate accurate classifications of psychopathy.

Objective Techniques. Several studies (Blackburn & Fawcett, 1999; Hume, Wallace, Patrick, & Partyka, 1996; Rogers & Bagby, 1994) have focused on the use of multiscale inventories to classify psychopaths. Hume et al. (1996) found no significant differences on MMPI-A scales between psychopathic and nonpsychopathic adolescents as classified by the PCL-R. Rogers and Bagby (1994) examined MMPI items related to psychopathy in a forensic sample. With a principal component analysis they found delinquency accounted for most of the variance associated with PCL Factor 1. In

contrast, Rogers and Bagby (1994) found refusal to submit to legal authority was associated with Factor 2.

Blackburn and Fawcett (1999) developed an Antisocial Personality Questionnaire (APQ) which they compared to a self-report scale of psychopathy. They found eight APQ factors consistent with psychopathy including lack of self-control, self-esteem, avoidance, paranoid suspicion, resentment, aggression, deviance, and extraversion. However, the measure was not successful in adequately classifying psychopaths. Blackburn and Fawcett (1999) concluded that these traits are consistent with the impulsive and hostile behavior manifested by psychopaths.

In summary, objective methods have garnered limited success in the ability to discriminate psychopathic from nonpsychopathic individuals. Other studies have focused on other standardized measures.

Projective Techniques. The Rorschach Inkblot Test has also been used in an attempt to classify psychopaths. In an adolescent sample, Smith, Gacono, and Kaufmann (1998) found psychopaths, as classified on the PCL: YV, were more self-centered and had greater pathology on self-perception variables on the Rorschach. In an adult sample, Reid and Gacono (1992) found limited usefulness for four specific indices based on Rorschach responses to classify psychopathic individuals. The researchers proposed five additional indices to evaluate violent behavior: Aggressive movement, Aggressive content, Aggressive past, Aggressive potential, and Sado-masochism. Except for the Sado-masochism scale, no differences were found between psychopaths and nonpsychopaths on these additional Rorschach indices. Finally, Russell and Loving

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(1999) in a sample of 71 male juvenile offenders found significant differences in Rorschach indices between psychopaths and nonpsychopaths. More empirical data are needed on the usefulness of the Rorschach. At present it appears to have limited applicability in discriminating between psychopathic and nonpsychopathic individuals.

Physiological Data. Physiological data has potential implications for the assessment of psychopathy. For example, Blair (1999) found those children high on psychopathic traits, as measured by the Psychopathy Screening Device (PSD) had reduced skin conductance (i.e., a correlate with low anxiety). As a second example, a deficit in the Behavioral Inhibition System (BIS) has also been linked to psychopathic traits (Fowles, 1994). The BIS is a neurological system, which helps manage impulses and regulate behavior (Fowles, 1994). Deficits in the BIS are manifested in reduced heart rate and lower anxiety. Despite group differences being present between psychopaths and nonpsychopaths on these physiological measures, no studies have addressed their clinical usefulness in the classification of psychopathy.

Psychopathy Checklist. Hart and Hare (1994) found partial support for convergent and discriminant validity between psychopathy, as classified by the PCL:SV, and the five-factor model of personality as measured by the Interpersonal Adjective Scales - Big 5 Version (IASR - B5;Trapnell & Wiggins, 1991). The five dimensions were composed of Dominance, Love, Conscientiousness, Openness, and Neuroticism. Using 12 incarcerated males and 12 male university students, Hart and Hare (1994) found Dominance ($r = .66$) was the most positively correlated with psychopathy. The results of this initial research have two important implications. First, psychopaths have a more dominant style of

personality, which may be associated with their behavioral difficulties. Second, the negative correlations with Love, Conscientiousness, Openness, and Neuroticism are consistent with descriptions of the psychopath as callous, glib, and superficial with lack of real emotions.

Levenson, Kiehl, and Fitzpatrick (1995) evaluated psychopathic characteristics in 487 undergraduate students and found psychopathy was better measured as dimensions (i.e., degree of psychopathy) than a simple dichotomy (i.e., yes or no). The researchers found that no single cut score was adequate for the classification of psychopathy. Instead, they posited that psychopathy should be viewed on a continuum of personality and behavioral characteristics. However, this study was limited to a sample of college students with whom high levels of psychopathy are not likely to be present; therefore, their conclusions may not be generalizable to forensic criminal populations. Most researchers treat the classification of psychopathy as a dichotomous classification, similar to DSM-IV diagnoses (Hare, 1985, 1991, 1993; Harpur, Hare, & Hakstian, 1991).

In summary, many different measures have been proposed for the assessment of psychopathy although an integration of methods has not been achieved (Hare, 1985). Many questions remain regarding the proper assessment techniques and what traits constitute a classification of psychopathy. Studies have been conducted utilizing physiological measures, self-report indices, objective personality measures, projective personality measures, and clinical behavioral observations in the assessment of psychopathy. While no method has been accepted as the gold standard for classification

of psychopathy, the PCL-R has achieved the highest standard, given its consideration of both personality and behavioral characteristics.

      <u>Etiological Explanations of Psychopathy.</u> Multiple explanations have been advanced regarding the etiology and development of psychopathy. Levenson (1992) explicated three causes of psychopathy: sociological, biological, and developmental/learning perspective. First, sociological perspectives of psychopathy are dependent upon cultural influences. For instance, Levenson proposed that certain environments (e.g., unimpeded power) encourage nonconformity and therefore may lead to psychopathic behavior. Levenson described how a person's social position and role (i.e., police officer, physician, or judge) could be used for exploitation and deceit. Second, the biological perspective portrays individuals manifesting psychopathic traits as having a genetic predisposition for lower anxiety, higher need for sensation seeking, and defects in the behavioral inhibition system (i.e., increased impulsivity). Levenson described the biological model as inadequate because research does not support sensation seeking or low anxiety as common characteristics of psychopathy. The third approach is a evelopmental/learning perspective where poor environmental conditions (e.g., inconsistent parenting, abuse, and neglect) leads to psychopathic behavior. Contrary to this perspective is the observation that many children experience difficult conditions without growing up to exhibit criminal traits. In summary, Levenson described sociological, psychological, and biological accounts of psychopathy as inadequate and reductionistic. Levenson (1992) proposed an alternative hypothesis for the development

of psychopathy; a psychological model that is premised on an individual's desire to fulfill gratification without anxiety. The assumptions of this model have yet to be tested.

Despite Levenson's objection to physiological explanations, several studies provide evidence for the inclusion of biological traits in determining personality traits of psychopathy. Kilzieh and Cloninger (1993) found that biological approaches have an important place in the study of personality disorders and their comorbidity with Axis I disorders. In reviewing the literature, they found decreased heart rate, serrated electroencephalography (EEG), and smaller evoked potentials supported physiological theories as an important facet in understanding psychopathy.

Additional research (Patrick, 1994; Patrick, Cuthbert, & Lang, 1994) has focused on other physiological data related to psychopathy. Patrick (1994) demonstrated among male prisoners that psychopaths do not evidence normal startle response reactions when shown aversive stimuli (e.g., slides depicting snakes, mutilations, and aimed guns) in comparison to nonpsychopaths and "mixed" psychopaths. An additional study by Patrick et al. (1994) focused on physiological deficiencies in psychopaths. They proposed psychopaths have an inherent deficit in emotional imagery, and therefore have a more difficult time predicting consequences. Central to this thesis is the argument that psychopaths can not imagine future events, especially in relation to emotional stimuli; this deficit contributes to difficulties planning ahead and more impulsivity. These researchers found psychopaths, when compared to nonpsychopaths, have significantly smaller physiological changes on heart rate and skin conductance to a stimulus expected to induce fear. These combined results suggest that (a) physiological processes may play

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an important role in the etiology and pathogenesis of psychopathy, and (b) under-arousal is a salient feature of psychopathy.

Collins (1991) concluded that decreased levels of serotonin were the reason psychopaths have passive-avoidance learning deficits. He hypothesized that the lack of serotonin in the central nervous system is the reason psychopaths have (a) a lack of anticipatory fear, and (b) high levels of impulsivity and emotional dysregulation. These features are posited as diminishing the effects of punishment. However, lack of serotonin in the brain has been implicated in the development of several disorders, including depression and anxiety. Therefore it cannot be viewed as a distinctive feature of psychopathy.

In summary, despite promising results for physiological and a neurochemical causal explanation for psychopathy, more research is needed to clarify the exact role of these physiological processes. Importantly, physiological processes have been found to be crucial components in the development of sensation seeking, attention-deficit and hyperactivity disorder (ADHD), and impulsivity. Several researchers (Ellis, 1987; Patrick et al., 1994) suggest that the agglomeration of these traits underlie psychopathy.

The common link between adult and adolescent psychopathy appears to be difficulty in the regulation of impulses, attention, and thrill seeking behaviors. The next section will discuss several facets of behavioral difficulties typically associated with the classification of psychopathy.

<u>Sensation Seeking, ADHD, and Impulsivity</u>

Several specific behavioral difficulties have been linked to psychopathy. The common bond between these characteristics consists of a lack of control and difficulty in modulating behavior. As subsequently described, several studies have linked traits found in sensation seeking, impulsivity, and attention deficit and hyperactivity disorder (ADHD) to psychopathy.

The combination of sensation seeking and psychopathy appears to be associated with hypoarousal (Ellis, 1987; Patrick, 1994; Patrick et al., 1994). Ellis (1987) presented a detailed arousal theory, which propounded the idea that criminal sensation seeking and impulsivity is related to the intensification of experiences required to achieve a daily arousal level. Ellis (1987) listed eight behavioral manifestations typical of this pattern of arousal: resistance to punishment, poor academic performance, impulsiveness, childhood hyperactivity, risk taking and sensation seeking, recreational drug use, preference for active social interaction, and preference for multiple sexual experiences. The impressive framework proposed by Ellis (1987), though not empirically validated, laid the foundation between psychopathy and the constructs of sensation seeking, impulsivity, and ADHD.

Empirical studies also link sensation seeking to conduct disorders (CD) in children and extraversion in adolescents (Gridley, 1990; Lykken 1982; Zuckerman, Bone, Neary, Manglesdorf, & Brustman, 1972). Sensation seeking consists of a cluster of traits that include uninhibited, nonconforming, and impulsive behavior, as well as a dominant type of extraversion (Zuckerman et al., 1972). Gridley (1990) attempted to differentiate

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psychopathic from nonpsychopathic sensation seeking. He described psychopathic thrill-seeking behaviors as characterized by high impulsiveness in combination with a lack of remorse or shame. In contrast, a sport enthusiast may engage in thrill-seeking behaviors but may use various safety measures. These planned activities, by definition, are not impulsive and carry only calculated risks. In contrast, psychopaths engage in dangerous behaviors without either taking the appropriate safety measures or planning ahead.

Lykken (1982) offered a different perspective on psychopathy. He proposed that psychopaths need a greater amount of sensation than others to become aroused. He hypothesized that the sensation-seeking behavior of psychopaths differs from others not in the type but in the magnitude. Therefore, psychopaths are more likely to engage in the behavior without prior consideration of the consequences and the well being of others.

Research has differentiated between sensation seeking from the typical desire to engage in new activities. McCourt, Gurrera, and Cutter (1993) investigated patients in an alcohol detoxification program and found sensation seeking was related to creative behavior but not with risk taking. However, alcohol patients with psychopathic traits preferred dangerous sensation seeking and were not simply trying novel behavior.

Kochanska (1993) described how a lack of fear-based inhibitions (i.e., constraints on sensation seeking) has been correlated with callous and unemotional traits. Given the strong link between psychopathy and callous/unemotional traits, sensation seeking appears to be related to psychopathy. In a study of delinquent youth, Russo et al. (1993) developed a Sensation Seeking Scale for Children (SSSC) and discovered three main components to sensation seeking: Thrill and Adventure Seeking, Drug and Alcohol

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Attitudes, and Social Disinhibition. Based on preliminary results, Russo (1994) found

that conduct disordered children scored higher on the SSS-C than non-conduct disordered

children. She concluded that sensation seeking is a crucial aspect of adolescent conduct

problems.

Various aspects of sensation seeking have been studied as they relate to conduct

problems and attention problems. Russo et al. (1991) discovered that male children

diagnosed with ADHD and CD scored higher on the SSSC than children with either CD

or ADHD alone. However, other research (Zentall & Zentall, 1983) has not found a clear

relationship between psychopathy and ADHD. More recently, Reynolds and Kamphaus

(1992) found sensation seeking on the Behavior Assessment System for Children

(BASC) was not specific to delinquent behavior but was generally indicative of clinical

dysfunction and school maladjustment in adolescents.

Given the importance of impulsivity in determining whether a behavior is novelty

seeking or psychopathic sensation seeking, a review of the concept of impulsivity is

required. Numerous studies (Block, 1995; Hare, 1982; Hart & Dempster, 1997; Lynam,

1996; Lynam & Moffitt, 1995; Stanford, Ebner, Patton, & Williams, 1994; Zaparniuk &

Taylor, 1996) found that impulsivity is related to psychopathy. These researchers have

described impulsivity as an important factor of both criminality and psychopathy. To

provide a testable model, Hart and Dempster (1997) elucidated three types of impulsivity.

First, they described impulsivity as a tendency to commit harmful acts without planning.

Second, they viewed impulsivity as the tendency to view environmental stimuli as

harmful. Third, they conceptualized impulsivity as a general impairment in cognitive and

behavioral difficulties. Examining the role of psychopathy and impulsivity, Hart and

Dempster (1997) stated that all three of the previously described types of impulsivity are

linked to psychopathy although the complete nature of the relationship remains unknown.

However, it is clear that psychopaths are prone to impulsive violence and that impulsivity

is a central feature of their behavioral difficulties.

Impulsivity has a moderately high correlation with dangerousness. Rogers,

Sewell, Ross, Ustad, and Williams, (1995) utilizing the Brief Psychiatric Rating Scale

(BPRS), found impulsivity, uncooperativeness, and hostility were the most correlated

with non-release decisions of forensic patients from a maximum security facility.

Additionally, they found most determinations of dangerousness were related to

aggression and lack of improvement in clinical status. In subsequent paragraphs, I extend

the discussion of impulsivity to adolescents manifesting psychopathic traits.

Zaparniuk and Taylor (1997) studied the concept of impulsivity in children and

adolescents. Similar to Hart and Dempster (1997), they agreed that impulsivity has a

major role in developmental psychopathology and adolescent psychopathy. Using

definitions from Schachar, Tannock, and Logan (1993), Hart and Dempster (1997)

advanced three characteristics of child and adolescent impulsivity: (a) the tendency to

execute actions too quickly, (b) difficulties in withholding actions once started, and (c)

the tendency to seek out immediate gratification at the expense of long-range

consequences. The definitions of impulsivity also correspond to a diagnosis of ADHD

(American Psychiatric Association, 1994; Zaparniuk & Taylor, 1997). Other research

(Stanford et al., 1994) on adolescents has also demonstrated a link with impulsivity, psychopathy, and dangerousness.

Stanford et al. (1994) found that high PCL-R scores are related to the number of impulsive behaviors observed in an adolescent population. The researchers examined the contribution of multiple impulsive behaviors in an attempt to determine what factors relate to several impulsive behaviors being manifested in a single individual. The impulsive behaviors were operationalized as the following actions: stealing, lying, use of substances, impulsive aggression, fire-setting, self-mutilation, and sexual disinhibition. Adolescents with three or more of the impulsive behaviors were shown to be significantly higher on the PCL-R than adolescents with fewer impulsive behaviors. These results support the importance of impulsivity in psychopathy within an adolescent population. They also demonstrate the need for assessments of adolescent psychopathy to address impulsivity.

Attentional problems have also been implicated in the classification of psychopathy, especially in adolescents (August, Realmuto, MacDonald, Nugent, & Crosby, 1996; Hinshaw, 1987; Lynham, 1996; Thompson, Riggs, Mikulich, & Crowley, 1996). The salient characteristics of ADHD (American Psychiatric Association, 1994) are impulsivity as manifested by the following: (a) interrupting when others are talking or difficulty waiting for one's turn, and (b) the inability to sit still, inability to sustain attention and "often acts as driven by a motor." Several studies (August et al., 1996; Lynam 1996, 1998) have empirically demonstrated the link between ADHD and psychopathy with an emphasis on impulsivity.

Adolescent Psychopathy

Models of Adolescent Psychopathy

Lynam (1996) proposed a hypothesis that combined symptoms of conduct disorder, hyperactivity, attention difficulties, and impulsivity as the basis for the development of psychopathy. He provided support for his hypothesis by integrating data from numerous studies showing children with traits of hyperactivity-impulsivity-and attention-problems (HIA) have more court appearances, more arrests for serious crimes, more periods of institutionalization, and more aggression than individuals lacking those traits. Furthermore, he provided support for children manifesting HIA had a greater prevalence of APD and more frequent arrests during their adulthood. Conduct problems alone are not a sufficient predictor of adult antisocial behavior; however when added to HIA, they become a robust predictor of adult criminal behavior. Lynam (1996) concluded the data directly support a relationship between HIA and psychopathy. However, the symptoms of adolescents who manifest both HIA and conduct problems are very similar to adolescents and adults classified as psychopaths. More research is needed to validate the relationship between HIA and psychopathy before an explicit link can be confirmed. Research demonstrated that children with ADHD and a comorbid externalizing disorder are at a greater risk for delinquency and aggression than those without ADHD (August et al., 1996). Likewise, Thompson et al. (1996) found boys with ADHD have higher degrees of substance abuse, more conduct disordered symptoms, and an earlier onset to conduct problems than boys without ADHD. This research continues to buttress the notion that ADHD is a contributor to conduct problems. Interestingly, it appears that only a

diagnosis of ADHD is insufficient to predict psychopathy. Rather, ADHD appears to be

an exacerbating when comorbid with an externalizing disorder (Hinshaw, 1987).

Behavioral problems, in the form of conduct disorder (CD) and oppositional

defiant disorder (ODD), also appear to be linked with adolescents classified as

psychopaths. Rogers et al. (1997) found that several constellations of conduct

disordered symptoms predicted psychopathy in an adolescent sample. Utilizing a

hierarchical multiple regression they found that aggressive behaviors, deceit and theft,

and oppositional defiant disorder (ODD) symptoms predicted adolescent psychopathy.

Aggressive behaviors contributed to more than one-third of the total variance (Rogers et

al., 1997).

Several theorists (e.g., Frick et al., 1994; Lynam 1996, 1998) have postulated

conduct problems as necessary antecedents to adolescent psychopathy. Frick et al. (1994)

used a factor analysis to evaluate whether the two-factor model of psychopathy in adults

is applicable to children. They found that impulsivity/conduct problems accounted for

most of the variance in their model. In clarifying previous research, Frick et al. (1997)

found a sample of children with both conduct problems and callous/unemotional traits

had more contact with the police and a greater variety of conduct disordered symptoms.

Likewise, Lynam (1998, 1996) found conduct problems, when added to other personality

dimensions relating to impulsivity, successfully predict the "fledging psychopath."

In summary, sensation seeking, impulsivity, and ADHD, CD, and ODD appear to

be contributory factors to the classification of adolescent psychopathy. Several studies

have provided empirical validation for each of the separate constructs to contribute to

psychopathy but none have looked at the combination of the three variables. A major

review paper (Ellis, 1986) listed sensation seeking, impulsivity, and ADHD as crucial to

psychopathy. In the next section will review how several of the concepts discussed in the

adult psychopathy and behavioral dysregulation section are relevant in the classification

of adolescent psychopathy.

Theoretical Constructs of Adolescent Psychopathy and Assessment

Adolescent psychopathy with its personality and behavioral correlates continues

to be studied partly due to the rise in violent offenses among that population (Elliot,

Huizinga, & Morse, 1986). Several empirical studies, (Brandt, Kennedy, Patrick, &

Curtin, 1997; Frick, 1998; Wootton, Frick, Shelton, & Silverthorn, 1997) provided

insight into adolescent psychopathy and various personality and behavioral

manifestations that accompany it.

Wootton et al. (1997) studied clinic-referred and community-recruited children to

examine the relationship between parenting deficits, callous traits, and conduct problems.

Using measures of conduct problems, a parenting questionnaire, and the Psychopathy

Screening Device (PSD; Frick, 1997), they found that the number of conduct problems

and oppositional problems in children were highly correlated ($r = .77$, $p < .001$).

Additionally, Wooten et al. found children high on callous/unemotional traits had high

rates of conduct problems were independent of the type of parenting they received. Two

important implications were discussed. First, callous/unemotional traits may have a

physiological component, independent of the environment. Second, adolescents with

callous/unemotional traits are empirically different than adolescents without those traits. Additional research has focused on assessment of psychopathy in adolescents. Frick (1998) hypothesized that low behavioral inhibition (i.e., impulsivity), combined with callous/traits may be the mechanism for the development of adolescent psychopathy.

Other studies have reviewed assessment methods with children manifesting psychopathic traits. Christian (1996) used a modified PCL-R (Hare, 1991) to evaluate psychopathic traits in adolescents. She deleted items associated with adult antisocial behavior and found the PCL-R to be effective in the assessment of adolescent psychopathy. Brandt et al. (1997) found adequate psychometric properties for the use of the PCL-R with incarcerated adolescents. First, post-dictive validity was established as higher scores on PCL-R were significantly correlated with more frequent arrests. Second, the PCL-R successfully predicted violent crimes and recidivism. On this second point, almost 80 % of adolescents classified as psychopaths recidivated with a violent offense within one-year after being released from incarceration (Brandt et al., 1997).

<div align="center">Current Study</div>

Operationalization of Constructs

For the purpose of this study five specific constructs are operationalized in terms of scales and cut scores. To clarify the hypotheses, these constructs are outlined below:

- Psychopathy as the independent variable is measured by the total score on the PCL:SV. Scores of ≥ 17 are classified as psychopaths.

- The Sensation Seeking Scale of the Behavior Assessment System of Children (BASC) will measure sensation seeking.

- ADHD, CD, and ODD will be measured by symptom endorsement on the ASI-4. Scores for the ADHD, CD, and ODD scales are determined both by the overall severity of the symptoms.

- Impulsivity will be assessed via the Barratt Impulsiveness Scale (BIS).

- Violent crime will also be analyzed as a dependent variable. Violent crime will be classified dichotomously; it is operationalized as whether the adolescent ever has been arrested for committing or admitted to the commission of a violent crime.

Proposed Hypotheses

1. Sensation Seeking, ADHD, CD, ODD, and Impulsivity will be useful variables in classifying psychopathy in adjudicated male adolescents.

2. Male psychopathic adolescents will have higher levels of sensation seeking, impulsivity, and ADHD than adjudicated male adolescents who do not meet the classification for psychopathy.

3. Male psychopathic adolescents will have higher levels of conduct disorder and oppositional defiant disorder symptoms than adjudicated male adolescents who do not meet the classification for psychopathy.

4. Male psychopathic adolescents will more likely have committed a violent crime than male nonpsychopathic adolescents.

5. Based on utility estimates, the PSD will be found to be an adequate screening instrument for the classification of adolescent psychopathy in adjudicated males.

6. As evidence of convergent validity, significant correlations will be found between the PSD and the corresponding PCL:SV factor and total scores.

CHAPTER II

METHODS

Design

The study is based on a contrasted group design. The general purpose of the study is to determine differences between psychopathic and nonpsychopathic male adolescents on the following dependent variables: sensation seeking, impulsivity, ADHD symptoms, CD symptoms, ODD symptoms, and violent offenses.

Participants

The participants are 79 adolescent residents at the Gainesville State School in Gainesville, TX. Gainesville State School is classified as a maximum-security facility for adolescents between the ages of 12 and 18. The participants are remanded from all areas of Texas. For placement at Gainesville, all adolescents had been adjudicated in the Texas Youth Court System. Participants are assessed as part of their initial evaluation in their first month of their residence. The range of criminal charges includes violent offenses, property crimes, and drug offenses.

Measures

PCL:SV. The Psychopathy Checklist: Screening Version (PCL:SV; Hart, Cox, & Hare, 1995) is a 12 item, two-factor, semi-structured interview that addresses core personality traits and antisocial behavior (see Appendix C). The PCL:SV involves an integration of interview data with case file information. Each PCL:SV item is scored on a three-point score with "2" meaning that the item is a reasonably good match and

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consistent with the individual's behavior; "1" refers to the item describing the individual as a match in some aspects, and "0" refers to the items not describing the individual at all. Similar to other psychopathy measures, the two factors are "selfish, callous, and unremorseful use of others" and "chronically unstable and antisocial lifestyle" (Hart et al., 1995). Using 11 adult samples from the United States and Canada, the PCL:SV was found to have adequate interrater reliability ($r = .60$) and good internal consistency for the total score of psychopathy (Cronbach's alpha = .84; Hart et al., 1995). As evidence of concurrent validity, the PCL:SV had high correlations with the PCL-R ($r = .80$) and moderate correlations with Antisocial Personality Disorder ($\underline{r} = .70$; Hart et al., 1995).

PSD. The Psychopathy Screening Device (PSD, Frick, 1999) is a 20 item, two-factor self-report scale that addresses various aspects of psychopathic behavior (see Appendix C). The PSD has a Flesch-Kincaid reading level of grade 4.8. Similar to the PCL:SV each item is scored on a three-point scale. The measure has been specifically normed with children and adolescents (N = 120). The two factors consist of callous/unemotional personality scale (alpha = .70) and impulsivity/conduct problems (alpha = .82).

BASC-SRP. The Behavior Assessment System for Children-Self-Report of Personality (BASC-SRP; Reynolds & Kamphaus, 1992) was administered to evaluate sensation seeking in adolescents (see Appendix D). The BASC-SRP has 186 items including 10 clinical and 4 adaptive scales. The BASC was normed on 4,423 adolescents ages 11 to 18 years with normative data weighted to match the 1990 US census. Median alpha coefficients for each scale were found acceptable and ranged from 0.64 to 0.88,

with a median of 0.81. Relevant to the current study the Sensation Seeking scale has an alpha coefficient of .71 (Kamphaus & Frick, 1996). Convergent validity was established by correlations with the MMPI, Achenbach Youth Self-Report, Behavior Rating Profile, and Children's Personality Questionnaire (Kamphaus & Frick, 1996). The BASC, while still relatively new, was found to have adequate validity when compared to these other measures of personality (Kamphaus & Frick, 1996).

BIS. The Barratt Impulsiveness Scale (BIS; Barratt & Patton, 1994) is a 30 item self-report scale that focuses on various aspects of impulsivity (see Appendix E). The BIS is composed of three factors (i.e., Non-planning, Motor, and Attentional) that were obtained by a second-order principal component analysis based of the six original factors (see Appendix E; Patton, Stanford, & Barratt, 1995). Alpha coefficients for the individual BIS scales were moderately high (Cronbach's alphas ranged from .79 to .83). Four samples were utilized for the validation of the BIS: undergraduates, substance abuse patients, general psychiatric patients, and prison inmates. Although the BIS have not been validated on adolescents, three reasons support its application to this population. First, the measure is easy to understand with a Flesh-Kincaid reading level of 2.9. Second, questions pertinent to adolescent behavior (e.g., planning ahead and restlessness) are measured with the BIS. Third, the BIS has been used clinically and for research purposes on adolescents as young as 12 years of age for an earlier version of the BIS (Barratt, 1981).

ASI-4. The Adolescent Symptom Inventory-4 (Gadow & Sprafkin, 1995) is a comprehensive checklist of DSM-IV (American Psychiatric Association, 1994)

symptoms associated with childhood and adolescent disorders. The ASI-4 describes symptoms on a four-point scale of frequency ("never," "sometimes," "often," or "very often").

As evidence of convergent validity, Gadow and Sprafkin (1995) found that an earlier version yielded moderately high correlations with the Delinquent and Aggressive subscales of the Child Behavior Checklist (.75 and .50, respectively). With relevance to the current study, the ASI-4 has been found to have adequate sensitivity and specificity for ADHD based on psychiatric diagnosis (.53 and .82, respectively).

Crimes. A file review was completed to determine if the adolescent had been arrested for a violent crime. Additionally, the adolescents were asked directly if they ever committed violent crimes in which they were not arrested.

Procedure

Adolescents admitted within the past month to Gainesville State School were considered appropriate for the assessment. The testing occurred prior to the adolescents being enrolled in any treatment program at Gainesville State School. The adolescents were asked to read questions from the BASC prior to the start of testing. If it was determined that the adolescent could not adequately read the items from the self-report measures, they were read to them. However, this only occurred on one occasion; a clinician assisted the individual in reading the items.

All psychological testing occurred at Gainesville State School as a part of the adolescent's standard assessment and treatment program. Two graduate students trained in diagnostic interviewing completed all the assessments on the adolescents. As part of

the assessment process, one of the clinicians met individually with the adolescent and administered the PCL:SV. The rationale for administering the PCL:SV first was to establish rapport and discuss the testing process. This procedure minimized bias because the interviewer was masked completely to other test results. The clinician then administered other instruments (PSD, BASC, BIS, and ASI-4) in a counterbalanced order. The purpose of counterbalancing was to attempt to minimize systematic measurement biases.

A cut score of $\geq$ 17 on the PCL:SV was used to establish a classification of psychopathy. This score was chosen based on modified scoring (Hart et al., 1995) that is required when an item is deleted from the overall score due to not having enough information to score or not being applicable to the population. Item 12 (Adult Antisocial Behavior) was not relevant in the current study. The total score of the PCL:SV for the classification of psychopathy was prorated from an 18 to a 17 based on this item deletion.

<div align="center">Data Analysis</div>

The overall purpose of this study is to determine the effects of impulsivity, sensation seeking, ADHD, CD, and ODD on the classification of psychopathy. These constructs were shown to be related to adolescent psychopathy and conduct problems in adolescents (August et al., 1996; Hart & Dempster, 1997; Lynam, 1996). Psychopathy has also been related to violent crimes (Hare & McPherson, 1984).

Data analysis is conducted on the adolescents for differences between adolescents classified as psychopaths ($\geq$17 on the PCL:SV) and nonpsychopaths. Descriptive statistics are calculated on both total and factor scores for both measures of psychopathy

<div align="center">30</div>

(PCL:SV and PSD) based on age and ethnicity. Furthermore, differences between psychopaths and nonpsychopaths on sensation seeking, impulsivity, ADHD, CD, ODD, and violent offenses are analyzed.

Hypotheses

Hypothesis #1. To predict the classification on the basis of sensation seeking, impulsivity, ADHD, CD, and ODD, an independent discriminant function analysis is used to predict the group classification of psychopathy. An independent discriminant model is used because of lack of a preexisting model using these variables. Each of the dependent variables has been previously used in studies of adolescent psychopathy but none has combined them (Ellis, 1987; Lynam 1996, 1998; Frick, 1998; Rogers et al., 1997). The classification variables are derived from scores on the BIS, ASI-4, and the BASC. Therefore, impulsivity, sensation seeking, ADHD, CD, and ODD act as predictors for determining the classification of psychopathy in the adolescents. To assist in the classification of psychopathy, utility estimates will be analyzed for both discriminant function analyses. Utility estimates will consist of positive predictive power (PPP), negative predictive power (NPP), sensitivity, specificity, and hit rate.

Hypotheses #2 and #3. The second hypothesis states that psychopaths will be significantly higher than nonpsychopaths on sensation seeking, impulsivity, and ADHD. The third hypothesis states that adolescents will be higher on CD and ODD symptoms than nonpsychopaths. Two separate MANOVAs are used to determine if any differences exist between adolescent psychopaths and nonpsychopaths. Therefore, the first MANOVA addresses differences between psychopathic male adolescents and

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nonpsychopathic male adolescents on the three dependent variables regarding behavioral

dysregulation: sensation seeking, impulsivity, and ADHD. While the second MANOVA

analyzes overt behavioral difficulties in the form of CD and ODD. The first MANOVA

was used to analyze traits related to novelty and managing impulses. The second

MANOVA was designed to look at differences in disruptive behaviors.

Hypothesis #4. The fourth hypothesis addresses differences in the proportion of

psychopaths and nonpsychopaths that have committed violent crimes. A chi-square will

determine differences between the two groups in violent offenses.

Hypothesis #5. Utility estimates determine whether the PSD is an effective screen for the

classification of psychopathy, as measured by the PCL:SV. These estimates include PPP,

NPP, sensitivity, specificity, and hit rate.

Hypothesis #6. To address convergent validity, a correlation matrix was used to

determine if the total score on the PSD is significantly correlated with the total score on

the PCL:SV. Additionally, correlations are calculated on the corresponding Factor 1 and

Factor 2 between the PCL:SV and the PSD.

Supplementary Analyses

As a supplementary analysis, a second-order principal axis factoral analysis with a

varimax rotation explores the underlying dimensions of the following constructs:

sensation seeking, impulsivity, ADHD, conduct disorder symptoms, oppositional defiant

disorder symptoms, and PCL:SV and PSD Factors 1 and 2.

Correlation matrices are used to analyze discrimiant and convergent validity for the

clinical measures and psychopathy. Discriminant validity for the PCL:SV are assessed

via the Anxiety, Depression, and Sense of Inadequacy scales from the BASC.

Convergent validity for the PCL:SV will be determined through the constructs of

sensation seeking, impulsivity, ADHD, CD, and ODD. Finally, two separate t-tests will

be used to analyze if C/U traits act as a suppresser for anxiety (see Frick, 1998). C/U

traits, based on the highest and lowest quartiles on the PCL:SV and PSD serve as the

independent variables. Anxiety scores, as determined by the BASC, acts as the

dependent variable.

CHAPTER III

RESULTS

Sample Characteristics

The sample consisted of 79 adolescent males between the ages of 14 and 18 ($M =$ 16.41, $SD = 1.34$). All adolescents were incarcerated at Gainesville State School, a maximum-security facility for juvenile offenders. Table 1 presents a summary of the distribution of age and psychopathy for this sample.

Table 1

Classification of Psychopathy by Age

		Psychopathy Classification of Participants	
		---	---
Age	*n*	Psychopaths	Non-Psychopaths
14	8	2 (25.0%)	6 (75.0%)
15	6	3 (50.0%)	3 (50.0%)
16	28	9 (32.1%)	19 (67.9%)
17	24	7 (29.2%)	17 (70.8%)
18	11	6 (54.5%)	5 (45.5%)
Total	77	27 (35.1%)	50 (64.9%)

Note. Psychopaths are categorized by a PCL:SV score of ≥ 17.

The sample consisted of three racial groups: African American, Hispanic American, and Anglo American.

Table 2

Racial Summary and Psychopathy Classification of Participants

		Psychopathy Classification of Participants	
Race	n	Psychopaths	Non- Psychopaths
Anglo American	24	9 (37.5%)	15 (62.5%)
African American	35	12 (34.3%)	23 (65.7%)
Hispanic American	18	6 (33.3%)	12 (66.7%)
Total	77	27 (35.1%)	50 (64.9%)

Note. Psychopaths are categorized by a PCL:SV score of $\geq$ 17.

Using a 2 x 3 Pearson chi-square, no significant difference was found between race and psychopathy classification X^2 (df = 76) = 0.10, $p > 0.05$. Additionally, using correlations, no significant differences were found between psychopathy and nonpsychopathy groups for age, $r = 0.15$, $p > 0.05$. Again, using a correlation, no differences were found between the independent variables of Factor 1 on the PCL:SV and the dependent variable of age $r = 0.16$, $p > 0.05$. Factor 2 of the PCL:SV was also nonsignificant, $r = 0.11$, $p > 0.05$. Results for the correlations are summarized in Table 3.

Table 3

Differences between PCL:SV Factor and Total Scores by Age

_____

PCL:SV	r	Significance

_____

Factor 1	.15	> .05
Factor 2	.16	> .05
Total Score	.11	> .05

_____

Classification of Psychopathy

Hypothesis 1, predicted the classification of psychopathy based on sensation seeking, impulsivity, ADHD, CD, and ODD; it was analyzed using an independent discriminant function analysis. The discriminant analysis with the five predictor variables yielded an overall classification rate of 74.0 %. The Canonical loadings were 0.57 (sensation seeking), 0.07 (impulsivity), - 0.32 (ADHD), 0.85 (CD symptoms) and - 0.14 (ODD symptoms), The structure coefficients are as follows: 0.75 (sensation seeking), 0.53 (impulsivity), 0.25 (ADHD), 0.82 (CD symptoms) and 0.25 (ODD symptoms). Utility estimates were determined on the discriminant function analysis found in Table 4. PPP is 65.4%, NPP is 78.7%, sensitivity is 63.0%, specificity is 80.4%, and hit rate is 74.0%. A complete summary of the discriminant function analysis is presented in Table 4.

Table 4

Discriminant Analysis on the Prediction of Psychopathy with Sensation Seeking,

Impulsivity, ADHD, Conduct Disorder, and Oppositional Defiant Disorder

		Predicted Group Membership	
Classification	*n*	Psychopaths	Nonpsychopaths
Psychopaths	27	17 (63.0%)	10 (37.0%)
Nonpsychopaths	46	9 (19.6%)	37 (80.4%)

Note. Classification for psychopaths is based on a cutting score of $\geq$ 17 on the PCL:SV

Wilks' lambda = 0.70, $p < 0.001$.

A second independent discriminant analysis was analyzed in order to directly test

Lynam's (1998, 1996) HIA model of psychopathy. Included in this analysis were

hyperactivity, impulsivity, attention problems and conduct problems. The discriminant

analysis with the four predictor variables yielded an overall classification rate of 72.6%.

The Canonical loadings were -0. 01 (hyperactivity), 0.29 (impulsivity), -0. 33 (attention

problems) and .92 (CD symptoms). The structure coefficients are as follows: 0.95 for

CD symptoms, 0.61 for impulsivity, 0.38 for hyperactivity, and 0.12 for attentional

problems. Based on the discriminant function shown in Table 5, PPP is 63.0%, NPP is

78.3%, sensitivity is 63.0%, specificity is 78.3%, and hit rate is 72.6%. A complete

summary of the discriminant function analysis is presented in Table 5.

Table 5

Discriminant Analysis on the Prediction of Psychopathy with Hyperactivity, Impulsivity,

Attention Problems, and Conduct Disorder

		Predicted Group Membership	
Classification	n	Psychopaths	Nonpsychopaths
Psychopaths	27	17 (63.0%)	10 (37.0%)
Nonpsychopaths	46	10 (21.7%)	36 (78.3%)

Note. Classification for psychopaths is based on a cutting score of $\geq$ 17 on the PCL:SV

Wilks' lambda = .77, p <0 .001.

Clinical Constructs and Psychopathy

Hypothesis 2 was analyzed via a MANOVA with psychopathy (i.e., psychopaths

and nonpsychopaths) as the independent variable and ADHD, impulsivity, and sensation

seeking, as dependent variables. The MANOVA yielded an overall Wilk's lambda of

0.82, p < 0.01. Results indicated that psychopaths were significantly higher on

impulsivity with a small effect size (eta^2 = 0.11) and sensation seeking with a small effect

size (eta^2 = 0.16) when compared to nonpsychopathic adolescents. Table 6 presents

means and standard deviations for the clinical measures and the individual F ratios.

Table 6

Means and Standard Deviations for Psychopaths vs. Nonpsychopaths on Clinical

Measures

Measures	Psychopaths		Nonpsychopaths		F	Eta^2
	M	SD	M	SD		
[1]ADHD Symptoms[a]	20.70	10.65	17.43	8.70	2.06	.03
Impulsivity[b]	74.33	11.87	66.04	11.37	8.83*	.11
Sensation Seeking[c]	61.67	9.36	53.74	8.70	13.40**	.16

Note. * $p < 0.05$, ** $p < 0.01$.

[a] ADHD scale Youth Self-Report.

[b] Barratt Impulsiveness Total Score.

[c] Sensation Seeking scale from the BASC.

Hypothesis 3 was that adolescent males classified as psychopaths have

significantly higher CD and ODD symptoms than adolescent males not classified as

psychopaths. Results from the MANOVA yielded an overall Wilk's lambda of 0.70, p

<0.01. To further evaluate these results univariate F ratios are computed for CD and

ODD symptoms (see Table 7). CD symptoms exhibited a moderate effect size while ODD symptoms had small effect size. As observed in Table 7, both CD and ODD symptoms were significantly higher for adolescent male psychopaths when compared to nonpsychopaths.

Table 7

Differences between Psychopaths and Nonpsychopaths on CD and ODD Symptoms

Clinical Measurements	Psychopaths		Nonpsychopaths		F	eta^2
	M	SD	M	SD		
CD Symptoms[a]	23.46	10.66	14.06	7.35	20.86**	.22
ODD Symptoms[a]	10.89	6.36	7.00	5.65	7.72**	.01

Note. * $p < 0.01$, ** $p < 0.001$.

[a] measured by ASI Youth Self-Report

Psychopathy and Violent Offenses

Hypothesis 4, which stated that psychopathic adolescents are more likely to be adjudicated for a violent offense than nonpsychopathic adolescents, was analyzed via a chi-square. Pearson chi-square results indicated a significant difference between psychopathic and nonpsychopathic offenders in violent offenses X^2 (df = 76) = 4.64, $p <$ 0.05. The results of the chi-square are presented in Table 8. These results indicate that

male adolescents who meet the criteria for psychopathy based on the PCL:SV were more likely to have committed a violent act than adolescent males not classified as psychopaths.

Table 8

Violent and Nonviolent Offenses in Psychopaths vs. Nonpsychopaths

	Classification	
Nature of Offense	Psychopaths	Nonpsychopaths
Violent	22 (17.6) [40%]	26 (31.4) [60%]
Nonviolent	6 (10.4) [9%]	23 (18.6) [91%]

Note. Obtained and Expected Frequencies (in parentheses) are shown for all cells. Row percentages are bracketed.

The PSD as a Screen for Psychopathy

To test Hypothesis 5 that the PSD will be an effective screen for adolescent psychopathy, several tests were utilized. The PSD was measured against the gold standard of the PCL:SV. Utility estimates were used to determine five estimates of the diagnostic usefulness of the PSD; they included PPP, NPP, sensitivity, specificity, and total hit rate. To determine classification, PSD cutting scores were used to obtain the maximum clinical utility through maximizing NPP. The goal of these analyses was to use

a cut score that was best able to "rule out" a classification of psychopathy with adjudicated maximum-security male adolescents. The current utility estimates are based on a PSD cutting score of ≥ 11 to classify psychopathy. Table 9 presents the utility estimates of the PSD for psychopathy. Other cut scores were also examined and are reported in Appendixe F.

Table 9

Utility Estimates of the Psychopathy Screening Device (PSD) for PSD > 11 with the Psychopathy Checklist: Screening Version (PCL:SV) as the Gold Standard

		PCL:SV Classification of Psychopathy	
PSD	*n*	Psychopaths	Nonpsychopaths
Psychopaths	49	8 (16.3%)	41 (83.7%)
Nonpsychopaths	28	1 (0.04%)	27 (96.4%)

Note. The following utility estimates were calculated: Positive Predictive Power = .16, Negative Predictive Power = 0.96, Sensitivity = 0.89, Specificity = 0.39, and Hit Rate = 0.45

To test Hypothesis 6, correlations were calculated between the factor scores and total scores of PCL:SV and the PSD. Significant correlations were found for both factor and total scores. For Factor 1, the relationship between the PCL:SV and the PSD is nonsignificant ($r = .20$) and shares only 4.0% of common variance. For Factor 2, the

relationship between the corresponding factors is significant with a moderate correlation ($r = 0.46$) with a common variance of 21.2%. Finally, the total score between the two measures also exhibited a significant moderate correlation ($r = 0.45$) with a common variance of 20.3 %. The matrix clearly shows that the significant relationship between the PCL:SV and PSD total score is due to the relationship between Factor 2 of both measures concerning conduct problems. The correlation matrix is presented in Table 10.

Based on Table 10, several discriminant validity coefficients were also examined. Unexpectedly the correlation between PCL:SV Factor 1 was correlated more with PSD Factor 2 ($r = 0.35$) than Factor 1 ($r = 0.20$). In contrast, PSD Factor 2 evidenced the expected relationship with higher correlations with PCL:SV Factor 2 ($r = 0.46$) than with PCL:SV Factor 1 ($r = 0.35$). Zr transformations were performed to determine the magnitude of differences between the corresponding factor scores of the PCL:SV and PSD. The transformations indicated a nonsignificant z-score between Factor 1 of the PCL:SV and PSD ($r = .20$) in comparison to Factor 2 of the measures ($r = 0.46$), $z(\mathrm{df} = 74) = 0.79$. $p > 0.05$.

Table 10

Correlations between PCL:SV and PSD Factor and Total Scores for a Sample of Adjudicated Male Adolescents

	PCL:SV 1	PCL:SV 2	PCL:SV total	PSD 1	PSD 2	PSD total
PCL:SV 1	(.90)	.73***	.96***	.20	.35**	.38**
PCL:SV 2		(.81)	.90**	.23*	.46**	.47**
PCL:SV total			(.91)	.68**	.88***	.45**
PSD 1				(.68)	.45**	.68**
PSD 2					(.33)	.88***
PSD total						(.75)

Note. * $p < 0.05$ (two tailed), ** $p < 0.01$. (two tailed) *** $p < 0.001$. To balance concerns regarding Type I and Type II errors,

$p < 0.05$ are considered nonsignificant trends. Underlined correlations represent convergent validity

estimates for Factor 1, Factor 2, and Total Score. Numbers in parentheses on the diagonal represent alpha coefficients.

Second-Order Factor Structure of Sensation Seeking, Impulsivity, PCL:SV Factor Scores

and Externalizing Diagnoses

As a supplementary analysis, a second-order principal axis factoring (PAF) was

performed with varimax rotation to determine the underlying dimensions for the clinical

measures. The two-factor solution produced substantial loadings ($\geq$ .40) and proved

optimal in terms of interpretability and minimal overlap. The two-factor solution

accounted for 55.4% of the variance, eight of the nine scales have substantial loadings.

Three and four factor solutions were analyzed but with less success than the two-factor

solution. Results from the three-factor solution (see Appendix G) resulted in five of nine

cross loadings and a weak Factor 3. The results of the four-factor solution (see Appendix

G) were not interpretable because the eigenvalue for Factor 4 was below the accepted

standard (i.e., 0.82). Table 11 summarizes the results for the two-factor solution.

The first factor, accounted for 47.9% of the variance, and consists of ADHD

symptoms, CD symptoms, ODD symptoms, sensation seeking, and impulsivity. This

factor is labeled Novelty Seeking/Behavioral Problems. The primary aspect of this factor

describes adolescents who become bored easily, are impulsive, and have difficulties with

conduct problems and have traits of oppositionality.

The second factor, accounted for 12.8% of the variance, and is labeled the

Psychopathy Factor which consists primarily of the PCL:SV dimensions

(Callous/Manipulative Personality and Chronic Conduct Problems).

Table 11

Factor Structure of Sensation Seeking, Impulsivity, Psychopathy Factor Scores,

and Externalizing Diagnoses

Scale	Factor 1	Factor 2
YSR ADHD Scale	.77	-.08
YSR Conduct Disorder Symptoms	.81	.33
Barratt Impulsiveness Scale	.78	.19
YSR ODD Symptoms	.76	.22
BASC Sensation Seeking	.63	.20
PCL:SV Factor 1	.21	.85
PCL:SV Factor 2	.38	.79
PSD Factor 1	.03	.51
PSD Factor 2	.67	.40
Variance Accounted for	47.94%	12.83%
Eigenvalues	4.31	1.15

Note. Substantial loadings (> 0.40) are underlined.

A supplementary analysis analyzed the discriminant validity for psychopathy in relation to depression, anxiety, sense of inadequacy. As expected, results indicate that the Anxiety, Depression, and Sense of Inadequacy Scales, as measured by the BASC,

have no significant relationship with the factor and total scores of the PCL:SV. In

contrast, the PSD total score evidenced moderate but significant correlations with

Anxiety, Depression, and Sense of Inadequacy. Sense of Inadequacy scale was also

significantly correlated with Callous/Unemotionality score of the PSD. Complete results

for this analysis can be found in Table 12.

Table 12

Discriminant Validity for Psychopathy Measures with Selected BASC Scales

	Depression	Sense of Inadequacy	PCL Factor 1	PCL Factor 2	PCL Total	PSD Factor 1	PSD Factor 2	PSD Total
Anxiety	55**	.47**	-.04	.09	.01	.15	.19	.25*
Depression		.69**	.09	.11	.10	.21	.21	.30**
Sense of Inadequacy			.03	.16	.09	.25*	.16	.29**

Note. * *p* < 0.05 (two tailed), ** *p* < 0.01 (two tailed). Underlined correlations represent discriminant validity.

An analysis is also provided for convergent validity (see Table 13). Results indicate convergent validity between Factor 1 of the PCL:SV and sensation seeking and impulsivity. As expected, CD and ODD symptoms are also significantly related to Factor 2 of the PCL:SV.   However, sensation seeking and impulsivity are also significantly related to Factor 2 of the PCL:SV.

Impulsivity was the only construct significantly correlated with Factor 1 of the PSD. However, all constructs were significantly correlated with Factor 2 of the PSD. The very modest correlations for PSD Factor 1 raise questions about its convergent validity.

Table 13

Convergent Validity for Psychopathy Measures on Sensation Seeking, Impulsivity, ADHD, CD, and ODD

	PCL:SV Factor 1	PCL:SV Factor 2	PCL:SV Total	PSD Factor 1	PSD Factor 2	PSD Total
Sensation Seeking	.23*	.36**	.30**	.13	.54**	.49**
Impulsivity	.26*	.43**	.35*	.25*	.57**	.57**
ADHD	.17	.30**	.24*	.12	.40**	.37**
CD	.44**	.55**	.52**	.14	.62**	.56**
ODD	.38**	.43**	.43**	.04	.58**	.47**

Note. * $p < 0.05$ (two tailed), ** $p < 0.01$ (two tailed).

The final correlation matrix focused on five clinical constructs (i.e., sensation seeking, impulsivity, ADHD, CD, and ODD) that are all related. As expected, the relationship between CD and ODD were highly related ($r = 0.80$) with 64.0% shared variance. Impulsivity and CD have only a moderate correlation ($r = 0.52$) and share 32.0% variance. Table 14 has a complete summary of the correlations.

Table 14

Correlations between Clinical Measures of Impulsivity, Sensation Seeking, ADHD, Conduct Disorder and Oppositional Defiant Disorder

	Impulsivity	ADHD	Conduct Disorder	Oppositional Defiant-DX
Sensation Seeking	.48**	.35*	.52**	.36*
Impulsivity		.53**	.60**	.49**
ADHD			.51**	.48**
CD				.80**

Note. * $p < 0.01$ (two tailed), ** $p < 0.001$ (two tailed).

Finally, high levels of C/U are tested to see whether they act as a suppresser for anxiety symptoms (Frick, 1998). Two separate analyses are conducted to test this theory. First, scores on PCL:SV Callous/Manipulative Personality (Factor 1) are divided into quartiles and comparisons are performed between the lowest and highest quartiles with the Anxiety Scale on the BASC as the dependent variable.

Fifteen participants are placed in the lower quartile C/U group (C/U score = ≤ 1). Eighteen participants are placed in the highest quartile (C/U score ≥ 9). The Anxiety Scale from the BASC is used as a dependent variable. No differences are found between C/U groups based on the BASC Anxiety Scale t(df = 31) = -0.053, $p > 0.05$. In a direct test of Frick's (1998) model, the same analysis was conducted for C/U on the PSD. The lowest C/U group (C/U score ≤ 3) was comprised of 18 participants and the highest C/U group (C/U > 10) was comprised of 13 participants. No differences were found for the BASC Anxiety Scale and C/U level t(df = 29) = - 1.58, $p > 0.05$.

CHAPTER IV

DISCUSSION

Correlates and antecedents of adolescent psychopathy are critical to the evaluation

and treatment of conduct-disordered youth. Psychopathic children and adolescents form

a subgroup of offenders that have more aggression, greater number of arrests, and more

recidivism (Christian et al., 1998). Related to increased criminal activity, the current

research examines several theoretical models of adolescent psychopathy. (Brandt et al.,

1997; Ellis, 1987; Lynam, 1996; Lynam, 1998; Patrick, 1994; Patrick et al., 1994). A

principal finding was male adolescents classified as psychopaths, exhibited high levels of

sensation seeking, impulsivity, CD symptoms, and ODD symptoms. The use of these

clinical constructs also produced a moderately high classification rate for adolescent

psychopathy in adjudicated males. A more thorough analysis of the results with current

conceptual models of adolescent psychopathy is delineated later in the section.

The discussion is organized into four primary sections: (a) antecedents and

classification of adolescent psychopathy; (b) the clinical assessment of adolescent

psychopathy, with specific attention given to the PSD; (c) psychopathy and violence; and

(d) summary of a hypothesized behavioral dysregulation system that comprises

adolescent psychopathy. Finally, limitations of the current study and suggestions for

further research are addressed.

Antecedents and Classification of Adolescent Psychopathy

Adolescent psychopathy is an important concept to assess in juvenile facilities

due to the increased risk of institutional violence and higher rates of recidivism that

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accompany this classification. Several theories (Forth & Burke, 1998; Lynam, 1996, 1998) have addressed various combinations of traits that contribute to adolescent psychopathy. It appears that assessing personality and behavioral correlates of psychopathy can not only increase the understanding of this construct but also improve clinical assessment of psychopathy.

From a theoretical perspective, several previous researchers (Barratt, 1993; Ellis, 1987; Forth & Burke, 1998; Frick, 1998; Lynam, 1996, 1998) have posited various models that have combined various traits to explain psychopathy. These traits have ranged from sensation seeking, impulsivity, attentional problems, hyperactivity, conduct problems, and oppositionality. I evaluate these various models in light of the current data.

Impulsivity, Sensation Seeking and Conduct Problems. The results buttress the work of researchers (Barratt, 1993; Hart & Dempster, 1997; Lynam 1998, 1996; Stanford et al., 1994) who consider impulsivity a central feature of antisocial behavior. Stanford et al. (1994) found in a sample of 57 adolescents in a residential treatment facility that the total score of the PCL-R is significantly related to the number of impulsive behaviors exhibited. The current research found that impulsivity is also significantly correlated with the total score of the PCL:SV ($r = 0.35$), although the magnitude of this relationship appears relatively modest.

Results of this study indicated that adolescent psychopaths had significantly higher levels of sensation seeking and impulsivity than nonpsychopaths. As noted in Table 6, sensation seeking appeared to be the more salient ($eta^2 = 0.16$) followed by

impulsivity (eta^2 = 0.11). The results are generally consistent with several researchers (Lynam, 1996; Stanford et al., 1994) that adolescents need greater amounts of stimulation and are more prone to impulsive behaviors. The next several paragraphs will review the current data in light of these studies.

Lynam's Model

The current study generally supports Lynam's (1996, 1998) conclusion that conduct problems and impulsivity are important aspects of adolescent psychopathy. Lynam (1996, 1998) found that male children with HIA and conduct problems are more at risk to commit criminal offenses and believed they would continue their offending into adulthood. In attempting to test Lynam's model classifying psychopathy, the data partially support his conclusions. Conduct problems were found to be highly correlated (0.92) with the discriminant function. However, impulsivity was only modestly correlated (0.29) with the discriminant function. In this discriminant model, impulsivity appears moderately useful to psychopathy classification.

Several considerations should be evaluated when reviewing differences found between (Lynam, 1998) and the current study. Two striking differences between the samples are age and criminal involvement. Lynam's participants initially consisted of 508 males with a mean age of 10.2 from Pittsburgh, PA public schools; these children were reassessed between the ages of 12 and 13. Lynam's sample is younger than the males used in the current study (M = 16.41) and were placed in the community. Major differences were also observed in methods. The current study used self-report instruments to assess for impulsivity, attention problems, hyperactivity, and sensation

seeking. In contrast, Lynam (1998) utilized several basic psychological and

neuropsychological screens for his study.

Impulsivity and Sensation Seeking

 In a detailed literature review, EllIis (1987) listed nine studies relating to

excitement seeking and nineteen studies describing impulsivity and its relationship to

criminal behavior. An additional ten studies linked these traits directly to psychopathy.

Ellis (1987) proposed these traits are related to the "suboptimal arousal" for criminals and

the results provide empirical support for Ellis' proposition. First, the current results found

significantly higher levels of sensation seeking and impulsivity in male adolescent

psychopaths. Second, impulsivity and sensation seeking both contributed to the

discriminant function (see Table 4). The suboptimal arousal hypothesis appears to be a

viable way of explaining the interaction of variables associated with adolescent

psychopathy. The next paragraph explains how sensation seeking and impulsivity relate

to conduct problems and the suboptimal hypothesis.

Impulsivity and sensation are constructs associated to increased criminal behavior

and violence (Barratt, 1993; Russo et al., 1994).   The assessment of impulsivity is a

critical factor, given of the propensity of the impulsive individual to engage in criminal

activity without considering the consequences. Furthermore, adolescents who crave

increased stimulation will most likely engage in behaviors that are high risk, including

criminal behavior (Barratt, 1993). Impulsivity has a moderately high correlation with CD

symptoms ($r = 0.60$) and a moderate correlation with Factor 2 of the PCL:SV ($r = 0.43$).

Sensation seeking was also found to be correlated with CD symptoms ($r = 0.52$) and

Factor 2 of the PCL:SV ($r = 0.36$). Therefore, one reasonable conclusion is that involvement in criminal behavior enables psychopathic adolescents to achieve a more adequate level of arousal.

Russo et al. (1994) found that sensation seeking is associated with conduct problems in children and adolescents and that those males with CD are more prone to boredom. In contrast to Russo et al. (1994), Levenson (1992) reported that the evidence does not support linking sensation seeking to psychopathy. Levenson (1992) stated that there are two different types of risk takers (physical and social). He proposed that social risk takers are more related to criminal behavior than just being "physically adventurous." The current data supports Russo et al. (1994) basic contention that sensation seeking is a core trait of psychopathy. This conclusion is supported through three statistical analyses: (a) significant differences on a MANOVA with psychopaths having higher levels of sensation seeking, (b) sensation seeking contributing to the overall discriminant function (Canonical loading = 0.57 and structure coefficient = 0.75), and (c) sensation seeking is modestly correlated with psychopathy ($r = 0.30$). However, it was not possible to test Levenson's hypothesis regarding social versus physical risk takers.

Hart and Dempster (1998) performed a content analysis of the PCL-R and concluded that impulsivity is an essential component of the measure. Consistent with that research, the current study found significant correlations between impulsivity and Factor 1 of the PCL:SV ($r = 0.26$), Factor 2 of the PCL:SV ($r = 0.43$) and the total score of the PCL:SV ($r = 0.35$). The current study supports impulsivity as an important facet of

psychopathy in male adolescents. These results with a modest correlation on Factor 1

and moderate correlation on

Factor 2 make sense given that the two relevant PCL:SV items (i.e., "Impulsive" and

"Lack of behavioral controls) are found on Factor 2.

Sensation seeking was also significant related to impulsivity ($r = 0.48$) as well as

psychopathy; Factor 1 ($r = 0.23$), Factor 2 ($r = 0.36$), and total score ($r = 0.30$). The

combination of sensation seeking and impulsivity forms a unique combination of traits in

adolescents classified as psychopaths. These individuals have a desire for stimulating

and novel behaviors as well as an inability to properly channel their impulses. The

sensation seeker is more prone to manifest psychopathic traits. For example, a sensation

seeker may find committed relationships boring and have many casual sexual partners or

commit a variety of criminal offenses due to boredom. The results provide indirect

evidence that impulsivity and sensation seeking are important facets of adolescent

psychopathy.

Externalizing Diagnoses

Several researchers (Christian et al., 1997; Frick, 1998; Lynam, 1996; Rogers et

al., 1997) have emphasized importance of CD and ODD symptoms in the classification of

adolescent psychopathy. Current results also revealed that adolescent psychopaths had

higher levels of CD and ODD than nonpsychopathic adolescents. Conduct disorder in

childhood has been found to be an important variable in the prediction of antisocial

behavior in adulthood (Lahey & Loeber, 1997). Consequently, adolescents with CD are

more likely to manifest the behavioral variables associated with the diagnosis, including

irresponsibility, violent behaviors, and violate social norms. Behavioral facets are an

important area of consideration for the accurate classification and assessment of

adolescent psychopathy. Adolescents classified as psychopathic will engage in more CD

symptoms in combination with a lack of empathy. CD symptoms were not only related

to PCL:SV Factor 2 ($r = 0.55$) but also to PCL:SV Factor 1 ($r = 0.44$). In this sample of

adjudicated male adolescents, personality variables related to psychopathy are also

related to CD. Sensation seeking ($r = 0.52$), impulsivity ($r = 0.60$) and ADHD ($r = 0.51$)

correlate modestly with CD. The results indicate that DSM-IV symptoms associated with

juvenile delinquency are as important as personality variables in determining who will be

classified as an adolescent psychopath.

Forth and Burke (1998) discussed several antecedents to adolescent psychopathy,

including ADHD and conduct problems. Conduct problems have already been shown to

be a significant contributor to adolescent psychopathy. The current research does not

support the Forth and Burke (1998) conclusion; I did not find that ADHD is related to the

classification of psychopathy. Hare (1996) found ADHD significantly correlated with

psychopathy ($r = 0.38$).   However, this moderate correlation provides only marginal

assistance in classifying psychopaths. The current study found significant correlations

with ADHD and ODD ($r = 0.48$), CD ($r = 0.51$), and PCL:SV Factor 2 ($r = 0.30$).

The most notable differences between studies (Hare, 1996; Lynam, 1996, 1998)

and the current research is that attention problems and hyperactivity were not

significantly different between adolescent male psychopaths and non-psychopaths (see

Table 6, eta^2 = .03). In applying attention problems and hyperactivity to a discriminant analysis, those difficulties were uncorrelated with the resulting discriminant function.

As noted, the current findings fail to support that symptoms of ADHD are higher in adolescent male psychopaths. Thompson et al. (1996) found that adolescents with ADHD from a residential treatment facility had more CD symptoms and substance abuse symptoms. The current study found no significant differences on ADHD between adolescents classified as psychopaths and nonpsychopaths. Also, as previously stated, hyperactivity has been hypothesized to be a critical component of determining what adolescents with CD may develop psychopathy (Lynam 1996, 1998).

Despite several studies (Lynam, 1996, 1998; Thompson et al., 1996) ADHD did not contribute substantially to the overall classification. The Canonical loading for ADHD was - 0.32 and the structure coefficient was 0.25 leading to the conclusion that ADHD symptoms did not contribute substantially to the discriminant function. Furthermore, a MANOVA found no differences on ADHD symptoms between psychopaths and nonpsychopaths.

Several explanations are possible for ADHD not being a significant contributor to psychopathy. First, method variance may be a relevant factor. ADHD was measured in the current study via a self-report inventory. It is possible that the male adolescents in this sample are not as aware of their ADHD symptoms. Associated with this explanation, structured interviews would have more accurately assessed ADHD symptoms in this sample due to their ability to obtain more information related to diagnoses. Second, differences in the samples tested may account for the observed differences. Several

studies (August et al., 1996; Lynam, 1996, 1998) used samples consisting of school-aged children who were not likely to have been adjudicated for an offense. The current study utilized adjudicated adolescents in a maximum-security facility. These two differences should be considered when comparing the current results to previous studies of ADHD's role with psychopathy.

Frick's Model. Frick (1998) concluded that psychopathy in children is composed of two separate factors: (a) Impulsive-conduct problems (I/CP), and (b) Callous-unemotional traits (C/U). Frick (1998) hypothesized that a psychopathic conduct-problem pathway consisted of a difficulty in behavioral inhibition leading to callous/unemotional traits. C/U ultimately cumulates in conduct problems. Frick (1998) emphasized that sensation seeking is related to callous/unemotional traits, leading to an individual seeking out novel experiences. Furthermore, he hypothesized that conduct problems (CD and ODD) are unrelated to sensation seeking behavior. However, in contrast to Frick (1998), Harpur et al. (1989) found sensation seeking linked with conduct problems in an adult sample.

I examined Frick's theory of psychopathy in this sample of adjudicated adolescents, and found that sensation seeking is related to conduct disordered symptoms ($r = 0.52$), ODD symptoms ($r = 0.36$), PCL:SV Factor 2 ($r = 0.36$), and PSD Factor 2 ($r = 0.54$). In contrast, the only measure PSD Factor 1 (C/U traits) was related to impulsivity ($r = 0.25$). This finding has important implications in that sensation seeking is related to conduct problems in this adolescent sample and not C/U traits. This finding does not support Frick's (1998) research regarding adolescent psychopathy. Accordingly, the

current sample of adolescents is more similar to adult psychopaths than psychopathic children in their presentation of sensation seeking traits. One hypothesis is that sensation seeking leads to conduct problems and illegal activities in adolescence and not to callous and uncaring personality, as proposed by Frick (1998).

Another key issue in the assessment of psychopathic traits in children has been the effect that anxiety has on C/U traits and conduct problems. Frick (1998) stated that anxiety is higher in children who have concurrent conduct problems. However, he also stated that C/U traits act as a "suppresser" of anxiety (i.e., high C/U traits would be associated with lower anxiety). In this sample, C/U shows no relationship to anxiety for both individuals with high C/U scores ($\underline{r}$ = - 0.04) and high overall levels of psychopathy (r = 0.01). Furthermore, Frick (1998) believed that individuals with only conduct problems and a lack of C/U would show increased levels of anxiety. This hypothesis was not supported because no significant relationship was found between anxiety and psychopathic conduct problems (Factor 2 of the PCL:SV and PSD; r = 0.09 and 0.19, respectively). To further examine the model, two separate t-tests found no differences on anxiety and C/U traits on either the PCL:SV or the PSD. The results of the current study question the notion that high C/U acts as a suppresser for anxiety in this sample of male adjudicated offenders. As best as can be determined, anxiety appears to be uncorrelated with psychopathy.

The Assessment of Adolescent Psychopathy with the PCL:SV and PSD

The current study addresses the potential contributions of the PSD to the classification of adolescent psychopathy. Self-report measures for the assessment of

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psychopathy have several limitations. First, difficulties with self-report instruments in the assessment of psychopathy include limited applicability to non-forensic samples. Research has generally focused on prison populations and failed to expand psychometric testing beyond that setting. Second, an inability to measure response styles, on the current self-report measures, limits their utility. For example, the PSD has no scale to measure defensiveness or malingering. Without specific indices, it would be almost impossible to ascertain the veracity of the adolescent's responses. Third, self-report measures are highly influenced by the emotional state of the individual (Hart & Hare, 1997). In contrast, a structured interview provides an opportunity to monitor the individual's affect. Such observation would be difficult to conduct with a brief self-report screen.

The primary advantage of a self-report measure is its potential to efficiently eliminate nonpsychopathic individuals from further assessment. A second advantage is the decrease in professional time for its administration. The emphasis of such screens is to maximize NPP so that few false-negative misclassifications (missed psychopaths) are rendered. Two important issues addressed by this study in relation to the PSD are (a) determining a cut score to maximize NPP (b) establishing the effectiveness of that cut score. The next paragraph will address utility estimates for the PSD.

The utility estimates proposed by the current study maximize NPP. A cut score of 11 out of a possible 40, the PSD yielded a NPP of 0.96. This cut score is highly effective (i.e., 96.0%) at ruling out nonpsychopaths. In this sample, the prevalence rate of psychopathy is 37.0%. Using the current utility estimates, the screen would enable an institution to eliminate full batteries on 60 cases out of every 100. In a placement in a

less secure facility, such as a local detention center, assessment savings would likely be greater. For example, in a facility that has an overall population consisting of 10.0% psychopathic population, the savings would be 86 cases per 100.

Using the PCL:SV as the gold standard, correlations determined the magnitude of the relationship between the PSD and the PCL. Most notable the correlation between the total score of the PCL:SV and the PSD reached significance ($r = 0.45$) and explained 20.3% of the variance. Factor 2 of the PSD and PCL:SV (chronic behavioral difficulties) was comparable to the total score ($r = 0.46$). Of particular interest, the PSD does not appear to measure core personality traits associated with Factor 1. One potential explanation is that adolescents readily endorse behavioral problems but appear less likely to acknowledge maladaptive personality characteristics associated with psychopathy. Despite its convergent validity, the alpha for was only .33. It does not appear that these items are measuring a unitary construct.

In summary, the results lead to several conclusions regarding the assessment of psychopathy in this sample. First, using the PCL:SV as a gold standard, conduct problems (Factor 2) on the PSD are more related to the overall score than personality characteristics. Second, using a fairly low cut-off score (i.e., 11), it can be determined with a 96.0% (NPP)

accuracy rate, which adolescents require further assessment of psychopathy. Furthermore, when the PSD signifies that an individual does not classify as a psychopath, the measure was shown to be 96.0% accurate. Using higher cut scores, the PSD might be able to rule-in psychopathy. A PSD score of > 18 was able to correctly identify 76.0% of

individuals classified as psychopaths by the PCL:SV. However, the ability of the PSD to rule out psychopaths dropped to 33 cases out of 100. Based on these results, it is suggested that the PSD only be used to screen to determine which individuals do not require a structured interview.

Second-Order Factor Analysis of Clinical Measures

A PAF analysis revealed two factors associated with clinical constructs assessed (sensation seeking, impulsivity, ADHD, CD, and ODD) and psychopathy. Two factors were discovered. The first factor, Dysregulation, is comprised of impulsivity, novelty seeking, and problems following rules. The second factor is Psychopathy and consists of callous/unemotional traits (Factor 1 of the PCL:SV) and antisocial behaviors (Factor 2 PCL:SV and CD symptoms). Through two factors, this research provides increased support for the inclusion of both personality and behavior in classifying adolescent psychopaths (see Hare, 1985; Zagon, 1995).

The current results are consistent with prior researcher (Forth & Burke, 1998; Frick, 1998) in suggesting that adolescent psychopathic offenders have a variety of maladaptive personality characteristics superimposed on conduct problems and oppositional behavior. The dysregualtion component accounts for a greater proportion of the variance (47.9%) than the psychopathy component (12.8%). The results suggest that clinical constructs, independent of psychopathy, should also be assessed in a maximum-security male adolescent population.

Farrington, Ohlin, and Wilson (1986) found that approximately 5.0% of offenders are responsible for between 50-60% of crime. An important clinical issue is the identification of variables that would classify these offenders. Several approaches may be considered. For example, Hart and Hare (1997) found those individuals classified as psychopaths had several disturbing trends, including higher levels of violence, more predatory violence (motivated by revenge), and more institutional violence. Aligned with Hart and Hare (1997), Block (1995) posited that impulsive violence is a critical aspect of psychopathy.

Adolescents in this sample classified as psychopaths were more likely to be adjudicated for a violent crime (see Table 8). Of the 77 adolescents with available offense information, 63.6% were adjudicated for a violent offense. However, 78.6% of the adolescents classified as psychopaths were adjudicated for a violent offense in comparison to 54.0% of the nonpsychopaths. A chi-square found this difference to be significant and is consistent with several researchers (Brandt et al., 1997; Hare & McPherson, 1984; Jutai & Hare, 1983) who found adult and adolescent psychopaths are typically more violent than nonpsychopaths. The importance of related to the greater likelihood of committing violence is one of the most important aspects of psychopathy (Hart & Hare, 1997).

These results need to be considered in relation to the current sample. The percentage of the psychopathic sample committing the violence acts were not as strong as some researchers suggest (Farrington, Ohlin, & Wilson, 1986). This is most likely due to

the sample being placed in a maximum-security facility with nearly 2/3 of the sample

being placed at the facility for a violent offense. Given the high percentage of

adolescents placed at this maximum-security facility for a violent offense, the differences

between psychopaths and nonpsychopaths are more remarkable. This discrepancy in

violent offenses is likely to be even more pronounced in a less secure facility.

Behavioral Dysregulation System

A hypothesis is proposed that combines sensation seeking, impulsivity, and

behavioral difficulties to explain adolescent psychopathy. This system leads psychopaths

to engage in greater amounts of criminal behavior as provides empirical support to Ellis

(1987). This suboptimal arousal system (Ellis, 1987) is characterized by an unwillingness

to conform behaviors to societal standards. The current research suggests that behavioral

dysregulation consists of a proneness to engage in novel behaviors and exciting behaviors

(sensation seeking) as well as difficulty inhibiting impulses (i.e., increased impulsivity)

contributing to behavioral problems. Problematic behaviors consist of a disregard for the

rights of others, aggression toward people and animals (i.e., CD; American Psychiatric

Association, 1994), frequent arguing with adults, and being angry and resentful (i.e.,

ODD; American Psychiatric Association, 1994).

The results of this study support the research of (Ellis, 1987; Kochanska, 1993;

Lynam, 1996, 1998) that several characteristics underlie adolescent psychopathy.   These

qualities include sensation seeking, impulsivity, conduct problems, and oppositionality.

Based on the current results, this study also suggests that hypoarousal is a primary facet

of adolescent psychopathy and is a moderating variable in their persistent and chronic

offending. The current research suggests that psychopaths tend to be impulsive and have a tendency to seek exciting and novel behaviors. The psychopath's increased criminal behaviors may relate not only to being impulsive but also encourages them toward sensation seeking with the use of novel and dangerous behaviors for arousal.

Although physiological deficits were not directly tested, this research raises the possibility that they may be the underlying factor for the behavioral dysregulation system. For instance, Patrick (1994) found a less active startle response in psychopaths when compared to nonpsychopaths. It is apparent that a basic hypoarousal within adolescents classified as psychopaths may explain their increased sensation seeking and impulsivity. A possible explanation for the current research is proposing that a behavioral dysregulation system in the form of sensation seeking, impulsivity, and conduct problems may compensate for a suboptimal arousal system and leads to psychopathic traits.

Limitations

The overarching goal of this thesis was the assessment and accurate classification of psychopathy. Methods used for the assessment of ADHD, CD, ODD, sensation seeking, and impulsivity relied on self-report inventories. Structured interviews may have been a more accurate way to assess externalizing diagnoses because of the use of probes to obtain further diagnostic information and discuss contradictions in self-report. Time constraints on the access to residents limited the use of structured interviews to the PCL:SV interview.

The current study also focused on antecedents of psychopathy in an adjudicated male population. The generalizability beyond males in a maximum-security facility

needs further inquiry. The inclusion of female participants and adjudicated adolescents in other types of detention facilities would have increased the generalizability of the current model.

In order to evaluate other models of psychopathy (Frick, 1998; Moffitt, 1993) additional variables would have added to the clinical applicability of the study. For example, obtaining variables related to intellectual functioning may have increased the classification model (see Moffitt, 1993). Obtaining a more accurate lifelong criminal past could have supplemented to longitudinal data concerning male adolescent psychopathy. Age of first arrest was unable to be collected. Age of onset would be important to assess various developmental models (early vs. late onset) and how they relate to psychopathy (see Moffitt, 1993). Furthermore, age of onset may have enabled the researcher to more explicitly examine the role of anxiety in the suppression of C/U traits.

Finally, no systematic evaluation of response styles was conducted with this sample. It is possible that adolescents responding to the self-report measures were less than honest by either denying or exaggerating previous behavioral problems.

<u>Future Directions</u>

The current study suggests several new directions for future research on adolescent psychopathy. Research should include additional samples beyond male adolescents in a maximum-security facility. Included in this recommendation are females and adolescents adjudicated in other levels of detention. Furthermore, longitudinal studies studying the changing of constructs over time would be useful to the study of

psychopathy. It would be useful to know how clinical traits (i.e., sensation seeking, impulsivity, ADHD) change from childhood to adolescence.

The role of sensation seeking also needs closer consideration in adolescent psychopathy. This study found that it was one of the primary contributors to the accurate classification of psychopathy. Furthermore, few studies have included it as a variable in research and have instead relied on the related construct of impulsivity. This study suggests that although related, sensation seeking and impulsivity contribute separately to adolescent psychopathy.

Research should focus on the ability of adolescents classified as psychopaths to utilize various response styles during the course of a psychological evaluation. For example, a male adolescent may have felt that denying prior criminal activities was the most appropriate way to respond to the examiner. On the other hand, the adolescent could have responded in an exaggerated manner to in an attempt to portray a "tough" image. Research could be utilized in the development of instruments with less face validity to accurately assess psychopathic personality traits.

Additional research should focus on the efficacy of brief self-report measures in the assessment of adolescent psychopathy.
While the PSD demonstrated good negative predictive power and sensitivity via an optimal cut score designed to maximize those utility estimates. If used in clinical practice, cut scores for the PSD require extensive cross-validation

APPENDIX A

CLECKLEY'S CRITERIA FOR PSYCHOPATHY

Cleckley's Criteria for Psychopathy

1. Superficial charm and good intelligence.

2. Absence of delusions and other signs of irrational thinking.

3. Absence of nervousness.

4. Unreliability.

5. Untruthfulness and insincerity.

6. Lack of remorse or shame.

7. Inadequately motivated antisocial behavior.

8. Poor judgment and failure to learn from experience.

9. Pathological egocentricity and incapacity for love.

10. General poverty in major affective reactions.

11. Specific loss of insight.

12. Unresponsiveness in general interpersonal reactions.

13. Fantastic and uninviting behavior with drink and sometimes without.

14. Suicide rarely carried out.

15. Sex life is impersonal, trivial, and poorly integrated.

16. Failure to follow and life plan.

APPENDIX B

HARE'S CRITERIA FOR PSYCHOPATHY

Hare's Criteria for Psychopathy from PCL-R	Factors According to Hare
1. Glibness/superficial charm	Factor 1
2. Grandiose sense of self-worth	Factor 1
3. Need for stimulation / proneness to boredom	Factor 2
4. Pathological lying	Factor 1
5. Conning/manipulative	Factor 1
6. Lack of remorse of guilt	Factor 1
7. Shallow effect	Factor 1
8. Callous/lack of empathy	Factor 1
9. Parasitic life-style	Factor 2
10. Poor behavioral controls	Factor 2
11. Promiscuous sexual behavior	No factor
12. Early behavior problems	Factor 2
13. Lack of realistic, long term goals	Factor 2
14. Impulsivity	Factor 2
15. Irresponsibility	Factor 2
16. Failure to accept responsibility for own actions	Factor 1
17. Many short-term marital relationships	No factor
18. Juvenile delinquency	Factor 2
19. Revocation of conditional release	Factor 2
20. Criminal versatility	No factor

APPENDIX C

FACTORS FOR PSYCHOPATHY SCREENING DEVICE

Psychopathy Screening Device (Youth Version)

Frick's Criteria for Psychopathy based on the PSD	Factors According to Frick
1. Blames others	Factor 1
2. Illegal Activities	Factor 2
3. Does not care about school	No factor
4. Acts without thinking	Factor 2
5. Shallow emotions	Factor 1
6. Lies easily	Factor 2
7. Breaks promises	No factor
8. Brags	Factor 1
9. Gets bored easily	Factor 2
10. Cons people	Factor 1
11. Teases people	No factor
12. No guilt	Factor 1
13. Engages in risky behaviors	Factor 2
14. Acts charming	Factor 1
15. Gets angry	Factor 2
16. Thinks better than others	No factor
17. Does not plan ahead	Factor 2
18. No concern about others	Factor 1
19. Hides true feelings	No factor
20. Does not keep same friends	No factor

APPENDIX D

RELIABILITY FOR BASC SELF-REPORT

BASC Self-Report

Clinical Scales of the BASC	*Alphas	Test-Retest
Anxiety	0.84	0.80
Attitude toward School	0.78	0.83
Attitude toward Teachers	0.78	0.69
Atypicality	0.77	0.77
Depression	0.85	0.77
Interpersonal Relations	0.83	0.75
Locus of Control	0.80	0.74
Relations with Parents	0.74	0.67
Self-esteem	0.84	0.85
Self-reliance	0.62	0.74
Sensation Seeking	0.65	0.81
Sense of Inadequacy	0.76	0.69
Social Stress	0.82	0.81
Somatization	0.62	0.69
Median of Clinical Scales	0.78	0.77
School Maladjustment	0.86	0.85
Clinical Maladjustment	0.93	0.86
Personal Adjustment	0.90	0.81
Emotions Symptoms Index	0.95	0.84

Reported in Kamphaus and Frick (1996).

APPENDIX E

FACTOR STRUCTURE OF BARRATT IMPULSIVENESS SCALE

Second Order Factor Structure of the Barratt Impulsiveness Scale

From Patton, Stanford, and Barratt (1995)

Original Six Factors   Current Three Factors

1. Attention   1. Attentional

2. Motor Impulsiveness   2. Motor

3. Self-control   3. Nonplanning

4. Cognitive complexity

5. Perseverance

6. Cognitive instability

APPENDIX F

VARIOUS CUT SCORES FOR THE PSD AND UTILITY ESTIMATES

Utility Estimates of the Psychopathy Screening Device (PSD) for PSD > 18 with the

Psychopathy Checklist: Screening Version (PCL:SV) as the Gold Standard

	PCL:SV Classification of Psychopathy	
PSD	Psychopaths	Nonpsychopaths
Psychopaths	37 (47.4%)	12 (5.4%)
Nonpsychopaths	13 (16.6%)	16 (20.5%)

Note. Positive Predictive Power = 0.76, Negative Predictive Power = 0.33,

Sensitivity = 0.70, Specificity = 0.57, and Hit Rate = 0.68. These cut scores based on

PSD > 18. A rationale for this cut score was based on the estimated prevalence of

psychopathy for 35.0% for this sample as determined by the PCL:SV classification.

Utility Estimates of the Psychopathy Screening Device (PSD) for PSD > 30 with the

Psychopathy Checklist: Screening Version (PCL:SV) as the Gold Standard

	PCL:SV Classification of Psychopathy	
PSD	Psychopaths	Nonpsychopaths
Psychopaths	0 (0.0%)	1 (0.01%)
Nonpsychopaths	50 (64.1%)	27 (34.6%)

Note. Positive Predictive Power = 0.00 Negative Predictive Power = 0.35,

Sensitivity = 0.00, Specificity = 0.96, and Hit Rate = 0.35. These cut scores based on

PSD ≥ 30. A convention for the PCL-R and PCL:SV is to classify persons as

psychopaths if they meet at least 75.0% of the total score. Applying this criterion to this

ratio to the PSD results in a score ≥ 30 classified as psychopaths.

APPENDIX G

FACTOR STRUCTURE OF EXTERNALIZING MEASURES

Factor Structure of Sensation Seeking, Impulsivity, PCL:SV Factor Scores, and

Externalizing Diagnoses

Scale	Factor 1	Factor 2	Factor 3
YSR ADHD	.79	-.04	.02
YSR Conduct Disorder Symptoms	.75*	.47*	-.09
Barratt Impulsiveness Scale	.80	.15	.25
YSR ODD Symptoms	.70*	.41*	-.25
BASC Sensation Seeking	.63	-.15	.09
PCL:SV Factor 1	.61*	.62*	-.30
PCL:SV Factor 2	.73*	.48*	-.18
PSD Factor 1	.78	-.09	.16
PSD Factor 2	.29	.43*	.80*
Variance Accounted for	47.94%	12.83%	11.27%
Eigenvalues	4.31	1.15	1.01

Note. Substantial loadings (> .40) are underlined. *Refers to cross loadings

Factor Structure of Sensation Seeking, Impulsivity, PCL:SV Factor Scores, and

Externalizing Diagnoses

Scale	Factor 1	Factor 2	Factor 3	Factor 4
YSR ADHD	.73	-.09	.29	.10
YSR Conduct Disorder Symptoms	.78*	.42*	.20	-.07
Barratt Impulsiveness Scale	.62*	.12	.51*	.27
YSR ODD Symptoms	.85	.35	-.03	-.11
BASC Sensation Seeking	.22	.22	.90	-.02
PCL:SV Factor 1	.12	.91	.07	.07
PCL:SV Factor 2	.25	.82	.25	.13
PSD Factor 1	.04	.12	.02	.97
PSD Factor 2	.56	.33	.37	.28
Variance Accounted for	47.94%	12.83%	11.27%	8.0%
Eigenvalues	4.31	1.15	1.01	.72

Note. Substantial loadings (> .40) are underlined. *Refers to cross loadings

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