

**Psychopathy as a Predictor of Instrumental Violence
Among Civil Psychiatric Patients**

A Thesis

Submitted to the Faculty

of

Drexel University

by

Heath Judson Hodges

in partial fulfillment of the

requirements for the degree

of

Master of Science in Psychology

October 2007

ACKNOWLEDGEMENTS

I would like to thank Dr. Kirk Heilbrun, my advisor, for his patience, guidance, and knowledgeable feedback as well as Dr. David DeMatteo for his candor and his well-informed insight. I thank Dr. Tracy Costigan for contributing her statistical experience to this largely analytical thesis design. This thesis would not have been possible had it not been for my numerous conversations with Graham Thomas, whose lucid and intelligible explanation of advanced statistics was elemental to my understanding of the material.

TABLE OF CONTENTS

LIST OF TABLES	vi
LIST OF FIGURES	vii
ABSTRACT	viii
CHAPTER 1. INTRODUCTION	1
1.1. Conceptualization and Assessment of Psychopathy	2
1.1.1. Defining Psychopathy	2
1.1.2. History and Description	2
1.1.3. Advent of the Psychopathy Checklist	3
1.1.4. PCL Revisions and Derivatives	4
1.1.5. Debates of Assessment	5
1.2. Violence Risk Assessment	7
1.2.1. Defining Violence Risk Assessment	7
1.2.2. Development of Risk Assessment	8
1.2.3. Violence Risk Factors	9
1.2.4. Psychopathy in Violence Risk Assessment	11
1.2.5. The MacArthur Violence Risk Assessment Study	14
1.3. Instrumental Violence	16
1.3.1. Defining Aggression and Violence	16
1.3.2. Instrumental and Reactive Aggression	16
1.3.3. Psychopathy and Instrumental Aggression	19
1.4. Hypotheses for the Present Study	24

CHAPTER 2. METHODS	24
2.1. Participants	24
2.2. Measures	25
2.2.1. Psychopathy	25
2.2.1.1. The Psychopathy Checklist: Screening Version	25
2.2.1.2. The Three-Factor Model	26
2.2.2. Violence and Instrumental Violence	27
2.3. Procedure	30
2.4. Analyses	31
2.4.1. Chi-square Statistic	31
2.4.2. Logistic Regression	31
2.4.3. Receiver Operating Characteristic Analysis	32
CHAPTER 3. RESULTS	34
3.1. Descriptive Statistics	34
3.2. Covariates	35
3.3. Hypothesis I: PCL: SV Predictive Ability	37
3.3.1. Continuous PCL: SV	38
3.3.2. Categorical PCL: SV	39
3.3.3. PCL: SV Cut-off	40
3.4. Hypothesis II: Three-Factor Model Predictive Ability	42
3.4.1. Continuous Three-Factor Model	42
3.4.2. Continuous Model Comparison	43
3.4.3. Categorical Three-Factor Model	44

3.4.4. Categorical Model Comparison	45
3.5. Hypothesis III: Factor Comparison	45
3.6. Hypothesis IV: Instrumental Violence and Victim Type	46
3.7. Secondary Analysis	47
CHAPTER 4. DISCUSSION.....	49
4.1. Implications for Results.....	49
4.2. Limitations of Study Design and Findings.....	53
4.3. Future Directions for Research, Practice, and Policy	55
4.3.1. Research.....	55
4.3.2. Practice.....	56
4.3.3. Policy	57
CHAPTER 5. LIST OF REFERENCES.....	59

LIST OF TABLES

1. The PCL: SV Two-Factor Model of Psychopathy.....	26
2. Cooke and Michie's Three-Factor Model of the PCL: SV	27
3. Results for Separate Bivariate Analyses for Covariates and Violence Status	37
4. Step and Model Results for the PCL: SV Regression.....	39
5. Contingency Table for Instrumental Status and Psychopathy Cut-offs.....	41
6. Step and Model Results for the Three-Factor Model Regression.....	43
7. Logistic Regression Results for the Psychopathy Factors	46
8. Incidence of Victim Type among Types of Offense.....	47

LIST OF FIGURES

1. ROC Curves for Continuous PCL: SV and Three-Factor Model total scores44

ABSTRACT

Psychopathy as a Predictor of Instrumental Violence among Civil Psychiatric Patients

Heath Judson Hodges

Kirk Heilbrun, Ph.D.

This study investigated the relationship between psychopathy and instrumental violence committed by psychiatric patients in the community. Psychopathy is a personality syndrome characterized by affective dysregulation, interpersonal deceitfulness, an irresponsible lifestyle, and social deviance. Instrumental violence is a form of violent behavior that is goal-directed and occurs in the absence of emotional arousal and without provocation. Higher scores on both the Psychopathy Checklist: Screening Version (PCL: SV) and a three-factor model of this measure indicated a greater likelihood that a participant would be instrumentally violent. However, neither model was more effective than the other in prediction. When examined more specifically, the Antisocial Behavior factor of the PCL: SV (Factor I) was the most influential of all the factors across both models in instrumental violence risk assessment. When examining victim type in instrumental incidents, strangers (compared to non-strangers) were not the most common target. This study advances previous research on instrumental violence and psychopathy in three ways. First, no study thus far has examined this relationship among civil psychiatric patients. Second, none of the studies to date have exceeded sample sizes of 400; the present study considered a much larger sample (N = 871). Third, despite the application of different measures of psychopathy, the current literature has not yet compared different models to gauge their relative predictive value for instrumental violence.

CHAPTER 1. INTRODUCTION

The most recent preliminary crime statistics submitted by the FBI (January – June 2006) indicate that violent crime has increased 3.7% when compared to the first half of 2005. In the metropolitan counties, reported murder offenses were up 3.1% and 8.4% in cities with populations between 500,000 and 999,999. Violence risk assessment aims to reduce crime and enhance public safety by identifying factors related to violent behavior. This influences public health and criminal justice proceedings such as violent offender trials and sentencing, prison classification, parole decision making, and treatment assignment. Violence risk assessment becomes especially important among violent psychiatric patients due to diminishing hospital stays and increased treatment in community-based settings (Narrow et al., 1993).

Psychopathy has repeatedly demonstrated itself as a strong predictor of violent recidivism among both inpatient and outpatient samples (Hemphill, Hare, & Wong, 1998; Salekin, Rogers, & Sewell, 1996). When examined more closely, those traits reflecting antisocial behavior have accounted for the greatest prediction of violence (Skeem & Mulvey, 2001). However, this has not been the case when exploring instances of violence perpetrated to achieve some goal, in which characteristics reflecting emotional detachment have yielded the most predictability (Cornel et al., 1996). A more precise approach to the prediction of violence may enable more accurate and specific outcomes, thus enabling the identification of more specialized types of violent offenders within this population. This will not only improve the construct validity of psychopathy but also advance its forensic applications.

1.1 Conceptualization and Assessment of Psychopathy

1.1.1 Defining psychopathy

The personality syndrome known as psychopathy is currently conceptualized as a constellation of personality traits denoting emotional detachment accompanied by antisocial behaviors. Hallmark characteristics of this syndrome are lack of remorse, lack of empathy, shallow affect, egocentrism, deceitfulness, impulsivity, and irresponsibility (Cleckley, 1982). Although there is deliberation among researchers concerning which traits are intrinsic to psychopathy and which are consequential, scholarly consensus and empirical evidence overwhelmingly support the existence of this disorder.

1.1.2 History and description

Psychopathy has roots which go back several hundred years and has been influenced by French, German, and Anglo-American psychiatric traditions (Werlinger, 1978). In 1809, Philippe Pinel popularized the first conceptualization of modern day psychopathy with his notion of “insanity without delirium” (*manie sans délire*). It has been historically recognized that this form of delirium was primarily that of emotions rather than intellect (Berrios & Porter, 1995). In 1835, British psychiatrist J.C. Prichard proposed the concept of “moral insanity” in which the afflicted suffers “a morbid perversion of the natural feelings, affections, inclinations, temper habits, moral dispositions, and natural impulses, without any remarkable disorder or defect of the intellect or knowing and reasoning faculties, and particularly without any insane illusion or hallucination” (Prichard, 1835, p. 6). However, considering the *zeitgeist*, “moral” was more interpretive of “psychological” (Berrios & Porter, 1995). The term “psychopath” as

it is used in modern contexts is arguably attributed to the German psychiatrist J.L.A. Koch (1889) .

There are numerous other psychiatrists (e.g., Craft, 1966; Henderson, 1939; Partridge, 1930; Schneider, 1950) and sociologists (e.g., McCord & McCord, 1964) who have made significant contributions to our understanding of the psychopathic disorder. However, it was not until 1941, when Hervey Cleckley published his monograph, “The Mask of Sanity,” that the concept of psychopathy was presented as a diagnosable mental disorder characterized by identifiable personality traits and observable behaviors. Cleckley (1941/1982) devised a clinical profile of the psychopath containing 16 characteristics as follows: superficial charm and good “intelligence”; absence of delusions and other signs of irrational thinking; absence of “nervousness” or psychoneurotic manifestations; unreliability; untruthfulness and insincerity; lack of remorse and shame; inadequately motivated antisocial behavior; poor judgment and failure to learn by experience; pathologic egocentricity and incapacity for love; general poverty in major affective reactions; specific loss of insight; unresponsiveness in general interpersonal relations; fantastic and uninviting behavior with drink and sometimes without; suicide rarely carried out; sex life impersonal, trivial, and poorly integrated; failure to follow any life plan.

1.1.3 Advent of the Psychopathy Checklist

Cleckley’s monograph was most influential in the American conception of psychopathy and marked the beginning of an empirical approach to the investigation of this syndrome. It was not until 1980, concurrent with the publication of the DSM-III (American Psychiatric Association) featuring Antisocial Personality Disorder (APD), that

the construct of psychopathy would have its first diagnostic measure. Robert Hare and colleagues devised their first draft of the Psychopathy Checklist (PCL; 1980). Using statistical procedures, they produced an inventory comprised of 22 items to assess psychopathy among prison inmates. Information for assessment is a collective effort involving a clinical interview, self-report, and collateral data to produce a score. It is important to note that even at this early juncture, psychopathy was distinct from the DSM's construct of APD—and has remained so. Individuals with APD represent a heterogeneous group with different personalities, attitudes, and motivations for committing antisocial behavior. By contrast, psychopaths are a homogeneous group demonstrating social deviance and an irresponsible lifestyle for specific reasons. Psychopathy emphasizes interpersonal characteristics and affective features that APD simply neglects. As such, APD is a broader class, with some research suggesting that 50+% of prison inmates meet APD criteria but fewer than 20% meet psychopathy criteria (Hare, 2003).

1.1.4 PCL Revisions and Derivatives

In 1991, enough studies had utilized the PCL to merit a newer revised edition, the PCL-R, which incorporates the psychometric feedback from its predecessor. The PCL-R contains only 20 items, with the test developers having decided to drop 2. Exploratory factor analyses described the data in two separate and moderately correlated domains, or factors: Factor 1 describes interpersonal deceit and reduced affect, termed the Emotional Detachment factor of psychopathy (Patrick, Bradley, & Lang, 1993), and Factor 2 consists of traits characterizing a socially deviant and reckless lifestyle, termed Antisocial Behavior (Patrick et al., 1993). Although the PCL-R was initially designed for the sole

purpose of assessing psychopathy, it has been utilized as a tool for various other purposes, including risk assessment and treatment amenability (Hare, Clark, Grann, & Thornton, 2000; Wong, 2001). Since the advent of the PCL, it has come to be regarded as the “gold standard” in psychopathy research.

In an effort to expand the applicability of the PCL beyond prison inmates, Robert Hare has developed several psychopathy scales for other populations. The P-Scan: Research Version (P-SCAN; Hare & Herve, 1999) was developed as a rough screen for psychopathic features for use in law enforcement. The PCL: Youth Version (PCL: YV; Forth, Kosson, & Hare, 2000) was designed to assess psychopathic traits in adolescents. And the PCL: Screening Version (PCL: SV; Hart, Cox, & Hare, 1995) was created for the MacArthur Violent Risk Assessment Study. The PCL: SV was designed for the assessment of psychopathy among the general population and civil psychiatric patients (i.e., individuals others than prisoners). A more specific description of this measure is provided in the methods section of this thesis.

1.1.5 Debates of Assessment

Despite its widespread acceptance, there has been recent discussion challenging the PCL as the optimal measure of psychopathy. There are two prominent issues of debate with regard to the assessment of psychopathy using the PCL measures. The first issue concerns structural model for the data within the measure. In 2001, David Cooke and Christine Michie designed a three-factor model to assess psychopathy. They argued that Robert Hare’s rendition of psychopathy relied too heavily on criminalistic criteria and was thus downstream from the heart of Cleckley’s original description. Indeed, there is support for this contention (e.g., Blackburn, 2005). Cooke and Michie omitted a

majority of the PCL-R's Factor 2 items thought to be more representative of criminality than psychopathy. They labeled this factor Irresponsible, Impulsive Lifestyle.

Furthermore, they separated Factor I (Emotional Detachment) into two parts: Arrogant Deceitful Lifestyle and Deficient Affective Experience. It has since been demonstrated that the three-factor model of psychopathy is a more appropriate fit to the PCL-R and PCL: SV data, thus better capturing the psychopathy syndrome (Cooke & Michie, 2001; Skeem, Mulvey, & Grisso, 2003).

Subsequent to Cooke and Michie's work, Hare published a second edition (2003) of the PCL-R which consists of a 2 x 4 hierarchical model similar to that employed by Cooke and Michie. That is, subordinate to the two original factors are 4 latent variable dimensions. Basically, this four facet model is identical to Cooke and Michie's three-factor model, with one exception: rather than omitting those items thought to represent criminality, they have been fashioned into another, fourth, dimension of psychopathy (an Antisocial factor). Hare maintains that antisociality is a significant part of the broader construct of psychopathy in much the same way that law abiding behavior is relevant to the concept of any other domain of personality.

The second issue of debate with regard to assessment is whether or not to consider psychopathy continuously or categorically. This concern is not merely restricted to the PCL measures but to any psychometric measure for psychopathy. Historical wisdom has considered psychopathy as a discrete taxon whereby "psychopaths" are quantitatively different than the rest of the population (Gacono, 2000). When this approach is applied psychometrically, psychopathy measures such as the PCL: SV use cut-offs to classify individuals as "psychopaths" or "non-psychopaths." It has also been suggested that a

range of cut-offs be used to accommodate cultural divergences and rater error (Hare, 2003). For example, a “psychopath” may be anyone whose PCL-R score falls between 26 and 30.

Opponents to this approach assert that a taxonic latent structure has limited utility and that it is much more pragmatic to consider psychopathy dimensionally, whereby the *degree* to which someone displays “psychopathic traits” is assessed. This conceptualization perceives psychopathy as existing on a continuum along with other personality traits. According to proponents of dimensional psychopathy, such an approach enables an etiological study of psychopathy in which multiple agents, versus one agent, can be identified as causal. Although earlier research seemed to point towards psychopathy as a discrete class (Harris, Rice, & Quinsey, 1994) current research is lending more support towards psychopathy on a continuum (Edens, Marcus, Lilienfeld, & Poythress, 2006; Marcus, Siji, & Edens, 2004; Walters, Duncan, & Kari, 2007).

1.2 Violence Risk Assessment

1.2.1 Defining violence risk assessment

The term risk assessment itself can refer to any process in which the goal is to determine an individual’s likelihood of experiencing some outcome (e.g., suicide, cancer). One definition often used in a forensic context refers to the prediction of further criminal offending (i.e., recidivism). Risk assessment in this sense is confined to predicting the persistence of offending among identified perpetrators rather than the antecedents of pursuing a criminal career. Risk assessment can target crime in general or have more specific applications (e.g., violent offenses, sexual offenses, fire starting). Variables that are empirically related to the outcome’s occurrence are termed risk factors.

Violence risk assessment operates on the supposition that offenders with similar patterns of risk factors will have a comparable likelihood of committing violent acts. It is this premise that allows for the possible prediction of violent behavior. By identifying the relationship between specific personal characteristics and violent behavior, we can then apply these patterns to other offenders of a similar disposition.

1.2.2 Development of risk assessment

In the past three decades there has been an efflux in the empirical development of both general and violence risk assessment (Bonta, Harman, Hann, & Cormier, 1996; Monahan & Steadman, 2001). Many researchers have conceived of this development in terms of generations (e.g., Bonta et al., 1996; Wong & Gordon, 2006). The first generation consisted of the “expert” opinions of mental health professionals. In this early stage, individuals were deemed as either “dangerous” or “nondangerous.” However, this approach did not pose an impressive degree of accuracy (Andrews, Bonta, & Wormith, 2006; Monahan, 1981; Mullen, 2000).

The second generation of risk assessment began to employ a statistical approach. Actuarial instruments were used to measure static variables associated with the perpetration of crime. Static variables are those which can not change, such as family history, or are highly resistant to change, such as psychopathy. The Violence Risk Appraisal Guide (VRAG; Quinsey, Harris, Rice, & Cormier, 1998) is one example of a second generation instrument for violent behavior; a component of which is the PCL. The VRAG has proven more effective in the prediction of violence than clinical judgment (Harris, Rice, & Cormier, 2002). However, second generation instruments may have limited clinical capacity due to their reliance on factors which are by definition

unchanging and therefore less amenable to treatment. Third generation instruments address the limitations of static variables by accounting for dynamic variables. Dynamic variables are factors associated with crime whose influence is relative, such as criminal attitude or weapon availability. Findings that have compared the predictability of dynamic variables to static variables are mixed (Barbaree, Seto, Langton, & Peacock, 2001; Gendreau, Little, & Goggin, 1996; Hanson & Harris, 2001).

The most recent generation of risk assessment considers the issue with an impressive dimensional complexity. Examples of this new approach include how variables fluctuate over time *within* an individual, known as a “risk state” (Skeem & Mulvey, 2002); proxy variables of violence, such as alcohol (Kraemer et al., 1997); the interaction of risk factors (Kraemer et al., 1997); and the directional effects of different variables (Douglas & Skeem, 2005). Risk assessment is currently considered to be significantly better than chance (Hart, 1998) and is recognized as one piece of the greater goal of violence risk management (Heilbrun, 1997).

1.2.3 Violence risk factors

This section will focus on risk factors for violence. Risk factors for violent behavior are generally understood as either static or dynamic. This distinction was briefly described above. Static variables include those which are demographic and historical. Dynamic variables take into account context, temperament, and extra-personal factors. These factors will be discussed in turn according to this dichotomy.

Sex is often a risk factor for violence. Among the general population, men are arrested more frequently for violent offenses than are women (Federal Bureau of Investigation, 2005). Further evidence suggests that men may engage in more *severe*

violence than women (Hiday, Swartz, Swanson, Borum, & Wagner, 1998). However, these findings have not been replicated among psychiatric populations where men and women did not differ in their frequency of violent behavior or the characteristics of their violent attacks (Tardiff et al., 1997). Consistent among both general and psychiatric populations is the finding that individuals in their late teens and early twenties are at the greatest risk for violence (Bonta, Law, & Hanson, 1998). Although race has been identified as a predictor for violence, this has ceased to be the case when controlling for socioeconomic status (Swanson, 1994).

A history of violent or criminal behavior including contact with the juvenile justice system and previous criminal experience is a strong predictor of future occurrences of violence (Bonta et al., 1998). The earlier the onset of criminal behavior (i.e., age) the more likely one is to maintain a criminal career (Borum, 1996). Another indicator of violent recidivism is a history of experienced or witnessed abuse (Klassen & O'Connor, 1994). Intelligence and neurological impairment have also been implicated in violence risk assessment (Borum, 1996; Krakowski, 1997). Numerous dynamic risk factors have been identified in the ongoing pursuit of violence risk assessment. Alcohol and substance abuse (Monahan et al., 2001; Swanson, Holzer, Ganju, & Jono, 1990) as well as anger (Monahan et al., 2001) are known to be strong predictors of violent behavior among psychiatric patients in the community. Similar findings have been found with institutional violence among psychiatric patients (Kay, Wolkenfeld, & Murrill, 1988).

1.2.4 Psychopathy in violence risk assessment

Although psychopathy is one of many risk factors playing a role in violence risk assessment, it has been repeatedly demonstrated as a strong predictor of violent recidivism (Grann, Langstrom, Tengstrom, & Kullgren, 1999; Kosson, Smith, & Newman, 1990; Lyon, Hart, & Webster, 2001). Further support has been provided by meta-analyses. Salekin, Rogers, and Sewell (1996) found that psychopathy was “unparalleled” in its ability to predict violent behavior among participants who were predominately White, Canadian, male offenders. This was also found to be the case among those suffering from serious mental disorder.

There have been numerous criticisms of the Salekin et al. (1996) study, including: (1) Only 29 effect sizes inspired the authors’ contention that the PCL-R is “unparalleled” in its predictive ability; (2) Of those 29, only 55% were actually predictive; and (3) The majority of validities were derived from file review data only; and (4) The study lacked comparisons between the PCL-R and other risk assessment instruments (Gendreau, Goggin, & Smith, 2002). Recent meta-analyses have conducted measure comparisons between the PCL measures and other risk assessment instruments. Hemphill et al. (1998) found that psychopaths were four times more likely to violently re-offend than other offenders. Gendreau, Goggin, and Smith (1999) performed a meta-analysis that included the Hemphill, Hare, and Wong (1998) results and found that the Level of Services Inventory–Revised (LSI-R; Andrews & Bonta, 1995) outperformed the PCL-R in both general and violence risk assessment.

Gendreau, Goggin, and Smith (2002) evaluated the effect sizes of 57 prospective studies with validities for the PCL-R or the LSI-R for general and violent recidivism.

Most of the considered studies were published (56%), came from Canadian samples (86%), and were generated from adult (77%), male (75%) samples. The weighted effect size for the LSI-R ($z^+ = .32$) was substantially greater than the PCL-R ($z^+ = .14$), with the LSI-R producing greater correlations with general recidivism 82% of the time. Although not as robustly, the LSI-R also outperformed the PCL-R for violent recidivism 72% of the time (Erratum; Gendreau, Goggin, & Smith, 2003). With regard to factor comparison on the PCL-R, Factor 2 (general $\phi = .24$, violent $\phi = .19$) had a greater effect size than that of Factor 1 (general $\phi = .10$, violent $\phi = .13$) for both forms of recidivism. However, opponents to this study have argued that both measures are equally valid and further suggest that the LSI-R is more appropriate as a specialized risk tool, while the PCL and its derivatives may be more suitable for identifying key risk *factors* (Hemphill & Hare, 2004). By this reckoning, the PCL is most appropriate if used in conjunction with instruments designed for the purpose of assessing risk, rather than in place of them.

Walters (2003a) compared the PCL-R with the Lifestyle Criminality Screening Form (LCSF; Walters, White, & Denney, 1991) while looking at recidivism as well as institutional adjustment. They looked at 41 studies that had used the PCL, PCL-R, PCL: SV, and PCL: YV. Although the PCL-R was found to be better predictor of institutional adjustment and the LCSF was more accurate at predicting recidivism, these differences were not significant. However, results may have been underestimated—or overestimated—due to Walters's tolerant inclusion criteria for analyses, such as divergent outcomes (e.g., general recidivism, sexual recidivism, violent recidivism), variant follow-ups (e.g., 4 months, 10.1 years), heterogeneous samples (e.g., high school students, schizophrenic

offenders, maximum security federal prisoners), and the specific PCL measure used (i.e., PCL, PCL-R, PCL: SV, PCL: YV) which were considered collectively.

Walters (2003b) conducted another meta-analysis, this time comparing the factors of the PCL measures and their predictive ability for recidivism and institutional adjustment. Forty-two studies employing the PCL, PCL-R, PCL: SV, or PCL: YV were examined for analyses. This time inclusion restrictions were placed on follow-up periods (i.e., average at least 1 year) and deemed “more methodologically sound.” He found that the Antisocial Behavior factor is significantly more predictive of general recidivism ($r^w = .32$), violent recidivism ($r^w = .26$), and institutional adjustment ($r^w = .27$) than the Emotional Detachment factor ($r^w = .15; .18; .18$). These findings remained after isolating the more methodologically sound studies ($N = 12$). However, similar to Walter’s previous meta-analysis, there existed variation among participants and PCL predictors. Thus, the findings from both of these meta-analyses should be considered with caution.

Although the relationship between psychopathy and violence risk assessment has been predominately established among male offenders, similar results have been found among women in the general population (Forth et al., 1996), female offenders (Vitale & Newman, 2001), and female substance abusers (Rutherford, Cacciola, Alterman, & McKay, 1996). Psychopathy is a prominent risk factor among both forensic and psychiatric populations (Hill, Rogers, & Bickford, 1996; Rice & Harris, 1992), despite a lower base rate of violence found in these populations. Research with the PCL-R suggests that psychopathic traits are a modest predictor of violence among mentally disordered offenders (Heilbrun et al., 1998; Webster, Harris, Rice, Cormier, & Quinsey, 1994). The PCL: SV has been shown to predict both institutional violence (Hill et al., 1996) and

community aggression (Douglas, Ogloff, Nicholls, & Grant, 1999; Edens, Skeem, & Douglas, 2006) among psychiatric populations. More recently, Edens (2007) performed a meta-analysis investigating the PCL's utility among adolescent offenders. He limited his analyses to postdictive studies that had used either the PCL: YV or a "youth modified" PCL. Psychopathy had a significant relationship with general and violent recidivism, although not with sexual recidivism, and a moderate effect size. However, moderate to severe heterogeneity was observed among effects, suggesting that psychopathy explains but only a portion of the possible variance.

Although there is some disparity about the contention that psychopathy's efficacy is "unparalleled" in risk assessment, researchers can at least agree that psychopathy is strongly associated with numerous socially undesirable outcomes, including general, violent, and perhaps sexual recidivism whose influence cuts across various populations, ethnicities, and age groups. The findings reviewed above suggest that psychopathy is a strong predictor for general and violent recidivism but that it should not be the only factor considered to achieve an accurate, reliable, and representative risk assessment for antisocial behavior.

1.2.5 The MacArthur Violence Risk Assessment Study

The MacArthur Violence Risk Assessment Study was the largest of three major empirical efforts of the MacArthur Research Network on Mental Health and the Law. The Network investigated the possible facets contributing to violent behavior among mentally disordered patients in the community. Investigators assessed multiple risk factors (historical, clinical, and contextual) through several means (collateral, official, and patient interview) and with longitudinal deliberation (every 10 weeks over a period

of 1 year). A more detailed description of the methods employed in the MacArthur study is described in the methods section of this manuscript.

The Psychopathy Checklist: Screening Version (PCL: SV) was specifically developed for the MacArthur Study to screen for psychopathic characteristics among non-forensic populations. Only 8% of the MacArthur sample displayed “probable” psychopathy (i.e., a score of at least 18). When investigators lowered the threshold to that deemed “potentially psychopathic” (with a score of at least 12), a total of 22% of subjects met this criterion. Even after substantially lowering the PCL: SV cutoff the MacArthur study found that psychopathy was the strongest predictor of violence among 133 other identified risk factors (Monahan et al., 2001). Investigators found that even scores as low as 8 on the PCL: SV were predictive of future violence. Interestingly, the “antisocial behavior” factor held the greatest predictive power, with the “emotional detachment” factor contributing far less. This remained true even after controlling for nonspecific behavioral predictors of violence within the psychopathy criteria which might have skewed the predictive utility of PCL: SV scores, such as prior arrest history (Skeem & Mulvey, 2001).

Skeem et al. (2003) attempted to test the MacArthur data against Cooke and Michie’s three-factor model of psychopathy. Although results suggest that the three-factor model was a better fit for the data, it had less predictive utility and did not satisfactorily clarify why the behavioral aspects of psychopathy account for the greatest predictability. Michael Vitacco and colleagues (2005) recently examined the MacArthur data comparing the aforementioned models with the second edition of Hare’s PCL-R. They found that while the three-factor model again showed better fit with the data, the

four-factor model was better in regard to *predicting* violence and other acts of aggression. Thus, it appears that the antisocial characteristics of psychopathy play an especially important role concerning violence risk assessment.

1.3 Instrumental Violence

1.3.1 Defining aggression and violence

Various investigators have employed diverse meanings for *aggression* and *violence*. Often the terms are used indiscriminately. For the purposes of this study, aggression/violent acts will be considered according to the operational definitions used by the MacArthur Network on Mental Health and the Law. The MacArthur research team distinguished between *serious acts of violence*, which included sexual assault, battery resulting in injury, and assaults or threats made with the use of a weapon and *other aggressive acts*, which were defined as behavior not resulting in injury or threats without a weapon in hand. This thesis will focus on the more severe form of aggression—serious acts of violence.

1.3.2 Instrumental and reactive aggression

Dollard and colleagues (1939) conceptualized aggression as any sequence of behavior whose aim is injury to another. Intrinsic to this definition of aggression is the infliction of harm. Dollard et al. (1939) asserted that all forms of aggression were a direct consequence of an inability to obtain expected gratification (i.e., frustration). They termed this theory the frustration-aggression model. As such, the degree of aggression inflicted is proportionate to the amount of anticipated and ultimately failed satisfaction sought. The founders of this model suggested that several other factors contribute to the severity of aggression. Among these are the degree with which one wants something,

what is obtained, and how often such desires are blocked. Dollard et al. asserted that most victims of aggression would be those who created frustration in their attackers. Therefore, most victims would be those close to the attacker because of their more personal and emotional affiliation with the aggressor.

Dollard's model did not recognize different types of aggression (i.e., instrumental aggression) but rather considered aggression as a unitary construct. Essentially, the frustration-aggression model acts as the foundation for what would later be deemed reactive aggression. Arnold Buss (1961), who defined aggression as "a response that delivers noxious stimuli to another organism" (p. 1), was the first to propose that aggression is reinforced by factors other than anger or frustration. In so doing, he considered intent an unnecessary component in the study of aggression. He contended that reactive aggression is reinforced by the victim's suffering and instrumental aggression by the extrinsic rewards of the action. He considered the Dollard et al. (1939) approach to be angry aggression, in which the primary drive is anxiety and the response is intended to inflict pain or suffering onto another. More specifically, he considered instrumental aggression to be one means of removing a barrier that blocks a person's path to a reinforcer, such as money. Buss was careful to observe that aggression type is not strictly categorical. There are situations in which both occur, one leads to the other, or the chronology is not easily discerned. This distinction of angry and instrumental aggression will undergo several revisions before reaching its current iteration.

The theoretical development of these types of aggression can be attributed to Leonard Berkowitz (1989), who would refine the Dollard et al. (1939) model, and Albert Bandura (1973, 1983) who would explain aggression in terms of social learning theory.

Berkowitz (1989) suggested that it is not only frustration which results in aggression but also the perceived intentions of the provoker. Based on this contention, he proposed a model of aggression whereby acts of violence could be clearly distinguished by way of emotional arousal (Berkowitz, 1993). As such, there is emotionally aroused aggression (reactive) and non-emotionally aroused aggression (instrumental). According to Berkowitz, *reactive aggression* is aggression whose primary purpose is to cause harm and serves some personal desire. This form of violence is acted out in response to perceived provocation and involves high emotional arousal such as anger. This type of aggression has been called different things, including emotional, affective, and angry aggression. For present purposes, it will be termed reactive aggression.

Instrumental aggression, also termed proactive aggression (Dodge, 1991) is aggression whose main objective is extrinsic rather than for personal pleasure. It is committed for the purposes of obtaining a goal, without emotional arousal. Typical expressions of such violence would include attempts at coercion and the preservation of power, dominance, or social status. Albert Bandura (1983) proposed that this is the most common form of violence and that it is a consequence of social learning rather than frustration. He posited that “aversive stimulation produces a general state of emotional arousal that can facilitate any number of responses” (Bandura, 1983, p. 12) and that the consequential behavior is a matter of reinforcing variables such as cognitive appraisal of the stimulus, coping style, adopted styles of behavior, and appreciation of both the rewards and consequences of an action. Bandura argued that frustration provokes aggression only as much as the perpetrator has learned violence as an appropriate response to such feelings.

Berkowitz and Bandura seem to agree that both forms of aggression can be calculated and that the two are not independent. Most violence will involve degrees of both types of aggression, and is rarely expressed without the influences of emotionality *and* recognition for utility. However, this does not depreciate the value of a dichotomous conceptualization of aggression types. As Dodge (1991) noted: This problem does not negate the validity of the qualitative distinction, however, any more than dusk would negate the difference between day and night (p. 206).

1.3.3 Psychopathy and instrumental aggression

Research has also examined the characteristics of perpetrators of such aggression. As such, investigators are working to identify types of offenders who are likely to commit certain sorts of aggression. Offenders diagnosed with psychopathy are one such type of perpetrator. Psychopathic individuals have been consistently shown to display more instrumental aggression relative to reactive aggression when compared with non-psychopathic offenders.

Dewey Cornell and colleagues (1996) examined the role of instrumental and reactive aggression among inmates in a medium-security state institution and criminal defendants undergoing a pretrial forensic evaluation in two studies. The first study was designed to demonstrate differences in psychopathy among instrumental, reactive, and non-violent offenders using inmate records. Psychopathy was assessed via the PCL-R (Hare, 1991). The second study was carried out on criminal defendants who had been charged with violent crimes and included videotaped clinical interviews with the participant. Psychopathy in this sample was measured using the PCL: SV. Both studies found that instrumental and reactive violent offenders could be distinguished from each

others by PCL scores, with instrumental offenders presenting more psychopathic characteristics. Of particular interest was the finding that these two types of aggression could not be distinguished by offense history. Inmates displaying instrumental aggression were described as more dishonest, manipulative, impulsive, and irresponsible. The non-prison instrumental offenders were similarly manipulative, impulsive, and irresponsible as well as more superficial and lacking in feelings for others.

Woodworth and Porter (2002) examined instrumental and reactive motives among incarcerated homicide offenders from two Canadian federal institutions. Their method of coding violence was based upon the Aggression Coding Guide created by Cornell et al. (1996). However, rather than making the distinction dichotomous, Woodworth and Porter chose to classify homicides on a continuum (rating of 1 to 4) in order to more specifically investigate the relationship between psychopathy and the instrumentality of homicides. The crime information was coded directly from institutional files, which contained official Criminal Profile Reports (CPR) and Psychological Assessment Reports (PAR). The CPR is written by a case management officer and gives objective information concerning the details of the crime. The PAR is written by a psychologist and contains a psychological assessment of the offender as well as a description of his/her crimes. Both of these documents provided sufficient information for both the homicide coding and assessment of psychopathy. The investigators reported a significant correlation between continuous psychopathy scores and instrumental ratings. Higher scores on the PCL-R were associated with higher levels of instrumental violence. Interestingly, Factor 1 (the Emotional Detachment factor) was significant in predicting instrumental violence whereas Factor 2 scores alone were not.

Stafford and Cornell (2003) investigated the predictive ability of psychopathy for types of aggression among adolescent psychiatric inpatients. Primary case managers who worked closely with patients were provided with descriptions of both types of violence and asked to rate a youth's use of instrumental and reactive aggression. To determine the presence of psychopathy, the investigators modified the PCL-R and removed items which were deemed inappropriate for adolescence. The investigators considered the instrumentality of aggression on a continuum and found that youths with more psychopathic traits engaged in more reactive and instrumental violence.

Frick, Cornell, Barry, Bodin, and Dane (2003) researched the role of calloused-unemotional (CU) traits and types of aggression among children in two public school systems of a moderate sized city in the southern United States. To assess types of aggression, they used the Aggressive Behavior Rating Scale (Brown, Atkins, Osborne, & Milnamow, 1996), which has a 10-item instrumental aggression factor and a 6-item reactive aggression factor. To measure the presence of CU traits they used the Antisocial Process Screening Device (APSD; Frick & Hare, 2001), which was formerly known as the Psychopathy Screening Device (Frick, Bodin, & Barry, 2000). Investigators found an association between CU traits and severity of both instrumental and reactive aggression. However, the association with reactive aggression could be largely accounted for by differences in the initial level of conduct problems. In contrast, the relationship between CU traits and instrumental aggression could not be entirely accounted for by differences in the initial level of conduct problem behavior.

Kruh, Frick, and Clements (2005) pursued a self-report approach to examine violence patterns among male inmates who were juveniles at the time of their conviction

(M = 18 yrs). For this study they developed the Situational Violence Patterns (SVP), a self-report questionnaire which assesses the situational details of individual acts of violence, including context, victim characteristics, precipitating events, and details of the violent act. To assess psychopathy they employed a self-report version of the APSD. This measure is similar to the PCL but is designed for youths and utilizes a rating-scale. Higher APSD scores were associated with unprovoked (instrumental) violence, more instances using a weapon, and a trend for more severe acts of violence. Psychopathic traits were also associated with greater cross-situational *diversity* in violence. That is, their history of violence was nonspecific to location, victim, or precipitating events.

Vitacco and colleagues (2006) investigated different factorial models of the PCL: YV to predict instrumental violence among 122 incarcerated male adolescents in a state facility for violent and chronic offenders. For this study the authors devised the ARF, a violence coding scheme that assesses five distinct domains of aggression: (1) preparation, (2) goal-directed, (3) provocation, (4) lack of anger, and (5) victim type (i.e., stranger). Each domain was scored on a scale of one (none) to five (always) with a total possible score of 25 (“purely instrumental”). They found that a 4-factor latent variable model of adolescent psychopathy accounted for the most variance with regard to instrumental violence (i.e., 20%).

Raine and colleagues (2006) constructed the Reactive-Proactive Aggression Questionnaire, a battery containing 23 rated questions. Their study tested this questionnaire on 335 adolescents comprising the youngest of three samples taken from a larger project known as the Pittsburgh Youth Study. Psychopathy was assessed via the Childhood Psychopathy Scale (CPS; Lynam, 1997), which is completed by the mother of

the adolescent. Investigators found that instrumental aggression, but not reactive aggression, was predictive of psychopathy. Interestingly, not all instrumental offenders were psychopathic.

1.4 Hypotheses for the Present Study

This study had four hypotheses. First, it was expected that the PCL: SV would be a strong predictor of instrumental violence when considered continuously. This was expected to be the case even after controlling for covariates that had a significant relationship with instrumental violence. When considered dichotomously, psychopathy as measured by the PCL: SV was expected to reveal a significant relationship between psychopathic features and instrumental violence status. The second hypothesis tested these same considerations on Cooke and Michie's three-factor model to evaluate which model was the best predictor. It was expected that the three-factor model would be superior to the PCL: SV model in predictive utility. Hypothesis three specifically examined the factors of each model to determine which factor accounted for the most variance when predicting if a participant would be instrumentally violent. Factor I (Emotional Detachment) of the PCL: SV was hypothesized to be the strongest contributor. The fourth and final hypothesis asked whether strangers or non-strangers were the most likely targets of instrumental violence. Strangers were expected to be the most common type of victim among instrumentally violent participants when compared to other victim types (e.g., family members, friends).

CHAPTER 2. METHODS

2.1 Participants

The data to be analyzed in this study were collected as part of the MacArthur Violence Risk Assessment Study (available at <http://macarthur.virginia.edu>). The methodology and results of the larger study (e.g., Monahan et al., 2001; Silver, Mulvey, & Monahan, 1999; Steadman et al., 1998) as well as those regarding psychopathy (Skeem & Mulvey, 2001) have been reported elsewhere. Participants were sampled from psychiatric inpatient facilities in 3 different cities: Pittsburgh, Pennsylvania; Kansas City, Missouri; and Worcester, Massachusetts. Study inclusion criteria were as follows: (a) civil admission; (b) ages between 18 and 40 years; (c) English-speaking; (d) White or African American ethnicity (or Hispanic in Worcester only); and (e) a diagnosis of schizophrenia, schizophreniform disorder, schizoaffective disorder, depression, dysthymia, mania, brief reactive psychosis, delusional disorder, alcohol or other drug abuse or dependence, or personality disorder, based on a review of medical records.

Eligible patients were sampled according to age, gender, and ethnicity to maintain a consistent distribution of these characteristics across sites. Of the 12,873 patients admitted into the three inpatient facilities during the data collection period, 7,740 met criteria for inclusion in the study. Research interviewers invited a sample of 1,695 patients to participate, for which the refusal rate was 29%, leaving a final sample size of 1,136 patients who were interviewed on site. It should be noted that detailed analyses of this subset of participants have indicated that patients who refused to participate in this study as well as those who failed to complete follow-up interviews were probably more likely to engage in future violence than those who completed the study (Steadman et al.,

1998). The analyses to be reported in this manuscript were based on a sample of 871 patients who were administered the PCL: SV. These patients were young ($M = 30$ years, $SD = 6$), predominantly White (69%; African American, 29%; Hispanic, 2%), male (58%), and voluntarily admitted (68%). They had independently determined diagnoses of depression (41%), schizophrenia (18%), bipolar disorder (16%), other psychotic disorder (4%), alcohol abuse or dependence (45%), other drug abuse or dependence (36%), or personality disorder only (2%). Approximately 41% of patients had a co-occurring major mental disorder and substance abuse or dependence disorder.

2.2 Measures

2.2.1 Psychopathy

2.2.1.1 The Psychopathy Checklist: Screening Version. The Psychopathy Checklist: Screening Version (PCL: SV; Hart, Cox, & Hare, 1995) was derived from the PCL-R and specifically designed for the MacArthur Violence Risk Assessment Study to assess psychopathic characteristics in a non-forensic population. Like the PCL-R, the PCL: SV structure consists of two moderately correlated, yet distinct, factors which are designed to capture different aspects of the psychopathy construct. The measure assesses 12 items (as opposed to the PCL-R's 20), with 6 items comprising interpersonal and affective characteristics (Factor 1) and 6 items reflecting social deviance (Factor 2). The PCL: SV is illustrated in Table 1. Individuals are rated across a scale of 0 to 2 for each item, with a total score of 0-24 possible. The cutoff for a diagnosis of psychopathy is 18, although lower cutoffs have proven effective for predicting violence (Skeem & Mulvey, 2001). Relative to the PCL-R, the PCL: SV is quicker to administer, contains fewer items, and does not rely on criminal records for assessment. The PCL: SV has been shown to be an

adequate shortened version of the PCL-R (Cooke, Michie, Hart, & Hare, 1999) and has been validated as a good assessment of psychopathy among non-forensic populations (Forth, Brown, Hart, & Hare, 1996). Evidence suggests that this instrument is a strong predictor of community and inpatient violence among men (Hare, 2003; Skeem & Mulvey, 2001; Walters, 2003b) and a moderate predictor for women (Nicholls, Ogloff, & Douglas, 2004). Furthermore, it has been validated in risk assessment across cultures (Douglas, Strand, Belfrage, Fransson, & Levander, 2005). More on the PCL: SV's psychometric characteristics in this sample are described in Skeem and Mulvey (2001).

Table 1. The PCL: SV Two-Factor Model of Psychopathy.

Emotional Detachment (Factor I)	Social Deviance (Factor II)
Superficial Grandiose Deceitful Lacks remorse Lacks empathy Doesn't accept responsibility	Impulsive Poor behavior controls Lacks goals Irresponsible Adolescent antisocial behavior Adult antisocial behavior

2.2.1.2 The Three-Factor Model. The three-factor model (Cooke & Michie, 2001) is a hierarchal approach to the assessment of psychopathy. It was designed in an effort to emphasize the “core” personality traits of the psychopathy syndrome. Developed across seven studies with North American and Scottish forensic correctional sub-samples, this model is comprised of three-factors: Arrogant and Deceitful Interpersonal Style, Deficient Emotional Experience, and Impulsive and Irresponsible Behavioral Style (Table 2). The former two constitute Factor I of the PCL-R (divided in half). The latter factor is essentially Factor II of the PCL-R minus nearly half of its items, which were

believed to be too criminalistic in nature. The three-factor model has been demonstrated to fit the data better than the PCL-R or PCL: SV (Cooke & Michie, 2001; Skeem et al., 2003); however, some researchers have criticized the statistics used to compose this model (Neumann, Vitacco, Hare, & Wupperman, 2005).

Table 2. Cooke and Michie's (2001) Three-Factor Model of the PCL: SV.

Arrogant Deceitful Style (Factor I)	Deficient Affective Experience (Factor II)	Irresponsible Impulsive Lifestyle (Factor III)
Superficial Grandiose Deceitful	Lacks remorse Doesn't accept responsibility Lacks empathy	Impulsive Lacks goals Irresponsible

2.2.2 Violence and instrumental violence

The MacArthur research team described violent behavior in two levels: *serious acts of violence*, which included sexual assault, battery resulting in injury, and assaults or threats made with the use of a weapon; and *other aggressive acts*, which involved battery not resulting in injury. Verbal threats were excluded as a criterion for *other aggressive acts*. The present study focuses on serious acts of violence. There were two reasons for this: 1) psychopathy has been shown to be a poor predictor of less severe forms of aggression among institutionalized mentally disordered offenders (Gray et al., 2003) as well as with the MacArthur sample (Skeem & Mulvey, 2001); and 2) psychopathy is associated with more severe displays of violence (Forth, Hart, & Hare, 1990; Forth & Mailloux, 2000) and greater harm to their victims (see Hart & Hare, 1997 for a review).

Considerations for the construct of instrumental violence were adopted from the Aggression Coding Guide created by Dewey Cornell and colleagues (1996). The two

cardinal characteristics of instrumental aggression were goal-directedness and planning. However, the authors noted that not all instances of instrumental aggression were planned. Furthermore, their results indicated that the most significant distinctions between reactive and instrumental aggression were provocation, anger, goal-directed behavior, and the target of the assault. Although provocation and arousal were deemed “secondary characteristics” in the Coding Guide, they are considered conceptual hallmarks of instrumental aggression and thus satisfy a more global and theoretical representation of this form of aggression than the mere presence of goal-directedness.

Criteria for the construct of instrumental violence underwent several revisions. The most conservative criteria consisted of violent acts which were committed (1) without provocation, (2) in the absence of anger, and (3) with a goal in mind. Under these conditions, a mere 3 participants had committed an act of instrumental violence. Goal-directedness was deleted from the construct to increase the base rate and because the MacArthur study defined goal-oriented behavior as whether or not an incident occurred because the target had something the subject wanted. However, this does not cover all potential acts of goal-oriented behavior, such as coercion and impression management. Unfortunately, no additional information assessing goal directed violence was obtained in this study.

After omitting the “goal-oriented” criterion the base rate increased to 21 participants. The decision to omit the “anger” criterion and define instrumental violence on the basis of provocation alone was made in order to achieve a satisfactory base rate (i.e., 59 cases) and because provocation was the only criterion which had been reconciled by the MacArthur team. That is, the presence of provocation for each violent incident

reported by any information source (i.e., patients, collateral informants, or official records) was independently reviewed to obtain a single reconciled report of the act. This process was not performed by the original investigators to ascertain the goal-directedness and the presence of anger for violent acts. Therefore, these indices were considered less reliable than reconciled provocation. In summary, to be classified as an instrumentally violent participant an individual had to have committed an act of violence in the absence of provocation.

The occurrence of instrumental violence was measured at the 1-year follow-up period, which reflects whether a patient committed any acts of violence in the community during the entire year after discharge (i.e., throughout any of the 5 follow-ups). This variable was based on all patients who completed at least one of the follow-up interviews. Using this approach, as contrasted with using only data from participants completing all 5 follow-up interviews, does not appreciably affect the outcome but yields a larger cohort (Steadman et al., 1998). The 1-year follow-up period was used because psychopathy is considered a static construct (Harpur & Hare, 1994), so risk associated with this syndrome should not fluctuate across follow-up intervals.¹

¹Most of the literature from the MacArthur group pertaining to the PCL: SV indicates that it was administered at baseline (e.g., Appelbaum, Robbins, & Monahan, 2000; Monahan & Appelbaum, 2000; Monahan & Steadman, 1994); however, Skeem and Mulvey (2001) state that the PCL: SV was administered at either the first or second follow-up interview. The chief concern with this discrepancy of reporting lies in the possibility that PCL: SV ratings were influenced by the occurrence of violence during the first 20 weeks of data collection. Fortunately, Skeem and Mulvey (2001) compared correlations of PCL: SV scores and occurrences of violence between follow-ups 1 & 2 and follow-ups 3-5. Findings suggested that measuring psychopathy concomitantly with violence did not substantially affect the PCL: SV's predictive power. Thus, whether the PCL: SV was administered at baseline or during the first two follow-ups should not be a matter of concern. Caution was nonetheless taken to ensure that this inconsistency did not influence the analyses of this study.

2.3 Procedure

Data collection for the MacArthur study occurred in two phases: during hospitalization and the year following the date of discharge. Patients were interviewed in the hospital on two occasions: (a) by a research interviewer to obtain data on demographic and historical factors and then (b) by a research clinician (with a PhD or an MA/MSW) to confirm the medical record diagnosis using the DSM–III–R checklist (Janca & Helzer, 1990) and to administer several clinical scales. The median length of hospitalization for study participants was 9 days. Those patients remaining in the hospital for more than 145 days were dropped from the study ($n = 3$).

Following discharge, information pertaining to violence (and an array of other factors) was collected via three means: patient interview, collateral informant, and official records. Research interviewers attempted to re-contact enrolled patients in the community and interview them five times (every 10 weeks) over the next year from the date of discharge. A collateral informant for each patient was also interviewed on the same schedule. This informant was nominated by the patient during each follow-up interview as the person who was most familiar with his or her current activities. Collateral informants were most often family members (47%) but were also friends (24%), professionals (14%), significant others (12%), or others (3%). Patients and collateral informants were paid for their participation. Hospital records were reviewed to assist in the completion of scales including the PCL: SV, and arrest records were reviewed to provide information about offense histories and arrests that occurred during the follow-up period.

In the event that multiple aggressive acts occurred in one incident, only the most serious act was coded. Incidents of child discipline without injury were excluded. Aggressive acts reported by any information source (i.e., patients, collateral informants, or official records) at any follow-up were independently reviewed by two trained coders to obtain a single reconciled report of the act. Any coding disagreements were resolved through discussion in team meetings. A more thorough description of the procedures used in the MacArthur study of mental disorders and violence can be found elsewhere (Monahan & Steadman, 1994; Monahan et al., 2001; Skeem & Mulvey, 2001).

2.4 Analyses

2.4.1 Chi-square statistic

A chi-square test for independence was used to examine the classification of instrumentally violent participants when psychopathy was considered as a taxon (Hypothesis I) and to determine if the perpetration of instrumental aggression is related to whether the victim of the assault is a stranger (Hypothesis IV). A chi-square statistic reflects the discrepancy between expected and observed frequencies over several categories. This statistic allows for the comparison of two variables on a nominal scale of measurement. Specifically, it tests whether the distribution of cases over the levels of one variable (e.g., instrumental violence) has the same proportional pattern within each of the levels in another variable (e.g., target).

2.4.2 Logistic regression

Logistic regression was used to examine the first three hypotheses of this study:
1) Higher PCL: SV scores will indicate a greater likelihood to commit instrumental violence; 2) The three-factor model will be superior to the two-factor PCL: SV in

prediction; and 3) Factor I of the PCL: SV will yield the greatest predictive ability compared to all factors across both models. Logistic regression was used to predict a dichotomous dependent variable (i.e., membership as an instrumentally violent participant) as well as determine the proportion of variance in a dependent variable that is explained by the independent variable. When applied to the present hypotheses (1-3), logistic regression estimates *how much* instrumental violence is accounted for by the presence of psychopathy.²

2.4.3 Receiver operating characteristic analysis

A receiver operating characteristics (ROC) analysis was used to investigate the first three hypotheses (reviewed above). An ROC analysis is a statistical technique that identifies the best threshold on a particular scale (i.e., PCL: SV/three-factor model) for classification into groups (i.e., instrumentally violent/not). The ability to correctly identify individuals who *do* qualify is known as sensitivity. The ability to correctly detect those who do *not* meet this criterion is known as specificity. The relationship between sensitivity and specificity is inverted. ROC analysis finds all the possible combinations of sensitivity and specificity for a given measure. Each score of the test is plotted relative to its sensitivity and specificity, thus creating a curve. The point at which the curve bends is the point where the degrees of sensitivity and specificity relative to each other have maximized. As such, one can select a score on this curve to reflect the desired proportion

² Binary logistic regression is preferable to linear regression analysis because binary logistical regression predicts the likelihood of an outcome that is dichotomous rather than continuous. A dichotomous outcome measure was chosen over a continuous one because the risk assessment research question is primarily concerned with whether someone will commit a serious act of violence during a specified outcome period. Furthermore, linear regression assumes that the relationship between the independent variable and dependent variable is linear; thus, it is not truly an analysis of probability, for which the relationship between the independent and dependent variables is S-shaped.

of sensitivity versus specificity. This score then serves as the “cutoff” for which all qualified scores must satisfy.

In addition to plotting all possible cutoff scores, an ROC analysis also displays this curve in relation to a diagonal line representing chance. The better a predictor, the farther will be the curve from the diagonal line, because this reflects the degree to which it predicts the outcome better than chance alone. This area between the curve and diagonal line is known as the Area Under the Curve (AUC); which serves as the probability of correctly distinguishing between instrumentally violent and non-instrumentally violent participants. In the context of this study, the AUC of an ROC analysis refers to the likelihood that a randomly selected, truly instrumentally violent patient will have received a higher score on the psychopathy measure (either the PCL: SV or the three-factor model) than a randomly selected, truly non-instrumentally violent patient. The standard within the literature for a moderate to large effect size is an AUC in the range of 0.75 to 0.80 (Mossman, 1994; Rice & Harris, 1995).

ROC analysis was chosen because it allows direct comparison across the scales of both models, which are similar in nature and measurement, in terms of classification accuracy. Thus, comparison is performed at each model’s most precise degree of evaluation. In addition, ROC analysis produces numerous cut-values for each scale, the selection of which is determined by the sensitivity and specificity most appropriate for the goals of a study. This study sought to maximize both sensitivity and sensitivity instead of just one over the other. The decision to use ROC was further emphasized by its use in previous studies of psychopathy and risk assessment with the MacArthur dataset (e.g., Skeem & Mulvey, 2001; Skeem et al., 2003).

CHAPTER 3. RESULTS

3.1 Descriptive Statistics

Of the more than 1,100 participants from the original study, only those who completed the PCL: SV (N = 871) were included in the following analyses. The most frequent Axis I diagnoses for these participants were Major Depression (31.7%), Schizophrenia (15.8%) and Adjustment Disorder (11.5%). The most frequent Axis II diagnosis was Paranoid Personality Disorder (2.9%). The mean age for this sample was 30, with most participants being Caucasian (69.1%). There were 240 reported incidents of instrumental violence over the entire year. These acts were perpetrated by 59 individuals (6.7% of the sample). When dichotomizing PCL: SV scores to best identify instrumental violence status (i.e., instrumental vs. non-instrumental), 151 of these incidents (62%) were committed by potentially psychopathic participants.

The most frequent diagnoses for the 59 instrumentally violent participants were Major Depression (27.1%), Alcohol Intoxication (11.9%), and Alcohol Abuse (11.9%). The Axis II diagnosis assigned most frequently in this group was Borderline Personality Disorder (3.4%) although it should be noted that only 5 instrumentally violent participants received an Axis II diagnosis. Most instrumentally violent participants were male (71.2%) and Caucasian (59.3%), with a mean age of 28. By contrast, non-instrumentally violent participants (n = 810) most often received Axis I diagnoses of Major Depression (32.0%), Schizophrenia (16.3%), and Adjustment Disorder (11.6%). The most frequent Axis II diagnosis was Paranoid Personality Disorder (2.8%). Most non-instrumentally violent participants were male (56.7%) and Caucasian (69.8%), with a mean age of 30. However, t-tests (for age) and chi-square statistics (for diagnoses and

race) did not reveal significant demographic differences between instrumentally and non-instrumentally violent participants. The frequency of instrumental acts decreased over time, with the first 10-week follow-up documenting 28 acts of instrumental violence and the final (50-week) follow-up reporting only seven.

3.2 Covariates

To control for extraneous variables potentially related to instrumental violence, covariates were considered for inclusion in all logistic regressions performed. This was done for two main reasons. First, covariates were included to control for the effect of confounding items within the PCL: SV that are historically recognized predictors of violence (e.g., previous antisocial behavior). Thus, the inclusion of these covariates enables more sensitive detection of the relationship between “core” psychopathy and instrumental violence status. Second, the inclusion of variables that predict instrumental violence accounts for variance that would otherwise be treated as error variance.

Twenty covariates were screened for inclusion in the final model. Fifteen of the twenty covariates were previously identified by Skeem and Mulvey (2001) as the strongest correlates of the PCL: SV and violence with no specific motive among the MacArthur sample. These were: (1) frequency of prior arrests; (2) type of prior arrests; (3) arrests for crimes against persons; (4) arrests for crimes against property; (5) previous reports of violence (in the 2 months prior to hospital admission); (6) any alcohol-related diagnosis; (7) any drug-related diagnosis; (8) Antisocial Personality Disorder; (9) any Cluster B disorders (i.e., Borderline, Histrionic, Antisocial, Narcissistic); (10) score on the Behavioral subscale of the Novaco Anger Scale (NAS; Novaco, 1994); (11) years of education; (12) Vocabulary score on the Wechsler Adult Intelligence Scale-Revised

(WAIS-R; Wechsler, 1981); (13) score on the Agreeableness scale of the NEO Personality Inventory-Revised (NEO-PI-R; Costa & McCrae, 1992); (14) score on the Nonplanning subscale of the Barratt Impulsiveness Scale (BIS; Barratt, 1994); and (15) any drug use throughout the study. Because the correlates of instrumental aggression are similar to those of general violence, these covariates were considered. An additional five covariates, which previous research has demonstrated as correlates of instrumental violence, were also screened. These included age, gender, race, history of sexual abuse, and number of peers/social network.

Individual bivariate analyses were performed to determine the relationship between each covariate and instrumental violence status. A two-stage process was applied for deciding which covariates to include in the model: 1) isolate those covariates with significant p-values ($p < .05$) and at least a small effect size³ (i.e., $< .10$), and 2) eliminate those covariates with the most missing data. The results for the covariate analysis are presented in Table 3. Four predictors (psychopathy and three covariates) qualified for inclusion in the final model for each subsequent regression analysis. The three covariates that were selected for inclusion in the final regression model were WAIS-R Vocabulary scores, average score on the Behavioral domain of the NAS, and any drug use during the study.

Estimated verbal IQ was significantly lower among instrumentally violent participants ($M = 28.4$, $SD = 14.0$) when compared to non-instrumentally violent participants ($M = 35.1$, $SD = 16.7$), $t(68) = 3.49$, $p < .05$. The NAS--specifically the Behavioral domain of this measure--captures an individual's antagonistic tendencies as

³ Effect size was computed using $r = \sqrt{t^2 / t^2 + df}$ (Rosnow & Rosenthal, 2005).

assessed by impulsive reactivity, verbal aggression, physical confrontation, and indirect expression. Despite the deliberate nature of instrumental violence, instrumentally violent participants had *higher* NAS-B scores ($M = 33.8$) than did non-instrumentally violent participants ($M = 28.5$), $t(862) = -6.27, p < .001$. Seventy six percent of instrumentally violent participants reported drug use during the study compared to 47.9% of non-instrumentally violent participants, a significant difference ($\chi^2(1) = 17.70, p < .001$).

Table 3. Results for Separate Bivariate Analyses for Covariates and Violence Status.

Covariate	Significant	Value	Effect Size	Missing N	Retained
1. Property crimes	No; $p = .083$	$\chi = 3.010$	Very small; .059	0	-----
2. People crimes	No; $p = .710$	$\chi = .138$	Very small; .013	0	-----
3. Verbal IQ*	*Yes; $p = .001$	* $t = 3.448$	*Medium; .386	26	Yes
4. Type of priors	Yes; $p = .000$	$\chi = 30.054$	Small; .199	110	-----
5. Freq. of priors	Yes; $p = .000$	$t = -5.345$	Small; .189	94	-----
6. Yrs of education	Yes; $p = .010$	$t = 2.568$	Very small; .087	2	-----
7. Age	No; $p = .185$	$t = 1.327$	Very small; .045	0	-----
8. Gender	Yes; $p = .029$	$\chi = 4.760$	Very small; .074	0	-----
9. Race	No; $p = .128$	$\chi = 4.108$	Very small; .069	0	-----
10. Social Network	No; $p = .102$	$t = -1.636$	Very small; .055	0	-----
11. Recent Violence	No; $p = .787$	$\chi = .073$	Very small; .065	854	-----
12. Sexual Abuse	No; $p = .382$	$\chi = .765$	Very small; -.030	26	-----
13. Average BIS	Yes; $p = .004$	$t = -2.864$	Very small; .097	6	-----
14. Average NOV	Yes; $p = .000$	$t = -6.267$	Small; .209	7	Yes
15. NEO Agreeable	No; $p = .185$	$t = 1.327$	Very small; .049	135	-----
16. Drug Use	Yes; $p = .000$	$\chi = 17.702$	Small; .143	0	Yes
17. Alcohol Diag.	Yes; $p = .028$	$\chi = 4.838$	Very small; .075	0	-----
18. Drug Diagnosis	Yes; $p = .008$	$\chi = 6.940$	Very small; .089	0	-----
19. APD	No; $p = .752$	$\chi = .100$	Very small; .011	71	-----
20. Cluster B	No; $p = .912$	$\chi = .012$	Very small; -.004	0	-----

* Indicates results in which equal variance was NOT assumed.

3.3 Hypothesis I: PCL: SV Predictive Ability

It was hypothesized that psychopathy, as assessed by the PCL: SV, would be as effective in screening for instrumental violence status as in predicting violence without a specific motive. This hypothesis was investigated in three ways: (1) considering

psychopathy dimensionally (i.e., continuous PCL: SV scores); (2) considering psychopathy categorically (i.e., dichotomizing PCL: SV scores); and (3) determining the best cut-off on the PCL: SV for the purpose of identifying instrumental violence status.

3.3.1 Continuous PCL: SV

A hierarchical logistic regression was performed to assess the predictive utility of dimensional psychopathy in correctly classifying participants as instrumentally violent. The analysis was executed via a 2-block, forced entry procedure in Statistical Package for the Social Sciences (SPSS). This method was selected because hierarchical regression allows the researcher to specify the order of the predictors. This approach is ideal since this study was interested in determining what psychopathy *adds* to prediction after holding other predictors constant. The three predetermined covariates (i.e., WAIS-R Verbal IQ scores, NAS-B scores, and drug use during the study) were entered in the first block. Then, PCL: SV total scores were entered in the second block to determine psychopathy's unique effect after controlling for covariates. A regression was also run with PCL: SV total scores given early entry, followed by the covariates, to evaluate psychopathy's contribution before considering the issue of covariance.

The influence of the PCL: SV prior to controlling for covariance was significant, $\chi^2=33.70$, $df=1$, $p < .001$, Nagelkerke $R^2 = .101$, and accounted for 8.1% of the variance⁴. The Hosmer and Lemeshow test was not significant, indicating that the observed data were not significantly different than what the model predicted. When covariates were entered into the model first, the overall model was a significant predictor

⁴ Effect size was calculated by dividing the model chi-square (based on log-likelihood) by the original -2LL (log-likelihood before any predictors were entered). That is, $R_L^2 = -2LL(\text{Model}) / -2LL(\text{Original})$ (Hosmer and Lemeshow, 1989).

of instrumental status, $\chi^2 = 57.97$, $df = 4$, $p < .001$, Nagelkerke $R^2 = .170$, and accounted for 13.9% of the variance. There was good prediction of instrumental status on the basis of the covariates alone, $\chi^2 = 45.87$, $df = 3$, $p < .001$, Nagelkerke $R^2 = .136$, as well as psychopathy's additive effect, $\chi^2 = 12.10$, $df = 1$, $p = .001$, Nagelkerke $R^2 = .034$. After controlling for covariates, psychopathy as measured by the PCL: SV, accounted for an additional 2.9% of the variance in offender status. Specifically, for every unit increase on the PCL: SV the odds of being instrumentally violent increased by a factor of 1.099. See Table 4 for the results of the steps of the regression as well as the final model.

Table 4. Step and Model Results for the PCL: SV Regression.

Step # and Description	χ^2	df	Significance	Nagelkerke R^2	Variance Accounted For
0 PCL: SV (<i>base influence</i>)	33.70	1	.000	.101	8.1%
1 Covariates	45.87	3	.000	.136	11.0%
2 PCL: SV (<i>additive influence</i>)	12.10	1	.001	.034	2.9%
3 Final Model	57.97	4	.000	.170	13.9%

3.3.2 Categorical PCL: SV

In the following set of analyses, PCL: SV scores were dichotomized, and the chi-square statistic was used to test for a relationship between psychopathy and instrumental violence. Participants were categorized as potentially psychopathic or non-psychopathic based on two cutoff scores identified in the literature. Thus, each analysis was conducted twice to determine if the choice of cutoff score affected the results of the analysis. The

first PCL: SV cutoff (i.e., 12) was that used by the original MacArthur study (Monahan et al., 2001). Notably, this cutoff is lower than the PCL: SV authors' recommended cut-off of 18 for classifying individuals as "psychopathic." The second cutoff used in the current analyses was identified by Skeem and Mulvey (2001) who found that a cut-off of 8 on the PCL: SV maximized sensitivity and sensitivity for the prediction of violence among the MacArthur sample.

Both the MacArthur cut-off and the Skeem and Mulvey cut-off yielded a significant association between psychopathic membership and instrumental violence status: cut-off = 12: $\chi^2(1, N = 871) = 26.09, p < .001$; cut-off = 8: $\chi^2(1, N = 868) = 28.80, p < .001$ (see Table 5). This was reflected in Cramer's V, with Skeem and Mulvey's cut-off having a slightly larger effect size ($\phi = .182$) than the MacArthur cut-off ($\phi = .173$). Specifically, the MacArthur PCL: SV cut-off identified 29 (3.3% of the entire sample) instrumental participants as potentially psychopathic, whereas the Skeem and Mulvey PCL: SV cut-off classified 51 (5.9% of the entire sample) instrumental participants as potentially psychopathic.

3.3.3 PCL: SV cut-off

While considering the predictive utility of previously established cut-offs on the PCL: SV, an ROC analysis was conducted to determine whether a different cut-off would be more appropriate for instrumental violence. The AUC for the PCL: SV total score was .749 ($SE = .026$), indicating a 75% chance that an individual who is instrumentally violent will obtain a higher score on the PCL: SV than a randomly chosen individual who is not instrumentally violent. The best cut-off for maximizing sensitivity and sensitivity on the PCL: SV was 10, with a true positive rate of 72.9% and a true negative rate of

Table 5. Contingency Table for Instrumental Status and Psychopathy Cut-offs.

Cut-off*				Psychopathy Status		Total
				Non Psychopathic	Potentially Psychopathic	
Three-factor Model (cut-off 7)	Instrumental Status	Non Instrumental	Count	502	310	812
			% within psychopathy status	96.5%	88.3%	93.2%
	Instrumental	Instrumental	Count	18	41	59
			% within psychopathy status	3.5%	11.7%	6.8%
		Non Instrumental	Count	402	407	809
			% within psychopathy status	98.0%	88.9%	93.2%
Instrumental	Instrumental	Count	8	51	59	
		% within psychopathy status	2.0%	11.1%	6.8%	
	Non Instrumental	Count	513	298	811	
		% within psychopathy status	97.0%	87.4%	93.2%	
Instrumental	Instrumental	Count	16	43	59	
		% within psychopathy status	3.0%	12.6%	6.8%	
	Non Instrumental	Count	646	166	812	
		% within psychopathy status	95.6%	85.1%	93.2%	
Instrumental	Instrumental	Count	30	29	59	
		% within psychopathy status	4.4%	14.9%	6.8%	

* Cut-offs indicate potential psychopathic membership if greater than or equal to value.

63.3%. When this cut-off was used to create dichotomous PCL: SV groups, chi-square revealed a significant relationship between psychopathic groups and instrumental violence status, $\chi^2(1, N = 870) = 30.14, p < .001$, identifying 4.5% of the entire sample as

potentially psychopathic instrumental participants (see Table 5). However, the effect size for this cut-off was barely distinguishable from that of the Skeem and Mulvey PCL: SV cut-off ($\phi = .186$ versus $\phi = .182$).

3.4 Hypothesis II: Three-factor Model Predictive Ability

It was hypothesized that the three-factor model of psychopathy would be a better predictor of instrumental violence status than the PCL: SV. This hypothesis was tested in three ways: (1) considering psychopathy dimensionally (i.e., continuous PCL: SV and three-factor model scores); (2) determining the best cut-off for dichotomizing the three-factor model for purpose of identifying instrumental violence status; and (3) considering psychopathy categorically (i.e., dichotomizing PCL: SV and three-factor model scores).

3.4.1 Continuous three-factor model

A hierarchal logistic regression was performed to determine the predictive ability of the three-factor model, considered dimensionally, in correctly classifying participants as instrumental. Statistics were executed in the same 2-block, forced entry fashion as employed with the PCL: SV logistic regression. The influence of the three-factor model when not controlling for covariance was significant, $\chi^2 = 20.43$, $df = 1$, $p < .001$, Nagelkerke $R^2 = .061$, and accounted for 4.9% of the variance. The complete model was a significant predictor of instrumental status, $\chi^2 = 52.09$, $df = 4$, $p < .001$, Nagelkerke $R^2 = .154$, and accounted for 12.5% of the variance.

Because there was no difference in the first step of this regression from that of the PCL: SV regression the contribution of the covariates was the same. The three-factor model remained a significant predictor when covariates were entered into the model

first, $\chi^2 = 6.22$, $df = 1$, $p < .05$, Nagelkerke $R^2 = .018$. After controlling for covariance, psychopathy as measured by the three-factor model accounted for an additional 1.5% of the variance in offender status, which was less than the contribution of the PCL: SV. For every unit increase on the three-factor model the odds of being instrumentally violent increased by a factor of 1.089. See Table 6 for the results of the steps of the regression as well as the final model. Both the PCL: SV model and three-factor model remained a good fit for the observed data after adding psychopathy scores (i.e., the Hosmer and Lemeshow statistic for both was $p > .01$).

Table 6. Step and Model Results for the Three-Factor Model Regression.

Step # and Description	χ^2	df	Significance	Nagelkerke R^2	Variance Accounted For
0 Three-factor Model (<i>base influence</i>)	20.43	1	.000	.061	4.9%
1 Covariates	45.87	3	.000	.136	11.0%
2 Three-factor Model (<i>additive influence</i>)	6.22	1	.013	.018	1.5%
3 Final Model	52.09	4	.000	.154	12.5%

3.4.2 Continuous model comparison

An ROC analysis was computed for continuous model comparison of total scores (see Figure 1). While the PCL: SV was a slightly better model ($AUC = .749$; $SE = .026$) than the three-factor model ($AUC = .704$; $SE = .030$), an inspection of the confidence intervals found that this difference was not statistically significant. The PCL: SV bounds ranged from .698 to .801 whereas the three-factor model bounds ranged from .646 to

.762. This indicates that both models were equally affective at identifying instrumentally violent participants.

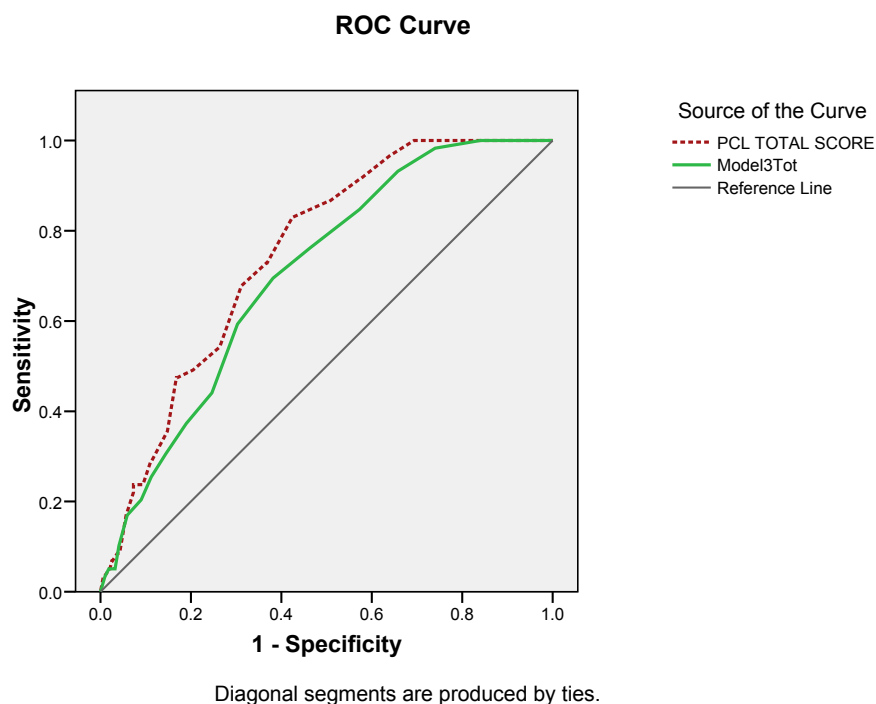


Figure 1. ROC Curves for Continuous PCL: SV and Three-Factor Model Total Scores.

3.4.3 Categorical three-factor model

The same considerations were applied to the three-factor model of psychopathy as the PCL: SV. That is, an ROC analyses was performed on three-factor model total scores for the purposes of dichotomizing participants into groups of non-psychopathic and potentially psychopathic participants. With a possible total score of 18, the best three-factor model cut-off was determined to be 7, with a true positive rate of 69.5% and a true negative rate of 61.8%. There was a significant association between psychopathic membership and instrumental violence status when this cut-off was computed into a

dichotomous variable, $\chi^2(1, N = 871) = 22.42, p < .001$. This cut-off identified 4.8% of instrumental participants as being potentially psychopathic. Cramer's V indicated a small effect size ($\phi = .160$).

3.4.4 Categorical model comparison

As reviewed above, a chi-square statistic was performed for each categorical comparison concerning psychopathic membership and instrumental violence status (see Table 5). All four of the cut-offs (i.e., MacArthur, Skeem and Mulvey, New PCL: SV, and three-factor model) were significant at the .001 level. However, no one cut-off was better than another at revealing an association between offense status and considering psychopathy categorically.

3.5 Hypothesis III: Factor Comparison

The third research question asked if any one factor—in either model—accounted for this predictive ability. It was hypothesized that Factor I, Emotional Detachment, of the PCL: SV would account for the greatest predictive variance. A logistic regression was performed for the factors of each model to determine the predictive ability of each factor, considered dimensionally, in correctly classifying participants as instrumental. Statistics were executed in the same 2-block, forced entry fashion as employed with the PCL: SV and three-factor model logistic regressions. The only difference was that instead of entering total scores in the second block, factor scores were entered. As there was no theoretical or statistical rationale to suggest otherwise, all factor scores were entered simultaneously in block two, preceded by the covariates in block one.

Although the addition of both PCL: SV factors was significant, $\chi^2 = 16.24, df = 2, p < .001$, Nagelkerke $R^2 = .18$, this was in large part due to the contribution of the

Antisocial Behavior factor (Factor II). For every unit increase on Factor II the odds of being instrumentally violent increased by a factor of 1.214, a significant amount (see Table 7). However, the Emotional Detachment factor (Factor I) did not significantly add to the predictive ability of the model; therefore, the hypothesis was not supported. Interestingly, predictive ability did not significantly improve when running the regression with the factors from the three-factor model. In fact, not one of the factors in the three-factor model was found to be a significant predictor on its own.

Table 7. Logistic Regression Results for the Psychopathy Factors.

Model	Variable	B	S.E.	Wald	Significance	Odds Ratio
PCL: SV	Verbal IQ	-.010	.010	.996	.318	.990
	NAS – B	.084	.024	12.463	.000**	1.087
	Any Drug	-.610	.336	3.287	.070	.544
	(Factor I) Emotional Detachment	.020	.052	.148	.701	1.020
	(Factor II) Antisocial Behavior	.194	.061	10.213	.001**	1.214
Three-factor Model	Verbal IQ	-.009	.010	.929	.335	.991
	NAS – B	.093	.023	15.772	.000**	1.097
	Any Drug	-.780	.331	5.563	.018*	.459
	(Factor 1) Arrogant Deceitful Style	-.011	.107	.011	.915	.989
	(Factor 2) Deficient Affective Experience	.163	.108	2.282	.131	1.177
	(Factor 3) Irresponsible Impulsive Lifestyle	.103	.097	1.134	.287	1.109

* $p < .05$. ** $p < .01$.

3.6 Hypothesis IV: Instrumental Violence and Victim Type

The fourth and final research question asked whether strangers or non-strangers were the most likely targets of instrumental violence. It was hypothesized that strangers would account for the greater proportion of target type among incidences of instrumental violence. Several steps were necessary to test this hypothesis. First, each act of violence was coded as either instrumental or non-instrumental. Second, the target of each violent

act was coded as either stranger or non-stranger. Third, frequencies were computed for each combination (i.e., type of target and type of violence) across the entire year. Fourth, these frequencies were then used to run a chi-square statistic.

Table 8. Incidence of Victim Type among Types of Offense.

			Victim Type		Total
			Non Stranger	Stranger	
Offense Type	Non Instrumental	Count	22	20	42 (23.7%)
		% within victim type	19.5%	91.7%	
		% within offense type	52.4%	31.3%	
	Instrumental	Count	91	44	117 (76.3%)
		% within victim type	80.5%	68.8%	
		% within offense type	67.4%	32.6%	

There were 117 acts of violence reported over the entire year that included information on the victim. Of those, 135 qualified as instrumental. Despite a trend that most victims of instrumental violence were not strangers (see Table 8), there was no significant relationship between victim type and category of violent incident. However, it should be noted that there were relatively few incidents available for analysis and that proportionately small differences in cells can affect significance rather easily. Thus, although no statistical assumptions were violated a genuine effect may have been difficult to detect (i.e., loss of power).

3.7 Secondary Analysis

An additional analysis was performed to assess the relationship between two aspects of violent offence: the presence of instrumental violence and type of victim (i.e.,

stranger or non-stranger). The investigation was conducted separately for psychopathic and non-psychopathic participants. The classification for dichotomizing psychopathy was determined per the analyses from Hypothesis II (i.e., the best cut-off for classifying instrumental violence status was 10 on the PCL: SV). However, because two cells had an expected frequency of less than 5 (violating an assumption of the analysis), results were rendered inconclusive.

CHAPTER 4. DISCUSSION

4.1 Implications for Results

The findings of this study have several interesting implications. First, the prevalence of instrumental offenders was much lower among this population (6.7%) than has been found in other cohorts, even with a relatively liberal criterion for instrumental violence. Williamson, Hare, and Wong (1987) found that 30% of crimes were perpetrated for material gain among an adult correctional population. Higher base rates have been found for more serious offenders, such as homicide offenders (60.9% were instrumental offenders; Woodworth & Porter, 2002) and adolescents who have been tried as adults (50% were instrumental offenders, Kruh et al., 2005). The current findings indicate that instrumental motives are not common incentives for violent behavior among patients with severe mental illness. As such, the investigation of instrumental violence and its correlates may be best if understood in the context of populations in which it is more prominent.

A second important finding from this study is that antisocial behavior plays a smaller role in predicting instrumental violence among this sample when compared to violence with no specific motive. Consistent with previous findings, psychopathy was a significant predictor of instrumental violence. This was the case with both the PCL: SV and three-factor models, supporting the first two hypotheses. However, one model was not a significantly better predictor than the other. This remained the case whether psychopathy was operationalized continuously, categorically, or with different cut-offs. By contrast, this difference *is* present when predicting violence without a specified motive (Skeem, Mulvey, & Grisso, 2003).

There are at least two possible explanations for why no difference was found between the two models. First, manipulation of data may not be sufficient to influence predictive ability for this form of violence. The three-factor model merely differs from the PCL: SV in how it structures the PCL data. It is not a different measure in itself. Even though different models do not render unique predictive ability, this does not refute the possibility of differences among different measures of psychopathy. There is evidence to suggest that self-report measures of psychopathy may account for additional variance in violence risk assessment (Walters, 2006). This could also be the case when isolating the motive of violent behavior. Alternatively, the predictive distinction between these two models might be less prominent among a civil psychiatric population. It is possible that more clinically significant differences exist among different populations (e.g., correctional, juvenile, non-clinical).

A second possible explanation for this finding is that the prediction of instrumental violence is simply not as contingent upon antisocial predictors as is violence without specified motive. Both models contain equivalent weight on personality traits. Because the construct of instrumental violence stands apart from violence in its motive but not its manifestation, one might think that manipulating the assessment of behavioral features would have little impact. Perhaps an effect would be observed if one were to alter the internal criteria for psychopathy. Although the presence of antisocial behavior did not influence model prediction, when examining the individual contribution of each of factor across both models only Factor 2 (Antisocial Behavior) of the PCL: SV was significant (contrary to what was hypothesized). This is in striking contrast to previous findings of factor comparisons among this form of violence.

This finding can be explained by looking at the distribution of the factor scores among instrumentally and non-instrumentally violent participants. The distribution of scores for both groups was normally distributed with the exception of Factor 1 on the PCL: SV and Factors 1 and 2 on the three-factor model for participants who were *not* instrumentally violent. The distributions for these scores were positively skewed, indicating that most non-instrumental participants maintained low psychopathic personality traits even when having elevated behavioral characteristics. What one can deduce from this finding is that the interaction of several psychopathic characteristics *across* factors accounted for the same variance which could have been explained by antisocial behavior alone. Hence, although antisocial behavior was influential in isolation, this main effect was balanced out when taken in combination with other psychopathic features, as demonstrated by the lack of predictive variation between models.

A third implication for this study concerns the finding that strangers were not the most common victim of instrumental violence. This not only failed to support what was hypothesized but is also contrary to previous findings examining victim type and instrumental violence in other populations. One explanation is that the perpetration of instrumental violence among the mentally ill is less discriminate than it is when committed by other types of individuals. Alternatively, some might argue that a relationship was not observed because of the watered down criteria for instrumental violence and that had this construct been more comprehensive that a relationship would have been discovered. This calls into question the “primary” and “secondary” features of instrumental violence. If a perpetrator’s relationship to the victim is, in fact, an artifact

then studies which have employed victim type as a stipulation for instrumental violence may have underestimated its true prevalence (e.g., Vitacco et al., 2006).

A fourth and final implication of this study regards the degree of variance accounted for by both psychopathy and the covariates. The highest percentage of explained variance was 13.9% (the final PCL: SV regression model). This indicates that there may be other risk factors which may prove useful in predicting violence that is instrumentally motivated. Perhaps more variance would have been explained had other covariates, which had a significant relationship with instrumental violence, been included in the final model (e.g., impulsivity scores, years of education). However, psychopathy's isolated contribution to the variance was only 2.9% for the PCL: SV model. Even when psychopathy was entered without controlling for covariance it explained only 8.1% of the variance. This is considerably less than psychopathy's influence in instrumental violence among other cohorts (e.g., adolescent male offenders, 20%; Vitacco et al., 2006). Ultimately, psychopathy explained just as much variance as each of the covariates. Thus, the more practical question becomes "How relevant is psychopathy in this type of risk assessment?"

The findings of this study suggest that psychopathy is not particularly relevant in this type of risk assessment among psychiatric patients and that several risk factors may be necessary to predict instrumental violence. As such, a clinician may be best in choosing a measure which employs a wide array of risk factors (e.g., the HCR-20) instead of one that captures selectively clinical criteria (i.e., a PCL measure). In evaluating whether to assess one risk factor over another, a clinician should be influenced by the legal question being assessed, what the literature supports as most relevant in this

specific instance, as well as which factors can be eliminated based on the information already available on a subject. For instance, dynamic risk factors with treatment implications should take priority in a risk management context (Monahan et al., 2001). However, when conducting a risk assessment, static risk factors may be just as relevant as dynamic variables if posing the same degree of risk. Monahan and colleagues (2001) observe that this issue can be complicated by the unique role of risk factors for different individuals. For example, in the MacArthur study both PCL: SV scores and drug use were not found to be relevant in increased risk for patients with delusions. The obvious need for individualized risk assessment underscores the contention that actuarial risk assessment be used in *conjunction* with clinical judgment.

4.2 Limitations of Study Design and Findings

While this study maintained certain strengths because of the efficient methodology set forth by its investigators, there were some drawbacks to the present archival approach. First, the original MacArthur study was not designed for examining instrumental violence. Had it been, the construct of instrumental violence might have been stronger and more instances might have been captured. A higher base rate would have enabled the inclusion of more predictors and possibly strengthened the model. But it should be noted that a very liberal definition of instrumental violence still yielded a relatively small baserate. A more conservative criterion would likely diminish the number of instrumentally violent participants identified in this population.

Second, the three-factor model was not used in the original study but rather mapped onto current PCL: SV item scores. The actual three-factor model uses a hierarchal structure for the purposes of better fitting the data. It could be argued that the

three-factor model as it was constructed in this study was less precise than the original. However, previous studies of PCL: SV model comparisons with the MacArthur dataset suggest that this approach does not diminish the integrity of the original model. A third limitation of this study was that the low base rate of instrumental violence might have made it difficult to detect effects among this type of violence among this population. For instance, too few cases prevented analyses comparing the differences in instrumental violence between potentially psychopathic and non-psychopathic participants. As such, effects may have been found for findings which were either inconclusive or not significant had there been more cases to examine.

It is worth noting that this study was not designed to test the “dimensional versus categorical” question, although the findings herein do tend to endorse one argument over the other. Cut-values were tested both above (i.e., 12) and below (i.e., 8) that of the maximal cut-off (i.e., 10) for this sample as indicated by ROC. None of the cut-offs on the PCL: SV differed significantly in their relationship to instrumentally violent membership. This demonstrates that PCL: SV cut-offs were not identifying qualitatively distinct individuals with regard to instrumental violence. Thus, dimensional psychopathy may be most suitable for instrumental violence risk assessment. Furthermore, continuous analyses tend to be more sensitive to the data and a categorical approach to risk assessment may be too imprecise or haphazard for making decisions with potentially great gravity for the individuals it concerns (e.g., involuntary commitment for defendant, safety for community).

Although the isolated influence of psychopathy for this study was statistically predetermined, the reason for separating covariates from psychopathy is largely a

conceptual one. There is current disagreement in the field as to whether antisocial behavior is “core” to psychopathy or merely an artifact of the internal characteristics of the syndrome (e.g., lack of empathy, poor inhibitory control). The same argument can be applied to other features of psychopathy which have been uniquely linked to violent behavior, such as drug abuse, anger, or impulsivity. There are important questions, such as “Should the psychopathy construct still be used?” and “To what degree can we ‘control’ for covariance before we are no longer looking at ‘psychopathy’?” These are questions for other researchers, practitioners, and theorists in the field. As far as this study was concerned, the constellation of features which equate to psychopathy were all relevant to prediction—albeit to a much lesser extent than is necessary for a formal “psychopath” label.

4.3 Future Directions for Research, Practice, and Policy

4.3.1 Research

The findings of this study indicate that violence is not often perpetrated without provocation. In determining motives for violent behavior among psychiatric patients future studies should examine heterogeneous samples of individuals with severe mental illness. The MacArthur study found that the one-year prevalence rate for violence differed notably among the major mental illnesses (i.e., schizophrenia, 14.8%; bipolar disorder, 22.0%; depression, 28.5%). This finding underscores the importance of considering the diversity for violence risk, and its motive, within this population. Another direction for future research is to appreciate how certain characteristics may influence one another to affect risk. For example, the original study found that the main effects of hallucinations and delusions by themselves did not increase risk for violence but that

these features in combination were predictive of future violence at one year. Similar interactions may be present when examining the motive for violence.

Some psychologists have argued that dichotomizing violent acts as instrumental versus reactive is unrealistic and lacks ecological validity. Most real world instances of violence contain an emotional basis and an instrumental advantage. While previous research would suggest that a dichotomy of violence is not without advantages, a less categorical system might improve clinical relevance. Perhaps instead of thinking about violence in the absolute terms of instrumental and reactive we should be considering the *degree* of goal-oriented and emotionally motivated acts of violence and the implications for these distributions.

There is much to learn about instrumental offenders as well as instrumental acts. Psychopathy may not be the only syndrome existent in these types of offenders. Another avenue may be to examine more trait specific characteristics of instrumental offenders and not just disorders. New studies should concentrate on the trajectory of instrumental offenders over time. Because violent behavior tends to be less aversive for instrumentally violent individuals, it is likely that they pursue violent strategies more often and chronically than do other individuals. For this reason, it is clear that instrumental violence needs additional study so it can be better understood, predicted, and managed.

4.3.2 Practice

This study offer several implications for forensic practice. As briefly discussed earlier, different measures of psychopathy may be better associated with certain motives of violence. For example, self reports of psychopathy, like the Psychopathic Personality Inventory-Revised (PPI-R; Lilienfeld & Widows, 2005), or change-sensitive measures of

psychopathic traits such as the Comprehensive Assessment of Psychopathic Personality (CAPP), which is currently being developed by Stephen Hart, David Cooke, Christine Michie, and Caroline Logan. This issue should also be investigated while being sensitive to dimensional and categorical taxonomies of psychopathy. These representations may have different applications just as certain models of psychopathy are most appropriate for violence risk assessment (i.e., the PCL: SV) while others are more suitable for personality assessment (i.e., the three-factor model).

The present study demonstrates that sub-diagnostic psychopathy is adequate for identifying instrumentally violent participants. Because the presence of instrumental motive for violence can influence treatment assignment, the finding that psychopathic traits are enough for prediction suggests that PCL: SV scores lower than those required for the “psychopath” label are still clinically relevant. For this reason clinicians should pay attention to psychopathic features and not just diagnoses.

4.3.3 Policy

In a similar vein, recent attention has been placed on the stigma of the psychopath label in legal proceedings and how this can be disadvantageous to those deemed “psychopaths,” especially if used in inappropriate contexts (Edens & Petrila, 2006). However, the opposite can be true: those who have failed to meet the psychopath threshold may be incorrectly seen as posing a qualitatively lesser degree of risk. The findings of this study demonstrate that psychopathy scores far below this threshold are still worthy of forensic attention.

And finally, it is important that researchers continuously inform the judicial process about the catalysts and motivations for violent behavior among this population.

Legal practitioners need to be aware of what treatments have been demonstrated effective among individuals with unique mental disorders. As research reveals more precise relationships between motive and violence, assessment yields more accurate outcomes, and treatment establishes which regimens are most appropriate for specific offenders, the legal community will be in a position to make far more educated sentencing decisions regarding such issues as conditional release and treatment priority.

CHAPTER 5. LIST OF REFERENCES

- American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, DC: Author.
- Andrews, D. A., & Bonta, J. L. (1995). *The Level of Service Inventory—Revised*. Toronto: Multi-Health Systems.
- Andrews, D., Bonta, J., & Wormith, J. (2006). The recent past and near future of risk and/or need assessment. *Crime & Delinquency*, 52(1), 7-27.
- Applebaum, P., Robbins, P., & Monahan, J. (2000). Violence and delusions: Data from the MacArthur Violence Risk Assessment Study. *American Journal of Psychiatry*, 157, 566-572.
- Bandura, A. (1973). *Aggression: A social learning analysis*. Oxford, England: Prentice-Hall.
- Bandura, A. (1983). Psychological mechanisms of aggression. In R. G. Geen & E. I. Donnerstein (Eds.), *Aggression: Theoretical and empirical reviews* (pp. 1-40). New York, NY: Academic Press, Inc.
- Barratt, E. (1994). Impulsiveness and aggression. In J. Monahan & H. J. Steadman (Eds.), *Violence and mental disorder* (pp. 61-79). Chicago: University of Chicago Press.
- Barbaree, H. E., Seto, M. C., Langton, C. M., & Peacock, E. J. (2001). Evaluating the predictive accuracy of six risk assessment instruments for adult sex offenders. *Criminal Justice and Behavior*, 28(4), 490-521.
- Berkowitz, L. (1989). Frustration-aggression hypothesis: Examination and reformulation. *Psychological Bulletin*, 106(1), 59-73.
- Berkowitz, L. (1993). *Aggression: Its causes, consequences, and control*. NY, England: Mcgraw-Hill Book Company.
- Berrios, G. E., & Porter, R. (1995). *A history of clinical psychiatry: The origin and history of psychiatric disorders*. NY, US: New York University Press.
- Blackburn, R. (2005). Conceptualizing psychopathy. In S. Strack (Ed.), *Handbook of personology and psychopathology*. New York: Wiley.

- Bonta, J., Harman, W. G., Hann, R. G., & Cormier, R. B. (1996). The prediction of recidivism among federally sentenced offenders: A re-validation of the SIR scale. *Canadian Journal of Criminology*, 38(1), 61-79.
- Bonta, J., Law, M., & Hanson, K. (1998). The prediction of criminal and violent recidivism among mentally disordered offenders: A meta-analysis. *Psychological Bulletin*, 123(2), 123-142.
- Borum, R. (1996). Improving the clinical practice of violence risk assessment: Technology, guidelines, and training. *American Psychologist*, 51(9), 945-956.
- Brown, K., Atkins, M. S., Osborne, M. L., & Milnamow, M. (1996). A revised teacher rating scale for reactive and proactive aggression. *Journal of Abnormal Child Psychology*, 24(4), 473-480.
- Buss, A. H. (1961). *The psychology of aggression*. Hoboken, NJ, US: John Wiley & Sons, Inc
- Cleckley, H. (1982). *The mask of sanity: An attempt to clarify some issues about the so-called psychopathic personality* (Rev. ed.). St. Louis: Mosby. (Original work published 1941).
- Cooke, D. J., & Michie, C. (2001). Refining the construct of psychopath: Towards a hierarchical model. *Psychological Assessment*, 13(2), 171-188.
- Cooke, D. J., Michie, C., Hart, S. D., & Hare, R. D. (1999). Evaluating the Screening Version of the Hare Psychopathy Checklist--Revised (PCL:SV): An item response theory analysis. *Psychological Assessment*, 11(1), 3-13.
- Cornell, D. G., Warren, J., Hawk, G., Stafford, E., & et al. (1996). Psychopathy in instrumental and reactive violent offenders. *Journal of Consulting and Clinical Psychology*, 64(4), 783-790.
- Costa, P., & McCrae, R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEOFFI) professional manual*. Odessa, FL: Psychological Assessment Resources.
- Craft, M. (1966). *Psychopathic disorders and their assessment*. Oxford: Permagon Press.
- Dodge, K. A. (1991). The structure and function of reactive and proactive aggression. In D. J. Pepler & K. H. Rubin (Eds.), *The development and treatment of childhood aggression*. (pp. 201-218). NJ, England: Lawrence Erlbaum Associates, Inc.
- Dollard, J., Miller, N. E., Doob, L. W., Mowrer, O., & Sears, R. R. (1939). *Frustration and aggression*. New Haven, CT, US: Yale University Press.

- Douglas, K. S., Ogloff, J. R., Nicholls, T. L., & Grant, I. (1999). Assessing risk for violence among psychiatric patients: The HCR-20 violence risk assessment scheme and the Psychopathy Checklist: Screening Version. *Journal of Consulting and Clinical Psychology, 67*(6), 917-930.
- Douglas, K. S., & Skeem, J. L. (2005). Violence risk assessment: Getting specific about being dynamic. *Psychology, Public Policy, and Law, 11*(3), 347-383.
- Douglas, K. S., Strand, S., Belfrage, H., Fransson, G., & Levander, S. (2005). Reliability and validity evaluation of the Psychopathy Checklist: Screening Version (PCL:SV) in Swedish correctional and forensic psychiatric samples. *Assessment, 12*(2), 145-161.
- Edens, J. F. (2007). Youth psychopathy and criminal recidivism: A meta-analysis. *Law and Human Behavior, 31* (1), 53-75.
- Edens, J. F., & Petrila, J. (2006). Legal and ethical issues in the assessment and treatment of psychopathy. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 573-588). New York: Guilford Press.
- Edens, J. F., Marcus, D. K., Lilienfeld, S. O., & Poythress, N. G. (2006). Psychopathic, not psychopathic: Taxometric evidence for the dimensional structure of psychopathy. *Journal of Abnormal Psychology, 115*, 131-144.
- Edens, J. F., Skeem, J. L., & Douglas, K. S. (2006). Incremental validity analyses of the Violence Risk Appraisal Guide and the Psychopathy Checklist: Screening Version in a civil psychiatric sample. *Assessment, 13*, 368-374.
- Federal Bureau of Investigation. (2005). Crime in the United States: The uniform crime reports. Retrieved November 22, 2006 from <http://www.fbi.gov/ucr/05cius/>
- Federal Bureau of Investigation. (2006). Preliminary Semiannual Uniform Crime Report. Retrieved December 16, 2006 from <http://www.fbi.gov/ucr/prelim06/index.html>
- Forth, A. E., Brown, S. L., Hart, S. D., & Hare, R. D. (1996). The assessment of psychopathy in male and female noncriminals: Reliability and validity. *Personality and Individual Differences, 20*(5), 531-543.
- Forth, A. E., Hart, S. D., & Hare, R. D. (1990). Assessment of psychopathy in male young offenders. *Psychological Assessment, 2*(3), 342-344.
- Forth, A. E., Kosson, D. S., & Hare, R. D. (2003). *The Psychopathy Checklist: Youth Version manual*. Toronto, ON, Canada: Multi-Health Systems.

- Forth, A. E., & Mailloux, D. L. (2000). Psychopathy in youth: What do we know? In C. B. Gacono (Ed.), *The clinical and forensic assessment of psychopathy: A practitioner's guide* (pp. 25-54). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.
- Frick, P. J., Bodin, S., & Barry, C. T. (2000). Psychopathic traits and conduct problems in community and clinic-referred samples of children: Further development of the Psychopathy Screening Device. *Psychological Assessment, 12*(4), 382-393.
- Frick, P. J., Cornell, A. H., Barry, C. T., Bodin, S., & Dane, H. E. (2003). Callous-unemotional traits and conduct problems in the prediction of conduct problem severity, aggression, and self-report of delinquency. *Journal of Abnormal Child Psychology, 31*(4), 457-470.
- Frick, P. J., & Hare, R. D. (2001). *The Antisocial Process Screening Device*. Toronto, ON, Canada: Multi-Health Systems.
- Gacono, C. B. (2000). *The clinical and forensic assessment of psychopathy*. Mahwah, NJ: Erlbaum.
- Gendreau, P., Goggin, C., & Smith, P. (1999). Predicting recidivism: LSI-R vs. PCL-R. *Canadian Psychology Abstracts, 40*, 2a.
- Gendreau, P., Goggin, C., & Smith, P. (2002). Is the PCL-R really the "unparalleled" measure of offender risk?: A lesson in knowledge cumulation. *Criminal Justice and Behavior, 29* (4), 397-426.
- Gendreau, P., Goggin, C., & Smith, P. (2003). Erratum. *Criminal Justice and Behavior, 30* (6), 722-724
- Gendreau, P., Little, T., & Goggin, C. (1996). A meta-analysis of the predictors of adult offender recidivism: What works! *Criminology, 34*, 575-607.
- Grann, M., Langstrom, N., Tengstrom, A., & Kullgren, G. (1999). Psychopathy (PCL-R) predicts violent recidivism among criminal offenders with personality disorders in Sweden. *Law and Human Behavior, 23*(2), 205-217.
- Gray, N. S., Hill, C., McGleish, A., Timmons, D., MacCulloch, M. J., & Snowden, R. J. (2003). Prediction of violence and self-harm in mentally disordered offenders: A prospective study of the efficacy of HCR-20, PCL-R, and psychiatric symptomatology. *Journal of Consulting and Clinical Psychology, 71*(3), 443-451.
- Hanson, R., & Harris, A. J. (2001). A structured approach to evaluating change among sexual offenders. *Sexual Abuse: Journal of Research and Treatment, 13*(2), 105-122.

- Hare, R. D. (1980). A research scale for the assessment of psychopathy in criminal populations. *Personality and Individual Differences, 1*(2), 111-119.
- Hare, R. D. (1991). *The Hare Psychopathy Checklist-Revised*. Toronto, ON, Canada: Multi-Health Systems.
- Hare, R. D. (2003). *The Hare Psychopathy Checklist-Revised* (2nd ed.). Toronto, ON: Multi-Health Systems.
- Hare, R. D., Clark, D., Grann, M., & Thornton, D. (2000). Psychopathy and the predictive validity of the PCL-R: An international perspective. *Behavioral Sciences & the Law, 18*(5), 623-645.
- Hare, R. D., & Hervé, H. (1999). *The Hare P-Scan: Research Version*. Toronto, ON: Multi-Health Systems.
- Harpur, T. J., & Hare, R. D. (1994). Assessment of psychopathy as a function of age. *Journal of Abnormal Psychology, 103*(4), 604-609.
- Harris, G. T., Rice, M. E., & Cormier, C. A. (2002). Prospective replication of the Violence Risk Appraisal Guide in predicting violent recidivism among forensic patients. *Law and Human Behavior, 26*(4), 377-394.
- Harris, G. T., Rice, M. E., & Quinsey, V. L. (1994). Psychopathy as a taxon: Evidence that psychopaths are a discrete class. *Journal of Consulting and Clinical Psychology, 62*, 387-397.
- Hart, S. D. (1998). The role of psychopathy in assessing risk for violence: Conceptual and methodological issues. *Legal and Criminological Psychology, 3*(Part 1), 121-137.
- Hart, S. D., Cox, D., & Hare, R. D. (1995). *The Hare Psychopathy Checklist: Screening Version*. Toronto: Multi-Health Systems.
- Hart, S. D., & Hare, R. D. (1997). Psychopathy: Assessment and association with criminal conduct. In D. M. Stoff, J. Breiling & J. D. Maser (Eds.), *Handbook of antisocial behavior* (pp. 22-35). Hoboken, NJ, US: John Wiley & Sons, Inc.
- Heilbrun, K. (1997). Prediction versus management models relevant to risk assessment: The importance of legal decision-making context. *Law and Human Behavior, 21*(4), 347-359.
- Heilbrun, K., Hart, S. D., Hare, R. D., Gustafson, D., Nunez, C., & White, A. J. (1998). Inpatient and postdischarge aggression in mentally disordered offenders: The role of psychopathy. *Journal of Interpersonal Violence, 13*(4), 514-527.

- Hemphill, J. F. & Hare, R. D. (2004). Some misconceptions about the Hare PCL-R and risk assessment: A reply to Gendreau, Goggin, and Smith. *Criminal Justice and Behavior*, 31 (2), 203-243.
- Hemphill, J. F., Hare, R. D., & Wong, S. (1998). Psychopathy and recidivism: A review. *Legal and Criminological Psychology*, 3(Part 1), 139-170.
- Henderson, D. (1939). *Psychopathic states*. New York, US: W W Norton & Co.
- Hiday, V., Swartz, M., Swanson, J., Borum, R., & Wagner, H. (1998). Male-female differences in the setting and construction of violence among people with severe mental illness. *Social Psychiatry and Psychiatric Epidemiology*, 33(Suppl 1), S68-S78.
- Hill, C. D., Rogers, R., & Bickford, M. E. (1996). Predicting aggressive and socially disruptive behavior in a maximum security forensic psychiatric hospital. *Journal of Forensic Sciences*, 41(1), 56-59.
- Hosmer, D. W. & Lemeshow, S. (1989). *Applied logistic regression*. New York: Wiley.
- Janca, A., & Helzer, J. (1990). DSM-III-R criteria checklist. *DIS Newsletter*, 7, 17.
- Kay, S. R., Wolkenfeld, F., & Murrill, L. M. (1988). Profiles of aggression among psychiatric patients: II. Covariates and predictors. *Journal of Nervous and Mental Disease*, 176(9), 547-557.
- Klassen, D., & O'Connor, W. (1994). Demographic and case history variables in risk assessment. In J. Monahan & H. J. Steadman (Eds.), *Violence and mental disorder: Developments in risk assessment* (pp. 229-258). Chicago: University of Chicago Press.
- Koch, J. L. A. (1889). *Kurzgefasster leitfaden der psychiatrie* (2nd ed.). Ravensburg: Dorn'schen Buchhandlung.
- Kosson, D. S., Smith, S. S., & Newman, J. P. (1990). Evaluating the construct validity of psychopathy in Black and White male inmates: Three preliminary studies. *Journal of Abnormal Psychology*, 99(3), 250-259.
- Kraemer, H. C., Kazdin, A. E., Offord, D. R., Kessler, R. C., & et al. (1997). Coming to terms with the terms of risk. *Archives of General Psychiatry*, 54(4), 337-343.
- Krakowski, M. (1997). Neurologic and neuropsychologic correlates of violence. *Psychiatric Annals*, 27(10), 674-678.

- Kruh, I. P., Frick, P. J., & Clements, C. B. (2005). Historical and personality correlates to the violence patterns of juveniles tried as adults. *Criminal Justice and Behavior*, 32(1), 69-96.
- Lilienfeld, S.O., & Widows, M. (2005). *Professional Manual for the Psychopathic Personality Inventory-Revised (PPI-R)*. Lutz, Florida: Psychological Assessment Resources.
- Lynam, D. R. (1997). Pursuing the psychopath: Capturing the fledgling psychopath in a nomological net. *Journal of Abnormal Psychology*, 106(3), 425-438.
- Lyon, D. R., Hart, S. D., & Webster, C. D. (2001). Violence and risk assessment. In R. A. Schuller & J. R. Ogloff (Eds.), *Introduction to psychology and law: Canadian perspectives* (pp. 314-350). Toronto, ON, Canada: University of Toronto Press.
- Marcus, D. K., Siji, J. L., & Edens, J. F. (2004). A taxometric analysis of psychopathic personality. *Journal of Abnormal Psychology*, 113(4), 626-635.
- McCord, W., & McCord, J. (1964). *The psychopath. An essay on the criminal mind* (2nd ed.). New York: Van Norstrand.
- Monahan, J. (1981). *Predicting violent behavior: An assessment of clinical techniques*. Beverly Hills, CA: Sage.
- Monahan, J. & Appelbaum, P. (2000). Reducing violence risk: Diagnostically based clues from the MacArthur Violence Risk Assessment Study. In S. Hodgins (Ed.), *Effective prevention of crime and violence among the mentally ill* (pp. 19-34). Dordrecht, the Netherlands: Kluwer Academic.
- Monahan, J., & Steadman, H. J. (1994). *Violence and mental disorder: Developments in risk assessment*. Chicago: University of Chicago Press.
- Monahan, J., & Steadman, H. J. (2001). Violence risk assessment: A quarter century of research. In L. E. Frost & R. J. Bonnie (Eds.), *The evolution of mental health law* (pp. 195-211). DC, US: American Psychological Association.
- Monahan, J., Steadman, H. J., Silver, E., Appelbaum, P. S., Robbins, P. C., Mulvey, E. P., et al. (2001). *Rethinking risk assessment: The MacArthur Study of Mental Disorder and Violence*. New York: Oxford University Press.
- Mossman, D. (1994). Assessing predictions of violence: Being accurate about accuracy. *Journal of Consulting and Clinical Psychology*, 62(4), 783-792.
- Mullen, P. E. (2000). Forensic mental health. *British Journal of Psychiatry*, 176, 307-311.

- Narrow, W. E., Regier, D. A., Rae, D. S., Manderscheid, R. W., & et al. (1993). Use of services by persons with mental and addictive disorders: Findings from the National Institute of Mental Health Epidemiologic Catchment Area Program. *Archives of General Psychiatry*, 50(2), 95-107.
- Neumann, C. S., Vitacco, M. J., Hare, R. D., & Wupperman, P. (2005). Deconstructing the "reconstruction" of psychopathy: A comment on Cooke, Michie, Hart, and Clark. *Journal of Personality Disorders*, 19(6), 624-640.
- Nicholls, T. L., Ogloff, J. R., & Douglas, K. S. (2004). Assessing risk for violence among male and female civil psychiatric patients: The HCR-20, PCL:SV, and VSC. *Behavioral Sciences & the Law*, 22(1), 127-158.
- Novaco, R.W. (1994). Anger as a risk factor for violence among the mentally disordered. In J. Monahan & H. Steadman (Eds.), *Violence and mental disorder: Developments in risk assessment*. University of Chicago Press.
- Partridge, G. (1930). Current conceptions of psychopathic personality. *American Journal of Psychiatry*, 10, 53-99.
- Patrick, C. J., Bradley, M. M., & Lang, P. J. (1993). Emotion in the criminal psychopath: Startle reflex modulation. *Journal of Abnormal Psychology*, 102(1), 82-92.
- Pinel, P. (1809). *Traite medico-philosophique sure l'alienation mentale ou la manie* (2nd ed.). Paris: Brosson.
- Prichard, J. C. (1835). *A treatise on insanity and other disorders affecting the mind*. Sherwood, Gilbert, and Piper.
- Quinsey, V. L., Harris, G. T., Rice, M. E., & Cormier, C. A. (1998). *Violent offenders: Appraising and managing risk*. DC, US: American Psychological Association.
- Raine, A., Dodge, K., Loeber, R., Gatzke-Kopp, L., Lynam, D., Reynolds, C., et al. (2006). The reactive-proactive aggression questionnaire: Differential correlates of reactive and proactive aggression in adolescent boys. *Aggressive Behavior*, 32(2), 159-171.
- Rice, M. E., & Harris, G. T. (1992). A comparison of criminal recidivism among schizophrenic and nonschizophrenic offenders. *International Journal of Law and Psychiatry*, 15(4), 397-408.
- Rice, M. E., & Harris, G. T. (1995). Violent recidivism: Assessing predictive validity. *Journal of Consulting and Clinical Psychology*, 63(5), 7373-7748.

- Rosnow, R. L. & Rosenthal, R. (2005). *Beginning behavioural research: A conceptual primer* (5th edition). Englewood Cliffs, NJ: Pearson/Prentice Hall.
- Rutherford, M. J., Cacciola, J. S., Alterman, A. I., & McKay, J. R. (1996). Reliability and validity of the Revised Psychopathy Checklist in women methadone patients. *Assessment*, 3(2), 145-156.
- Salekin, R. T., Rogers, R., & Sewell, K. W. (1996). A review and meta-analysis of the Psychopathy Checklist and Psychopathy Checklist--Revised: Predictive validity of dangerousness. *Clinical Psychology: Science and Practice*, 3(3), 203-215.
- Schneider, K. (1950). *Die psychopathischen personlichkeiten* (9th ed.). Wien: Deuticke.
- Silver, E., Mulvey, E. P., & Monahan, J. (1999). Assessing violence risk among discharged psychiatric patients: Toward an ecological approach. *Law and Human Behavior*, 23(2), 237-255.
- Skeem, J. L., & Mulvey, E. P. (2001). Psychopathy and community violence among civil psychiatric patients: Results from the MacArthur Violence Risk Assessment Study. *Journal of Consulting and Clinical Psychology*, 69(3), 358-374.
- Skeem, J. L., & Mulvey, E. P. (2002). Monitoring the violence potential of mentally disordered offenders being treated in the community. In A. Buchanan (Ed.), *Care of the mentally disordered offender in the community* (pp. 111-142). New York: Oxford Press.
- Skeem, J. L., Mulvey, E. P., & Grisso, T. (2003). Applicability of traditional and revised models of psychopathy to the Psychopathy Checklist: Screening Version. *Psychological Assessment*, 15(1), 41-55.
- Stafford, E., & Cornell, D. G. (2003). Psychopathy scores predict adolescent inpatient aggression. *Assessment*, 10(1), 102-112.
- Steadman, H. J., Mulvey, E. P., Monahan, J., Robbins, P. C., Appelbaum, P. S., Grisso, T., et al. (1998). Violence by people discharged from acute psychiatric inpatient facilities and by others in the same neighborhoods. *Archives of General Psychiatry*, 55(5), 393-401.
- Swanson, J. (1994). Mental disorder, substance abuse, and community violence: An epidemiological approach. In J. Monahan & H. J. Steadman (Eds.), *Violence and mental disorder: Developments in risk assessment* (pp. 101-136). Chicago: University of Chicago Press.
- Swanson, J., Holzer, C. E., Ganju, V. K., & Jono, R. T. (1990). Violence and psychiatric disorder in the community: Evidence from the Epidemiologic Catchment Area surveys. *Hospital & Community Psychiatry*, 41(7), 761-770.

- Tabachnik, B., & Fidell, L. (1989). *Using multivariate statistics*. New York: Harper Collins.
- Tardiff, K., Marzuk, P. M., Leon, A. C., Portera, L., & et al. (1997). Violence by patients admitted to a private psychiatric hospital. *American Journal of Psychiatry*, *154*(1), 88-93.
- Vitacco, M. J., Neumann, C. S., Caldwell, M. F., Leistico, A.-M., & Van Rybroek, G. J. (2006). Testing factor models of the Psychopathy Checklist: Youth Version and their association with instrumental aggression. *Journal of Personality Assessment*, *87*(1), 74-83.
- Vitacco, M. J., Rogers, R., Neumann, C. S., Harrison, K. S., & Vincent, G. (2005). A comparison of factor models on the PCL-R with mentally disordered offenders: The development of a four-factor model. *Criminal Justice and Behavior*, *32*(5), 526-545.
- Vitale, J. E., & Newman, J. P. (2001). Using the Psychopathy Checklist--Revised with female samples: Reliability, validity, and implications for clinical utility. *Clinical Psychology: Science and Practice*, *8*(1), 117-132.
- Walters, G. D. (1991). Predicting the disciplinary adjustment of maximum and minimum security prison inmates using the Lifestyle Criminality Screening Form. *International Journal of Offender Therapy and Comparative Criminology*, *35*, 63-71.
- Walters, G. D. (2003a). Predicting criminal justice outcomes with the Psychopathy Checklist and Lifestyle Criminality Screening Form: A meta-analytic comparison. *Behavioral Sciences and the Law*, *21*, 89-102
- Walters, G. D. (2003b). Predicting institutional adjustment and recidivism with the psychopathy checklist factor scores: A meta-analysis. *Law and Human Behavior*, *27*(5), 541-558.
- Walters, G. D. (2006). Risk-appraisal versus self-report in the prediction of criminal justice outcomes: A meta-analysis. *Criminal Justice and Behavior*, *33* (3), 279-304.
- Walters, G. D., Duncan, S. A., & Kari, M. P. (2007). The latent structure of psychopathy: A taxometric investigation of the Psychopathy Checklist-Revised in a heterogeneous sample of male prison inmates. *Assessment*, *14*(3), 270-278.

- Webster, C. D., Harris, G. T., Rice, M. E., Cormier, C., & Quinsey, V. L. (1994). *The violence prediction scheme: Assessing dangerousness in high risk men*. Toronto, ON, Canada: University of Toronto Centre of Criminology.
- Wechsler, D. (1981). *Wechsler Adult Intelligence Scale-Revised Manual*. New York: Psychological Corporation.
- Werlinder, H. (1978). *Psychopathy: A history of the concepts*. Sweden: Coronet Books Inc.
- Wong, S. (2001). Psychopathic offenders. In S. Hodgins & R. Müller-Isberner (Eds.), *Violence, crime and mentally disordered offenders: Concepts and methods for effective treatment and prevention* (pp. 87-112). London: Wiley.
- Wong, S., & Gordon, A. (2006). The validity and reliability of the Violence Risk Scale: A treatment-friendly violence risk assessment tool. *Psychology, Public Policy, and Law*, 12(3), 279-309.
- Woodworth, M., & Porter, S. (2002). In cold blood: Characteristics of criminal homicides as a function of psychopathy. *Journal of Abnormal Psychology*, 111(3), 436-445.

