THE PREDICTION OF RECIDIVISM IN 3,015 MALE INMATES WITH THE 
COOLIDGE CORRECTIONAL INVENTORY

by

AIMEE E. WALSH

B.A., University of Missouri, 2012

A thesis submitted to the Graduate Faculty of the
University of Colorado Colorado Springs
in partial fulfillment of the
requirements for the degree of
Master of Arts
Department of Psychology
2016
This thesis for the Master of Arts degree by

Aimee E. Walsh

Has been approved for the

Department of Psychology

By

__________________________
Frederick L. Coolidge, Chair

__________________________
Lori James

__________________________
Michael Kisley

6/24/2016
Date
Walsh, Aimee E. (M.A., Psychology)

The Prediction of Recidivism in 3,015 Male Offenders with the Coolidge Correctional Inventory

Thesis directed by Professor Frederick L. Coolidge

Previous literature has established that repeat criminal offenders frequently have higher rates of personality disorders than un-incarcerated populations. Correlation, standard multiple regression, hierarchical multiple regression, and a $t$-test were used to assess the general hypothesis that antisocial personality disorder would be the most predictive personality disorder for recidivism, and that antisocial personality disorder and its common co-occurring disorders of conduct disorder, substance abuse, and psychotic thinking would be associated with a higher number of incarcerations in an offender sample. In order to assess this relationship the current study examined 3,015 adult male offenders using the Coolidge Correctional Inventory, which is a self-report measure of psychological and neuropsychological functioning specifically designed for offender populations (CCI; Coolidge, Segal, Klebe, Cahill, & Whitcomb, 2009). Results suggested that antisocial personality disorder was the most predictive personality disorder for recidivism, and that there was a small relationship between recidivism and antisocial personality disorder, conduct disorder, and substance abuse while there was not evidence of a meaningful relationship for psychotic thinking.

*Keywords:* antisocial personality disorder, recidivism, personality disorders, criminogenic factors, Coolidge Correctional Inventory
DEDICATION

This thesis is dedicated to my family, without whom this would not have been possible: Rich, Maxine, Tracee, Jeff, Mark, Jamie, and Lauren.
# TABLE OF CONTENTS

## CHAPTER

1. INTRODUCTION ............................................................................................................. 1
   a. The Prediction of Recidivism ................................................................................. 3
   b. Origins of Antisocial Personality Disorder and Psychopathy ................. 5
   c. Antisocial Personality Disorder ......................................................................... 9
   d. Antisocial Personality Disorder and Recidivism ........................................... 11
      i. Conduct Disorder ......................................................................................... 12
      ii. Substance Abuse ...................................................................................... 14
      iii. Psychotic Thinking ................................................................................. 16
2. HYPOTHESES ........................................................................................................... 20
3. METHODOLOGY ...................................................................................................... 22
   i. Participants ................................................................................................. 22
   ii. Materials .................................................................................................. 22
4. RESULTS .................................................................................................................. 25
5. DISCUSSION ............................................................................................................ 35
   i. Limitations and Future Directions ............................................................... 38
REFERENCES ............................................................................................................ 41
APPENDIX ............................................................................................................... 46
TABLES

TABLE

1. Internal Scale Reliabilities ................................................................. 26
2. CCI Personality Descriptives ............................................................... 30
3. CCI Personality Disorder Correlation Matrix ..................................... 31
4. Multiple Regression for CCI Personality Disorders ........................... 32
CHAPTER 1
INTRODUCTION

Criminal recidivism is a major concern in the criminal justice system. Recidivism occurs when an offender is released from prison and subsequently relapses into criminal behaviors that result in re-incarceration. One circumstance that frequently leads to re-incarceration is technical recidivism, which occurs when an offender violates the conditions of his or her parole. Another circumstance that leads to re-incarceration is when an offender commits a new crime that warrants incarceration. Repeatedly incarcerating offenders has a severe negative impact for both society and government resources. In 2014 the United States Bureau of Justice Statistics released an extensive report on state correctional spending that highlighted the vast amount of national resources devoted to the U.S. correctional system. In 1982 the U.S. spent roughly $15 billion on corrections. In contrast, estimates of U.S. correctional spending in 2010 ranged between roughly $48 billion and $53 billion per year. However, the increased allocation of government funds to the correctional system has not led to decreased national recidivism rates; instead, from 1982 to 2008 the number of inmates in state prisons increased.

State of Recidivism: The Revolving Door of America’s Prisons (2011), a report by the PEW Center on the States, supports the case that the prison system may not be effective in reducing recidivism; the report concluded that “we are past the point of
diminishing returns, where each additional prison cell provides less and less public safety benefit” and that “there are more cost-effective policies and programs” (p. 5) that could be used instead of prison. The PEW report extensively studied national recidivism trends and found that on average 1 in 31 adults within the U.S. have been incarcerated at some point in their lifetime and that an estimated 1 out of every 100 Americans is currently incarcerated. Many of those adults are repeat offenders (i.e., they returned to prison multiple times), with roughly 45% to 67% returning to prison within three years of release and 77% returning to prison within five years of release (U.S. Department of Justice, 2014). For a subset of offenders categorized as “high-risk” these estimates are exacerbated (the criteria for a high-risk offender varies across states and institutions but is commonly applied to offenders with a longstanding pattern of deviant behavior). High-risk offenders not only recidivate more frequently than general offenders but they also recidivate more quickly after being released; roughly 37% of high-risk offenders recidivate within six months and 57% recidivate within one year of release from prison (U.S. Department of Justice, 2014).

Omnibus estimates of national recidivism range between 50% and 80%, while state-specific research on recidivism reports that roughly 50 to 60% of offenders recidivate after being released from incarceration (Abracen et al., 2013; Glover, Nicholson, Hemmati, Bernfeld, & Quinsey, 2002; Howard, McCarthy, Huband, & Duggan, 2013; Stalenheim, 2004). Possible explanations for why certain groups of offenders have such high rates of recidivism are varied and frequently contested. One major issue, however, is that the prison system is not intended to be a psychiatric facility, yet the rate of mental illness in the prison system is rampant, leading some researchers to
assert that “by all objective measures, correctional facilities in the United States have become the primary mental health institutions in the nation” (Adams & Ferrandino, 2008; p. 913). Although reports on recidivism rates vary, it is clear that recidivism is a likely event for many offenders, and predicting criminal behaviors in offenders is a crucial societal issue.

The Prediction of Recidivism

Factors that predict and contribute to recidivism are known as criminogenic factors. There are two primary types of criminogenic factors: static and dynamic. Dynamic criminogenic factors are changeable and are overall less stable over time. Static criminogenic factors, on the other hand, are either unchangeable or severely resistant to change and are often reflective of an offender’s persistent characteristics or background. An offender’s criminal history, for instance, is a static, unchangeable factor that is highly predictive of recidivism (Caudy, Durso, & Taxman, 2013). The assumption behind this factor is that the more times an offender has committed criminal behavior in the past, the more likely it is that he or she will continue to behave criminally into the future as a result of engrained criminal behaviors and criminal associates. However, static criminal history fails to take into account the complex underlying factors that contribute to habitual criminal behavior.

In an attempt to understand some of these underlying factors, Andrews and Bonta (2010) identified the following major risk factors for recidivism: criminal history, pro-criminal companions, pro-criminal attitudes and cognitions, antisocial personality pattern, education and employment, family and marital status, substance abuse, and leisure or recreation time. Of the central eight, antisocial personality and criminal history were the
strongest predictors of recidivism. While criminal history is predictive of recidivism, it is not changeable; therefore, it cannot mitigate recidivism. Antisocial personality, on the other hand, is a complex factor that can be affected by both treatment and co-occurring disorders (e.g., substance abuse), and a better understanding how antisocial personality affects recidivism is necessary in order to predict and prevent recidivism.

A meta-analysis on personality disorder prevalence rates in the general population concluded that roughly 1 out of 10 individuals in the general population has a clinically diagnosable personality disorder, with antisocial personality disorder being the most prevalent at 4.1% in the general population (Lenzenweger, 2008). In an offender population, on the other hand, the prevalence rates of antisocial personality disorder are staggering in comparison (Moran et al., 1999). Conservative estimates suggest that roughly 30% of offenders meet the diagnostic criteria for antisocial personality disorder (Retzlaff, Stoner, & Kleinsasser, 2002; Stalenheim, 2004), while less conservative estimates suggest that roughly 50% to 60% of offenders meet the criteria antisocial personality disorder (Fazel & Danesh, 2002; Hiscoke, Långström, Ottoisson, & Grann, 2003; Howard et al., 2013). These estimates are over ten times the rate in an unincarcerated population.

One cause for this difference between rates of antisocial personality disorder in the general public and in offenders is that the American Psychological Association (APA) criteria for antisocial personality disorder focus primarily on quantifiable antisocial behaviors, which inherently will be more prevalent in individuals known for behavioral issues and whose behaviors were extreme enough to warrant a prison sentence. Thus, based on the APA criteria, antisocial personality disorder by definition will be over-
represented in an offender population (Hare, Hart, & Harpur, 1991; Ogloff et al., 2006). However, even though the prevalence rates for antisocial personality disorder in offenders are sizeable compared to rates in the general public it has been suggested that the reported rates of mental illness in offenders still likely underestimates the true rate of disorders in offenders (Retzlaff et al., 2002), which suggests that, regardless of the APA criteria, there is clearly something unique about the relationship between antisocial personality disorder and criminal behavior.

Antisocial personality disorder consistently emerges in the literature as an important criminogenic factor for the prediction of recidivism (Collins, 2010; Gendreau, Little, & Goggin, 1996). This is partially explained by the fact that antisocial personality disorder is defined in part by behavioral acts against society. However, another explanation is that antisocial personality disorder does not act alone in affecting recidivism risk. Antisocial personality disorder is frequently accompanied by other disorders. Three such disorders commonly associated with antisocial personality disorder are conduct disorder (i.e., a history of misconduct or criminality before the age of 15), substance abuse, and psychotic thinking. In pursuit of better understanding the effect of mental health disorders on incarceration outcomes, the current study examined the general hypothesis that antisocial personality disorder with its common comorbid disorders would be associated with a heightened rate of criminal recidivism in offenders.

**Origins of Antisocial Personality Disorder and Psychopathy**

Antisocial personality disorder can be traced back to the same historical origins as another disorder called psychopathy. The two diagnoses are commonly used interchangeably with one another; however, they currently require very different criteria
for a clinical diagnosis. Before the 1800s, Benjamin Rush, a physician and American revolutionary leader, was one of the first to attempt to explain the underlying construct of antisocial personality disorder and psychopathy by initiating the term *moral derangement*, which was defined as a case where one’s will becomes bound involuntarily to vicious behaviors because of one’s passions. Moving forward, in 1835 Pritchard, an English physician, coined the term *moral insanity*, which was described as a state without hallucinations that subjected a person to “morbid perversions”, serving as a predecessor to today’s definitions of psychopathy and antisocial personality disorder.

One of the first formal attempts to address a diagnosis of antisocial or psychopathic behavior came from the military. In 1938 at the start of World War II the U.S. Navy derived seven different types of psychopathic states in order to identify men that were unfit for military service (Hunt, 1944). By the end of World War II, each branch of military service had a separate diagnostic system and the APA independently began the task of establishing and refining a single psychiatric diagnostic classification system. Moving forward, in 1941 the American psychiatrist Hervey Cleckley published *The Mask of Sanity*, which identified 16 characteristics of psychopathy, including superficial charm, unreliability, lying, poor judgment, narcissism, incapacity for love, lack of remorse, lack of insight, impersonal sex life, and a failure to follow a clear life plan. Cleckley attempted to address whether a psychopath had an underlying psychotic disorder, and he eventually decided that most psychopaths likely did not have a psychotic disorder.

Moving forward, the first version of the *DSM* was published in 1952 to include a personality disorder called *sociopathic personality disturbance*; APA replaced the prefix
psycho- with socio- in order to deemphasize the notion of a psychotic state and emphasize that acts against society were being perpetrated. This first version of the DSM listed four subtypes of sociopathic personality disturbance. One subtype was antisocial reaction, which described individuals that were rational but were in continual trouble, unable to learn from experience or punishment, maintained no loyalties to anyone or any group, were callous and hedonistic, and had no sense of responsibility. The DSM noted that this subtype would replace any previous classifications of constitutional psychopathic state or psychopathic personality; thus began the official split between psychopathy and what is known today as antisocial personality disorder.

In 1968, the DSM underwent its first major revision (DSM-II) and sociopathic personality disturbance was changed to antisocial personality disorder. Again it appears that the diagnostic term was changed to emphasize that those with antisocial personality disorder had behaviors that repeatedly conflicted with society. The diagnostic criteria included nearly all of the DSM-I criteria for sociopathic personality disturbance, antisocial reaction type. Among its symptoms were selfishness, callousness, irresponsibility, impulsivity, lack of guilt, an inability to learn from experience or punishment, and lack of loyalty to any one group or social value. The criteria also included a tendency to blame others and offer reasonable rationalizations for their behavior. In subsequent versions of the DSM (i.e., DSM-III, DSM-III-R, DSM-IV, DSM-IV-TR, DSM-5) the diagnostic title antisocial personality disorder remained the same and the criteria focused on observable behaviors such as breaking the law, lying, irresponsibility, recklessness, early history of conduct disorder, job inconsistencies, poor parenting, aggressiveness, and failure to honor financial obligations. The APA criteria
for antisocial personality disorder diagnosis avoided subjective and emotional behaviors (that would come to fall under the psychopathy criteria), such as a lack of empathy, shallow affect, and defensiveness, in order to increase diagnostic validity.

In contrast to the APA’s antisocial personality disorder that was seen as a social or environmental response, Canadian psychologist R. D. Hare spearheaded research on psychopathy and emphasized the diagnostic distinguishability between psychopathy and antisocial personality disorder. His Psychopathy Checklist (Hare, Hart, & Harpur, 1991), which is used to predict psychopathy, promotes the emotional repercussions and underlying genetic component of antisocial behaviors, while maintaining a diagnosis outside the current DSM. His criteria for psychopathy emphasized the affective and social aspects of antisocial patterns, while the APA criteria focused on the quantifiable aspects of antisocial behaviors. Despite his attempts to influence the DSM criteria for antisocial personality disorder (Hare, Hart, & Harpur, 1991), the APA has never adopted Hare’s psychopathy criteria into the DSM.

Despite originating from the same concept, psychopathy and antisocial personality disorder have evolved and diverged; the DSM-defined antisocial personality disorder is based on quantifiable behavioral criteria whereas the historically less regulated psychopathy is based on affective and emotional criteria. As a result, psychopathy is likely a narrower, more specific construct than antisocial personality disorder (Ogloff, 2006). Prison-based research supports this claim, with roughly 15% of offenders meeting the criteria for psychopathy (Hare, Hart, & Harpur, 1991; Ogloff, 2006), while in comparison roughly 24% to 60% of offenders meet the criteria for antisocial personality disorder (Coolidge et al., 2011; Fazel & Danesh, 2002; Hiscock,
Långström, Ottosson, & Grann, 2003; Howard et al., 2013; Retzlaff, Stoner, & Kleinsasser, 2002; Stalenheim, 2004). This difference is likely due to the definitions of antisocial personality disorder and psychopathy. Antisocial personality disorder, by definition, focused on antisocial behaviors, which inherently will be over-represented in an offender population due to the high rate of behavioral issues in offenders. A diagnosis of psychopathy, on the other hand, is tied to affective and emotional factors, which will be more difficult to measure and will be less readily observable in an offender population. While it is important to consider the socio-emotional criteria of psychopathy, for the purposes of the current study the DSM-recognized diagnosis of antisocial personality disorder will be used to assess recidivism.

**Antisocial Personality Disorder**

The current *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*; APA, 2012) categorizes antisocial personality disorder under the larger umbrella of personality disorders, which are generally defined as “impairment in personality (self/interpersonal) functioning” with the presence of “one or more pathological personality traits” (p. 761). The first version of the *DSM* introduced 11 distinct personality disorders (APA, 1952). One personality disorder, called sociopathic personality disturbance, contained an antisocial reaction subset that was characterized by callousness and lack of social obedience; this personality disorder evolved into what is known today as antisocial personality disorder (APA, 1952, p. 38). The *DSM-II* made the jump to introduce antisocial personality disorder as its own distinct diagnosis to characterize “individuals who are basically unsocialized and whose behavior pattern brings them repeatedly into conflict with society,” with criteria such as lack of loyalty, disregard for social values,
callousness, and selfishness (APA, 1968, p. 43). Next, the *DSM-III* pushed antisocial personality disorder further to include a set of specific criteria for clinical diagnosis that persists into the most recent iteration of the *DSM* (APA, 1968, p. 305). The *DSM-III-R* delineated three distinct clusters of personality disorders: Antisocial personality disorder was grouped into Cluster B, which contained antisocial, borderline, histrionic, and narcissistic personality disorders (APA, 1987).

The current *DSM* dictates that the following criteria must be met for a clinical diagnosis of antisocial personality disorder:

1. A pervasive pattern of disregard for and violation of the rights of others, occurring since age 15 years, as indicated by three (or more) of the following:
   1.1. Failure to conform to social norms with respect to lawful behaviors, as indicated by repeatedly performing acts that are grounds for arrest.
   1.2. Deceitfulness, as indicated by repeated lying, use of aliases, or conning others for personal profit or pleasure.
   1.3. Impulsivity or failure to plan ahead.
   1.4. Irritability and aggressiveness, as indicated by repeated physical fights or assaults.
   1.5. Reckless disregard for safety of self or others.
   1.6. Consistent irresponsibility, as indicated by repeated failure to sustain consistent work behavior or honor financial obligations.
1.7. Lack of remorse, as indicated by being indifferent to or rationalizing having hurt, mistreated, or stolen from another.

2. The individual is at least age 18 years.

3. There is evidence of conduct disorder with onset before age 15 years.

4. The occurrence of antisocial behavior is not exclusively during the course of schizophrenia or bipolar disorder. (APA, 2013. pp.659)

**Antisocial Personality Disorder and Recidivism**

Offenders with any personality disorder have a 26% higher risk of recidivism than offenders without a personality disorder (O’Driscoll et al., 2012). However, antisocial personality disorder commonly emerges as one of the most predictive personality disorders for both general and violent recidivism risk (Wallinius et al., 2011). One study found that offenders with antisocial personality disorder were nearly 5 times more likely to recidivate generally and nearly 4 times more likely to recidivate violently when compared to offenders without antisocial personality disorder (Hiscoke, Långström, Ottosson, & Grann, 2003). The high rate of recidivism with antisocial personality disorders can be partially explained by the definition of antisocial personality disorder: offenders that meet the criteria for antisocial personality disorder are likely to have behavioral issues, and offenders with behavioral issues are likely to continue to have behavioral issues, impulsivity, and heightened reactivity after being released into society.

Another cause for the high rate of recidivism associated with antisocial personality disorder may be attributed to individuals with antisocial personality disorder...
being more susceptible to other disorders (Black, Gunter, Loveless, & Allen, 2010; Trestman, 2000). One study found that one-third of offenders met the criteria for comorbid antisocial personality disorder, conduct disorder, substance abuse, and psychotic thinking; offenders that had higher rates of those comorbid disorders had a higher rate of violent recidivism and greater severity of recidivism (Ogloff et al., 2015). Roughly half of the sample met the criteria for both antisocial personality disorder and psychotic thinking. Offenders with a psychotic disorder were also highly likely to meet the criteria for a substance use disorder; the study reported that roughly 80% of offenders had substance abuse issues. Offenders with comorbid antisocial personality disorder and substance abuse disorders committed more serious criminal acts, therefore those offenders also had the highest rates of recidivism. Overall, antisocial personality disorder, childhood conduct disorder, substance abuse, and psychotic thinking are highly interrelated in complex patterns that affect offender likelihood of recidivism.

**Conduct Disorder**

The *DSM* definition of antisocial personality disorder necessitates some history of childhood misconduct before age 15; therefore, conduct disorder is a precursor for the development of antisocial personality disorder (Loeber, Burke, & Lahey, 2002; Robbins, 1966). In addition, the relationship between antisocial personality disorder and conduct disorder may be attributed to criminal history; that is, the more times an individual has behaved criminally in the past the more likely it is that they will continue to behave criminally in the future. Therefore, individuals that were frequently in trouble as children will likely continue that pattern of behaviors into adulthood, which can bring them into conflict with society and, in turn, can contribute to a risk of prison. However, this does
not mean that conduct disorder before the age of 15 will always result in the development antisocial personality disorder.

Research suggests that 52% of those with a history of childhood conduct disorder go on to receive a diagnosis of antisocial personality disorder, while 48% of children with conduct disorder will fail to meet the criteria for antisocial personality disorder in adulthood. It has been suggested that although the APA definition of antisocial personality disorder necessitates some history of juvenile conduct disorder, that conduct disorder and antisocial personality disorder may not have a causal relationship because it is possible that there are many factors and clinical history variables that can affect the relationship between conduct disorder and antisocial personality disorder (Loeber et al., 2002; Swanson et al., 2008). Since the relationship between conduct disorder and antisocial personality disorder may be somewhat confounded, some studies use “modified antisocial personality disorder” (i.e., the APA criteria for antisocial personality disorder without the conduct disorder criteria) and have found that roughly 17% of offenders without a history of conduct disorder meet the criteria for modified antisocial personality, which suggest that offenders can still behave antisocially and have antisocial traits without a history of juvenile conduct disorder (Loeber et al., 2002).

One of the earliest critical works on how childhood conduct disorder evolves into adulthood is Robbins’ *Deviant Children Grown Up* (1966), which longitudinally assessed adult mental health outcomes from childhood symptoms. The goal of the study was to examine the *DSM-I* antisocial reaction subset of sociopathic personality disturbance (which would eventually evolve into what is known today as antisocial personality disorder; 1966, p. 79). The criteria for sociopathic personality disorder included “truancy
combined with other school problems”, which is known today as childhood conduct disorder or juvenile conduct disorder (p. 80). As the children in the study aged, Robbins found that 30-40% of juveniles with conduct disorder and a sociopathic personality disorder went on to develop what is now known as antisocial personality disorder in adulthood.

Childhood conduct disorder with co-occurring antisocial personality disorder is a good predictor of future criminal behavior (Swanson et al., 2008). Roughly 80% of individuals with antisocial personality disorder and a history of conduct disorder go on to serve a prison sentence at some time, and out of those that are incarcerated roughly 40% committed crimes that resulted in at least a five-year sentence. Robbins’ longitudinal study concluded that juveniles with antisocial personality disorder and a conduct disorder “were found to have more arrests, more serious arrests, more convictions when arrested, to serve more and longer sentences, to have their legal troubles continue later into their lives” moving into adulthood (Robbins, 1966. pp. 113). Therefore, childhood conduct disorder contributes substantially to antisocial personality disorder, which in turn, can lead to a heightened risk of criminal behaviors and recidivism in adulthood.

**Substance Abuse**

The most recent version of the *DSM* (APA, 2014) defines substance abuse as “a cluster of cognitive, behavioral, and physiological symptoms indicating that the individual continues using the substance despite significant substance-related problems.” Research consistently suggests that substance abuse is rampant in an offender sample, with many studies indicating a 60% prevalence rate for offender substance use disorders (Coolidge, Segal, Klebe, Cahill, & Whitcomb, 2009; Hiscoke, Långström, Ottosson, &
Substance abuse has a significant effect on offender likelihood of recidivism. Offenders with high self-reported substance use are three times more likely to recidivate than offenders with low self-reported substance use (Tarescavage, Luna-Jones, & Ben-Porath, 2014). This relationship can be partially explained by the effect of substance abuse on impulsivity and decision-making, such that individuals prone to substance abuse are also less prone to consider the long-term consequences of their short-term, substance-fueled behaviors.

Walter, Weisbeck, Dittman, and Graf (2011) assessed how substance abuse and personality disorders affected recidivism comparing four offender groups: (1) offenders with comorbid personality and substance use disorders, (2) offenders with only a personality disorder, (3) offenders with only a substance use disorder, and (4) offenders with a psychiatric diagnosis that was neither a personality disorder nor a substance use disorder. Offenders with a psychiatric diagnosis of neither a personality disorder nor a substance use disorder had recidivism rates that were not statistically significantly different from offenders without mental health disorders. In contrast, offenders with personality disorders and/or substance abuse had higher recidivism rates such that offenders with a personality disorder had a 33% recidivism rate, offenders with a substance use disorder had a 44.6% recidivism rate, and offenders with a comorbid personality disorder and substance use disorder not only had a 69.3% recidivism rate but were quicker to recidivate than any other group. Therefore, personality disorders, especially when combined with a comorbid substance abuse disorder are associated with a heightened risk of recidivism.
Another study examined the unique effect of personality disorders on correctional outcomes while controlling for common recidivism predictors of sex, age, prior court experiences, indigenous status, and psychiatric disorders (O’Driscoll et al., 2012). Out of a variety of predictors, only personality disorders and substance abuse statistically significantly predicted recidivism. Comorbid personality disorders and substance abuse were significantly related to recidivism, while no other mental disorders were significantly related. Research consistently reports that roughly 60% to 80% of offenders with a substance abuse disorder also meet the criteria for antisocial personality disorder (Hiscoke, Långström, Ottosson, & Grann, 2003; Moran & Hodgins, 2004; Robbins, 1966). One explanation for the high rate of substance abuse in antisocial offenders may be attributed to antisocial individuals being more prone to irresponsibility, disregard for personal safety, and impulsivity per the APA criteria for diagnosis. Regardless of the cause for the relationship, it is clear that offenders with antisocial personality disorder have high rates of substance abuse, which in turn results in those offenders being more susceptible to criminal behaviors, more likely to recidivate than other offenders, and quicker to recidivate after being released from prison (Howard, McCarthy, Huband, & Duggan, 2013).

**Psychotic Thinking**

Psychotic disorders are characterized by abnormal functioning in the form of delusions, hallucinations, disorganized speech, thought, or movement. Psychotic disorders include schizotypal personality disorder, schizophrenia, and delusional disorder. Psychotic disorders and antisocial personality disorder are often comorbid, with 78% of offenders having comorbid antisocial personality disorder with psychotic-
spectrum disorders; Out of those offenders with a comorbid diagnosis 88% had a history of at least one conviction (Moran & Hodgins, 2004; Schug, Raine, & Wilcox, 2007). A highly influential study by Robbins (1966) found that of those diagnosed with antisocial personality disorder, 17% had blurred vision, 8% had episodes of blindness, 7% had movement difficulty, and 9% had delusions (pp. 120). Overall, 33% of individuals with antisocial personality disorder were later diagnosed with a psychotic disorder (pp. 125). While it is clear that there is a relationship between antisocial personality disorder and psychotic thinking, research on how the combination of those disorders affects recidivism is conflicting and there is not a clear distinction of how or why antisocial personality disorder and psychotic thinking interact to affect recidivism.

While the causal relationship between antisocial personality disorders, psychotic thinking, and recidivism is unclear in the literature, some research suggests that psychotic symptoms are associated with a decreased recidivism rate because those with extreme psychotic symptoms are essentially too ill to behave criminally (Collins et al., 2010; Prins, Skeem, Mauro, & Link, 2015). On the other hand, some research suggests that psychotic thinking and antisocial personality disorder are related to an increased rate of violent behaviors and recidivism, especially because psychotic symptoms (e.g., paranoid delusions) can contribute to outwardly aggressive, paranoid behavior that in some circumstances evolves into criminal behavior (Keers, Ullrich, DeStavola, & Coid, 2014; Moran & Hodgins, 2004; Schug, Raine, & Wilcox, 2007).

One explanation for the effect of comorbid antisocial personality disorder and psychotic thinking on criminal behavior is arousal level. Individuals with comorbid antisocial personality disorder and psychotic-spectrum disorders were found to have
reduced skin-conductance and decreased arousal levels in response to stimuli when compared to both controls and those with non-comorbid antisocial personality disorder or a psychotic-spectrum disorder (Schug, Raine, & Wilcox, 2007). This higher threshold for stimuli and decreased arousal contributes to a propensity for risky behaviors, which results in behavioral issues and failure to consider long-term repercussions, both of which likely contribute to criminal behavior and incarceration rates.

Another critical factor that influences the relationship between psychotic thinking and recidivism is mental health treatment. While the majority of research associates psychotic thinking with increased recidivism, one study examined offenders under intensive mental health treatment and found that offenders with antisocial personality disorder and psychotic thinking had a 94% lower risk of recidivism when compared to offenders that had antisocial personality disorder without psychotic symptoms (Prins, Skeem, Mauro, & Link, 2015). For untreated offenders, on the other hand, there is a strong association between violent criminal behavior and psychotic symptoms (Keers, Ullrich, DeStavola, & Coid, 2014) such that offenders with co-occurring antisocial personality disorder and psychotic-spectrum disorders had a general recidivism rate of 88% with 75% of those offenders committing their first criminal offense prior to receiving any psychiatric treatment. Offenders with comorbid antisocial personality disorder and psychotic thinking have a high likelihood of non-violent criminal behavior and offenders are often untreated for psychotic symptoms when they commit crimes worthy of lengthy prison sentences (Moran & Hodgins, 2004). Therefore, it is possible that the relationship between antisocial personality disorder and psychotic thinking may be mitigated by mental health treatment, but the literature on this effect is inconsistently
reported and the relationship between psychotic thinking and antisocial personality warrants further investigation. Overall, the literature suggests that the relationship between antisocial personality disorder and its common co-occurring disorders requires further investigation in order to understand the relationship between antisocial personality disorder and recidivism.
CHAPTER 2

HYPOTHESES

The current study employed the Coolidge Correctional Inventory (CCI) to examine the relationship between criminal recidivism and psychopathology, specifically antisocial personality disorder, and its common co-occurring disorders of conduct disorder, substance abuse, and psychotic thinking. It was hypothesized that criminal recidivism (i.e., number of incarcerations) would be significantly correlated with the Antisocial Personality Disorder scale (H₁). It was hypothesized that number of incarcerations would be significantly correlated with the Conduct Disorder scale (H₂). It was hypothesized that number of incarcerations would be significantly correlated with the Substance Abuse scale (H₃). It was hypothesized that number of incarcerations would be significantly correlated with the Psychotic Thinking scale (H₄). It was hypothesized that the Antisocial Personality Disorder scale would not significantly contribute to the prediction of number of incarcerations beyond the effects of the Conduct Disorder, Substance Abuse, and Psychotic Thinking scales (H₅). It was hypothesized that out of the 14 CCI personality disorder scales, the Antisocial Personality Disorder scale would emerge as the strongest predictor of recidivism (H₆). Finally, it was hypothesized that offenders who had clinically significant scores (i.e., scores one standard deviation above the mean) on a composite of the Antisocial Personality
Disorder, Conduct Disorder, Substance Abuse, and Psychotic Thinking scales would have a higher number of incarcerations than offenders without clinically significant scores (i.e., score less than one standard deviation above the mean; H7). The overall goal of the hypotheses is to investigate the relationship between antisocial personality disorder and its common co-occurring disorders with recidivism.
CHAPTER 3

METHODOLOGY

Participants

Participants ($N = 4,238$) were male offenders admitted into the Colorado Department of Corrections (CDOC) in Denver, CO that were administered the CCI during standard prison intake procedures. All data was de-identified by the CDOC prior to transmission to the present investigators; the CDOC maintains all original data. The present archival data use was approved by the University of Colorado, Colorado Springs Institutional Review Board and by the CDOC.

Materials

**Coolidge Correctional Inventory (CCI).** The CCI is a *DSM-IV* aligned self-report inventory composed of 250 items that were specifically created from the Coolidge Axis II Inventory (CATI; Coolidge & Merwin, 1992) to be used specifically in an offender population (Coolidge et al., 2009). The CCI was created as an alternative to time-consuming and expensive measures commonly used in correctional settings (e.g., the Minnesota Multiphasic Personality Inventory). The Colorado Department of Corrections implemented the CCI as part of its standard prison intake procedures for roughly 10 years to assess offender neuropsychological issues, clinical syndromes, personality disorders, and likelihood of dangerous behaviors during intake. At the time of testing, the CCI had no reported test retest reliability, however, the CCI is based upon
the CATI, and the CATI has been shown to have excellent test retest reliability (e.g., \( r = .90; \) 1 week interval; Coolidge & Merwin, 1992). The median internal reliability for the 33 CCI scales and subscales is Cronbach’s \( \alpha = .79 \) (range: \( \alpha = .49 \) to \( \alpha = .93 \); Coolidge et al., 2009). The validity of the CCI has been demonstrated in a series of clinical studies investigating attention-deficit hyperactivity disorder (Cahill et al., 2012), neurocognitive differences in male and female inmates (Coolidge et al., 2011), and male rapists and child molesters (Francia et al., 2010).

The CCI items were answered on a 4-point Likert-type scale that ranges from 1 to 4 (1 = *strongly false*, 2 = *more false*, 3 = *more true*, 4 = *strongly true*). The CCI contains two validity scales: Tendency to Deny Blatant Pathology (TDBP; 97 items) and Random Responding (3 items; e.g., “I played quarterback for the Denver Broncos”). The CCI scales assessed in the present study are the Psychotic Thinking scale (12 items), the Conduct Disorder scale (8 items), the 2 items assessing alcohol and drug abuse, and the CCI’s 14 personality disorder scales: Antisocial Personality Disorder scale (45 items), Avoidant scale (18 items), Borderline scale (23 items), Dependent scale (27 items), Depressive scale (7 items), Histrionic scale (30 items), Narcissistic scale (26 items), Obsessive-Compulsive scale (30 items), Paranoid scale (20 items), Passive-Aggressive scale (23 items), Sadistic scale (17 items), Schizoid scale (9 items), Schizotypal scale (22 items), and Self-Defeating scale (21 items).

**Screening.** Missing data was corrected for prior to receipt of the dataset; therefore, the number of offenders excluded due to insufficient data is unknown. However, per the CCI manual, offenders that did not complete at least 235 of the CCI’s 250 items were excluded from analysis and offenders’ missing data that did not meet the
criteria for exclusion was corrected for using multiple imputation methods. After accounting for missing data, a total of 4,238 male inmates’ CCI protocols were screened by the CCI’s TDBP and Random Responding validity scales. Possible scores on the TDBP scale ranged from 97 to 388. Per the CCI manual scores one standard deviation below the mean on the TDBP scale are indicative of the denial of pathology, therefore, offenders with a TDBP score less than one standard deviation below the normative mean (i.e., TDBP scores less than 135) were excluded from analysis, which eliminated 1,135 offender’s scores. Possible scores on the Random Responding scale ranged from 3 to 12. Offenders that endorsed any of the three random responding items were excluded, which resulted in the elimination of 88 inmate’s protocols. The final sample thus consisted of 3,015 valid CCI profiles.

**Final Sample Demographics.** After screening, the offender sample had the following ethnicity distribution: 919 (30%) White; 857 (28)% mixed or unknown ethnicity; 613 (20%) Hispanic; 546 (18%) Black; 60 (2%) Native American; 20 (<1%) Asian. Offenders were on average 33.5 years old ($SD = 9.7$ years; age range = 17 to 73 years old). Approximately 67% of the sample had at least a high school diploma or high school equivalency. Of the sample, 71% were incarcerated in Colorado for the first time, 20% for the second time, and 9% for the third time or more.
CHAPTER 4
RESULTS

Scale Reliabilities. The internal scale reliabilities (Cronbach’s $\alpha$; Cronbach, 1951) in the present sample ($N = 3,015$) were conducted on the Conduct Disorder scale, Psychotic Thinking scale, and the following 14 CCI personality disorder scales: Antisocial scale, Avoidant scale, Borderline scale, Dependent scale, Depressive scale, Histrionic scale, Narcissistic scale, Obsessive-Compulsive scale, Paranoid scale, Passive Aggressive scale, Sadistic scale, Schizoid scale, Schizotypal scale, Self-Defeating scale. The standard acceptable range for Cronbach’s $\alpha$ is typically between 0.7 and .8; Scores below 0.7 can suggest poor internal reliability while scores above .85 can suggest item redundancy (Field, 2005). However, per Kline (1999), reliable scales can still have widely ranging Cronbach’s $\alpha$ due to the nature and variability of the psychological constructs being measured. The Conduct Disorder scale (8 items), $\alpha = .75$, and Psychotic Thinking scale (13 items), $\alpha = .75$, both had good internal reliability. The internal scale reliabilities for the for the 14 personality disorder scales in the present sample ranged between $\alpha = .86$ to $\alpha = .65$ (see Table 1 for internal scale reliabilities for all CCI personality disorders) with most scales having good internal scale reliability.

Scale Descriptives and Frequencies. The frequencies for the number of incarcerations were as follows: one incarceration, $n = 2050$ (71%); two incarcerations, $n = 590$ (20%); three incarcerations, $n = 199$ (7%); four incarcerations, $n = 58$ (2%); five to
seven incarcerations, \( n = 18 \) (<1%). The CCI contains two drug and alcohol abuse items: Item 17 “Someone I know thinks I have a drug or alcohol problem” and Item 177 “I have gotten in trouble because of my drinking or drug problem”. For Item 17, 40% endorsed or strongly endorsed the item. For Item 177, 57% endorsed or strongly endorsed the item.

Table 1

<table>
<thead>
<tr>
<th>Scale</th>
<th>Items</th>
<th>Cronbach’s ( \alpha )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antisocial</td>
<td>45</td>
<td>.86</td>
</tr>
<tr>
<td>Avoidant</td>
<td>18</td>
<td>.81</td>
</tr>
<tr>
<td>Borderline</td>
<td>23</td>
<td>.80</td>
</tr>
<tr>
<td>Dependent</td>
<td>7</td>
<td>.85</td>
</tr>
<tr>
<td>Depressive</td>
<td>27</td>
<td>.83</td>
</tr>
<tr>
<td>Histrionic</td>
<td>30</td>
<td>.69</td>
</tr>
<tr>
<td>Narcissistic</td>
<td>26</td>
<td>.74</td>
</tr>
<tr>
<td>Obsessive Compulsive</td>
<td>30</td>
<td>.75</td>
</tr>
<tr>
<td>Paranoid</td>
<td>20</td>
<td>.78</td>
</tr>
<tr>
<td>Passive Aggressive</td>
<td>23</td>
<td>.78</td>
</tr>
<tr>
<td>Sadistic</td>
<td>17</td>
<td>.78</td>
</tr>
<tr>
<td>Schizoid</td>
<td>21</td>
<td>.69</td>
</tr>
<tr>
<td>Schizotypal</td>
<td>22</td>
<td>.80</td>
</tr>
<tr>
<td>Self-defeating</td>
<td>9</td>
<td>.65</td>
</tr>
</tbody>
</table>

**Hypothesis 1.** It was hypothesized that recidivism, as measured by number of incarcerations, would be significantly positively correlated with the CCI Antisocial Personality Disorder scale. The Antisocial Personality Disorder scale (\( M = 87.89, SD = 14.86 \)) was created by combining the 46 CCI items that measure antisocial traits, which resulted in a variable ranging from 46 (strong denial of all items) to 184 (strong endorsement of all items). It was found that there was a weak but statistically significant
positive correlation between the Antisocial Personality Disorder scale and number of incarcerations \( r = .12; p < .0005 \). Thus, Hypothesis 1 received little or no support.

**Hypothesis 2.** It was hypothesized that number of incarcerations would be significantly positively correlated with the Conduct Disorder scale. The Conduct Disorder scale \( (M = 13.61, SD = 4.51) \) was created by combining the 8 CCI items that measure conduct disorder before the age of 15, resulting in a variable ranging from 8 \( (\text{strong denial of all items}) \) to 32 \( (\text{strong endorsement of all items}) \). It was found that there was a weak but statistically significant positive correlation between the Conduct Disorder scale and number of incarcerations \( r = .10; p < .0005 \). Thus, Hypothesis 2 received little or no support.

**Hypothesis 3.** It was hypothesized that number of incarcerations would be significantly positively correlated with substance abuse. The Substance Abuse scale \( (M = 4.76, SD = 2.11) \) was created by combining the sums of the CCI’s substance abuse items (i.e., item 17 and item 177) together, resulting in a variable ranging from 2 \( (\text{strong denial of both items}) \) to 8 \( (\text{strong endorsement of both items}) \). It was found that there was a weak but statistically significant positive correlation between the Substance Abuse scale and the number of incarcerations \( r = .10; p < .0005 \). Thus, Hypothesis 3 received little or no support.

**Hypothesis 4.** It was hypothesized that number of incarcerations would be significantly positively correlated with the Psychotic Thinking scale. The Psychotic Thinking scale \( (M = 20.76, SD = 5.32) \) was created by combining the 12 CCI items that measure psychotic thinking, resulting in a variable ranging from 12 \( (\text{strong denial of all items}) \) to 48 \( (\text{strong endorsement of all items}) \). It was found that there was a very weak,
non-significant positive correlation between the Psychotic Thinking scale and number of incarcerations ($r = .03; p = .07$). Thus, Hypothesis 4 was not supported.

**Hypothesis 5.** It was hypothesized that the Antisocial Personality Disorder scale would not significantly contribute to the prediction of number of incarcerations above and beyond the Conduct Disorder, Substance Abuse, and Psychotic Thinking scales. In order to test this hypothesis, hierarchical multiple regression was conducted to predict number of incarcerations from scores on the Antisocial Personality Disorder, Conduct Disorder, Substance Abuse, and Psychotic Thinking scales. The Conduct Disorder, Substance Abuse, and Psychotic Thinking scales were entered as predictors into the first block and the Antisocial Personality Disorder scale entered into the second block in order to assess whether the Antisocial Personality Disorder scale was predictive of number of incarcerations beyond the effects of its common co-occurring disorders.

The first block, with the Conduct Disorder, Substance Abuse, and Psychotic Thinking scales, significantly accounted for 2% of the variance in recidivism, $F(3, 3011) = 17.35, p < .0005, R = .13, R^2 = .02, R^2_{\text{adjusted}} = .02$. The second block, with the Antisocial Personality Disorder scale added, was also statistically significant and accounted for 2% of the variance in recidivism, $F(1, 3010) = 15.01, p < .0005, R = .14, R^2 = .02, R^2_{\text{adjusted}} = .02$. The change in $R^2$ associated with adding the Antisocial Personality Disorder scale to the predictive model was small, yet statistically significant ($R^2_{\text{change}} = .003, p = .005$). Examination of the standardized beta coefficients for the first block suggested that the Conduct Disorder ($\beta = .09, p < .0005$) and Substance Abuse scales ($\beta = .09, p < .0005$) offered a small, yet statistically significant unique contribution to the prediction of number of incarcerations, while the Psychotic Thinking scale ($\beta = -$
.01, \( p = .51 \) did not significantly predict number of incarcerations. Examination of the second block suggested that the Antisocial Personality Disorder scale (\( \beta = .09, p < .05 \)) and the Substance Abuse scale (\( \beta = .07, p < .0005 \)) offered a small, yet statistically significant unique contribution to predicting number of incarcerations in the model, while the Psychotic Thinking scale (\( \beta = -.03, p = .15 \)) and the Conduct Disorder scale (\( \beta = .03, p = .32 \)) did not statistically significantly contribute to the prediction of recidivism in the model.

Zero-order correlations between the predictor variables and number of incarcerations were also examined. These additional analyses are supported by Nathans, Oswald, and Nimon (2012) who have noted, “there is no single ‘right’ way to interpret regression results, and although reliance on beta weights may feel right because it is normative practice, it provides very limited information” (p. 2). All co-occurring disorders were significantly positively correlated with the Antisocial Personality Disorder scale at the \( p = .01 \) level: Conduct Disorder scale, \( r = .77, p < .005 \); Substance Abuse scale, \( r = .33, p < .005 \); Psychotic Thinking scale, \( r = .46, p < .005 \). The results of the zero-order correlations of predictors with number of incarcerations are as follows: Antisocial Personality Disorder scale, \( r = .12, p < .0005 \); Conduct Disorder scale, \( r = .10, p < .0005 \); Substance Abuse scale, \( r = .10, p < .0005 \); Psychotic Thinking scale, \( r = .03, p = .07 \). Thus, the hypothesis that the Antisocial Personality Disorder scale would not significantly contribute to the prediction of number of incarcerations above and beyond the Conduct Disorder, Substance Abuse, and Psychotic Thinking scales was not supported, as the Antisocial Personality Disorder scale was still a unique significant predictor of recidivism beyond the contribution of its common co-occurring disorders.
**Hypothesis 6.** The 14 CCI Personality Disorder scales (i.e., Antisocial scale, Avoidant scale, Borderline scale, Dependent scale, Depressive scale, Histrionic scale, Narcissistic scale, Obsessive-Compulsive scale, Paranoid scale, Passive-Aggressive scale, Sadistic scale, Schizoid scale, Schizotypal scale, and Self-Defeating scale; see Table 2 for scale descriptives) were examined concurrently using correlation and linear multiple regression in order to assess the hypothesis that the Antisocial Personality Disorder scale would be the most predictive personality disorder for number of incarcerations. Nearly all of the CCI Personality Disorder scales were statistically significantly correlated with one another at the \( p < .01 \) level (see Table 3). Per Cohen’s classification of correlation sizes (1988), the Antisocial Personality Disorder scale was highly correlated with the Borderline, Paranoid, Passive-Aggressive, and Sadistic scales; it was moderately correlated with the Depressive, Narcissistic, Schizoid, and Schizotypal scales; finally, it was slightly correlated with the Avoidant, Dependent, Histrionic, Obsessive-Compulsive, and Self-Defeating scales.

**Table 2**

*CCI Personality Disorder Descriptives*

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antisocial</td>
<td>52</td>
<td>153</td>
<td>87.89</td>
<td>14.86</td>
</tr>
<tr>
<td>Avoidant</td>
<td>20</td>
<td>72</td>
<td>38.30</td>
<td>7.30</td>
</tr>
<tr>
<td>Borderline</td>
<td>27</td>
<td>83</td>
<td>47.18</td>
<td>8.17</td>
</tr>
<tr>
<td>Dependent</td>
<td>7</td>
<td>28</td>
<td>12.69</td>
<td>4.01</td>
</tr>
<tr>
<td>Depressive</td>
<td>27</td>
<td>95</td>
<td>53.02</td>
<td>9.07</td>
</tr>
<tr>
<td>Histrionic</td>
<td>40</td>
<td>100</td>
<td>68.94</td>
<td>7.73</td>
</tr>
<tr>
<td>Narcissistic</td>
<td>31</td>
<td>89</td>
<td>55.67</td>
<td>7.74</td>
</tr>
<tr>
<td>OCD</td>
<td>52</td>
<td>99</td>
<td>71.71</td>
<td>6.39</td>
</tr>
<tr>
<td>Paranoid</td>
<td>24</td>
<td>75</td>
<td>44.57</td>
<td>7.09</td>
</tr>
<tr>
<td>PG</td>
<td>29</td>
<td>89</td>
<td>48.96</td>
<td>7.26</td>
</tr>
<tr>
<td>Sadistic</td>
<td>16</td>
<td>65</td>
<td>28.58</td>
<td>6.29</td>
</tr>
<tr>
<td>Schizoid</td>
<td>27</td>
<td>72</td>
<td>46.86</td>
<td>6.07</td>
</tr>
<tr>
<td>Schizotypal</td>
<td>26</td>
<td>83</td>
<td>42.78</td>
<td>7.82</td>
</tr>
<tr>
<td>Self-defeating</td>
<td>11</td>
<td>38</td>
<td>20.77</td>
<td>4.03</td>
</tr>
</tbody>
</table>

*Note.* OCD, Obsessive-Compulsive Disorder; PG, Passive-Aggressive.
Table 3

CCI Personality Disorder Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. APD</td>
<td>--</td>
<td>.20</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>2. Avoidant</td>
<td>.20</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>3. Borderline</td>
<td>.58</td>
<td>.49</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>4. Dependent</td>
<td>.26</td>
<td>.66</td>
<td>.63</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>5. Depressive</td>
<td>.39</td>
<td>.65</td>
<td>.69</td>
<td>.65</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>6. Histrionic</td>
<td>.27</td>
<td>-.06</td>
<td>.48</td>
<td>.42</td>
<td>.26</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>7. NA</td>
<td>.44</td>
<td>.28</td>
<td>.50</td>
<td>.49</td>
<td>.42</td>
<td>.63</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>8. Obsessive</td>
<td>.12</td>
<td>.49</td>
<td>.26</td>
<td>.46</td>
<td>.42</td>
<td>.03*</td>
<td>.35</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>9. Paranoid</td>
<td>.56</td>
<td>.47</td>
<td>.55</td>
<td>.32</td>
<td>.52</td>
<td>.08</td>
<td>.46</td>
<td>.39</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>10. PG</td>
<td>.59</td>
<td>.53</td>
<td>.63</td>
<td>.61</td>
<td>.63</td>
<td>.29</td>
<td>.54</td>
<td>.41</td>
<td>.62</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>11. Sadistic</td>
<td>.83</td>
<td>.18</td>
<td>.47</td>
<td>.26</td>
<td>.37</td>
<td>.27</td>
<td>.52</td>
<td>.25</td>
<td>.54</td>
<td>.55</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>12. Schizoid</td>
<td>.41</td>
<td>.56</td>
<td>.64</td>
<td>.58</td>
<td>.63</td>
<td>.31</td>
<td>.43</td>
<td>.41</td>
<td>.52</td>
<td>.60</td>
<td>.37</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>13. SZ</td>
<td>.46</td>
<td>.65</td>
<td>.56</td>
<td>.43</td>
<td>.60</td>
<td>.04*</td>
<td>.38</td>
<td>.42</td>
<td>.70</td>
<td>.59</td>
<td>.46</td>
<td>.55</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>14. SD</td>
<td>.25</td>
<td>.57</td>
<td>.26</td>
<td>.21</td>
<td>.44</td>
<td>-.26</td>
<td>.12</td>
<td>.40</td>
<td>.50</td>
<td>.33</td>
<td>.27</td>
<td>.42</td>
<td>.69</td>
<td>--</td>
</tr>
</tbody>
</table>

Note. APD, Antisocial Personality Disorder; NA, Narcissistic; PG, Passive Aggressive Personality Disorder; SZ, Schizotypal; SD, Self-defeating Personality Disorder; All correlations without an asterisk indicate a correlation significant at the p = .01 level (2-tailed); .03* indicates a non-significant correlation; .04* indicates a correlation significant at the p = .05 level (2-tailed).

As a model, the 14 CCI personality disorders significantly accounted for 3% of the variance in number of incarcerations, $F(14,3000) = 6.46, p < .0005$, $R = .17$, $R^2 = .03$, $R^2_{\text{adjusted}} = .03$. The standardized beta coefficients for all 14 CCI personality disorders (see Table 4) suggested that the Antisocial, Depressive, Schizotypal, and Self-Defeating scales accounted for a statistically significant amount of variance in the model. The Antisocial Personality Disorder ($\beta = .13, p < .005$) and Self-Defeating ($\beta = .11, p < .0005$) scales were statistically significant unique contributors in the model such that higher scores on the Antisocial Personality Disorder and Self-Defeating scales corresponded to a higher number of incarcerations. The Schizotypal ($\beta = -.08, p < .05$) and Depressive ($\beta = -.31, p < .0005$) scales were also statistically significant unique contributors in the model such that higher scores on Schizotypal and Self-Defeating scales corresponded to a lower number of incarcerations.
Table 4

**Multiple Regression for all CCI Personality Disorders**

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>Beta</th>
<th>t</th>
<th>Sig.</th>
<th>Partial</th>
<th>Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antisocial</td>
<td>.01</td>
<td>.13</td>
<td>3.41</td>
<td>.00</td>
<td>.06</td>
<td>.06</td>
</tr>
<tr>
<td>Avoidant</td>
<td>.00</td>
<td>.02</td>
<td>.49</td>
<td>.62</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>Borderline</td>
<td>.00</td>
<td>.02</td>
<td>.70</td>
<td>.48</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>Dependent</td>
<td>.01</td>
<td>.03</td>
<td>1.02</td>
<td>.31</td>
<td>.02</td>
<td>.02</td>
</tr>
<tr>
<td>Depressive</td>
<td>-.01</td>
<td>-.13</td>
<td>-3.81</td>
<td>.00</td>
<td>-.07</td>
<td>-.07</td>
</tr>
<tr>
<td>Histrionic</td>
<td>.00</td>
<td>.02</td>
<td>.66</td>
<td>.51</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>Narcissistic</td>
<td>.00</td>
<td>.01</td>
<td>.19</td>
<td>.85</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Obsessive Compulsive</td>
<td>.00</td>
<td>-.03</td>
<td>-1.44</td>
<td>.15</td>
<td>-.03</td>
<td>-.03</td>
</tr>
<tr>
<td>Paranoid</td>
<td>.00</td>
<td>.00</td>
<td>-.11</td>
<td>.91</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Passive Aggressive</td>
<td>.01</td>
<td>.05</td>
<td>1.62</td>
<td>.11</td>
<td>.03</td>
<td>.03</td>
</tr>
<tr>
<td>Sadistic</td>
<td>.00</td>
<td>-.03</td>
<td>-.70</td>
<td>.48</td>
<td>-.01</td>
<td>-.01</td>
</tr>
<tr>
<td>Schizoid</td>
<td>.00</td>
<td>-.02</td>
<td>-.57</td>
<td>.57</td>
<td>-.01</td>
<td>-.01</td>
</tr>
<tr>
<td>Schizotypal</td>
<td>-.01</td>
<td>-.08</td>
<td>-2.44</td>
<td>.01</td>
<td>-.04</td>
<td>-.04</td>
</tr>
<tr>
<td>Self-defeating</td>
<td>.02</td>
<td>.11</td>
<td>3.59</td>
<td>.00</td>
<td>.07</td>
<td>.06</td>
</tr>
</tbody>
</table>

Results of the zero-order correlations between the 14 CCI personality disorders and the criterion variable, number of incarcerations, were as follows: Antisocial Personality Disorder scale, $r = .12, p < .0005$; Avoidant scale, $r = -.01, p = .57$; Borderline scale, $r = .04, p < .05$; Dependent scale, $r = -.06, p < .005$; Depressive scale, $r = .03, p = .18$; Histrionic scale, $r = -.01, p = .73$; Narcissistic scale, $r = .02, p < .05$; Obsessive-Compulsive scale, $r = -.04, p = .06$; Paranoid scale, $r = .06, p < .001$; Passive-Aggressive scale, $r = .05, p < .005$; Sadistic scale, $r = .09, p < .0005$; Schizoid scale, $r = .02, p = .29$; Schizotypal scale, $r = .03, p = .07$; and Self-Defeating scale, $r = .07, p < .0005$.

Thus, the hypothesis that the Antisocial Personality Disorder scale would be the most predictive personality disorder for number of incarcerations was partially supported, with the Antisocial and Self-Defeating personality disorder scales being the only...
significant positive predictors for number of incarcerations. Additionally, Antisocial Personality Disorder had the largest positive correlation with number of incarcerations, and had strong positive correlations with personality disorders that were also significantly positively correlated with number of incarcerations (see Table 3). Additionally, it was found that the Depressive and Schizotypal scales were statistically significant negative predictors for number of incarcerations such that they may be considered protective factors against recidivism.

Hypothesis 7. It was hypothesized that offenders with clinically significant scores (i.e., offenders who scored greater than or equal to one standard deviation above the mean) on a composite of the Antisocial Personality Disorder, Conduct Disorder, Substance Abuse, and Psychotic Thinking scales would have a higher number of incarcerations than offenders who scored less than one standard deviation above the mean on those predictor variables. Per the CCI manual, any offenders with scores higher than the one standard deviation above the mean cutoff are considered highly likely to have a clinically significant level of that disorder (Coolidge, 2004). The composite predictor variable was computed by combining the sum of offender scores on the Antisocial Personality Disorder, Conduct Disorder, Substance Abuse, and Psychotic Thinking scales resulting in a 68-item variable with possible scores ranging from 68 to 272. Offender scores on the composite predictor in the current sample ranged from 78 to 234 ($M = 127.03$, $SD = 22.26$). Thus, a cutoff of one standard deviation above the mean on the composite predictor variable was set at 149.28. The number of incarcerations for the overall sample of offenders ranged between 1 and 7 incarcerations ($M = 1.41$, $SD = .76$).
A two-tailed $t$-test with a cut-off $p < .05$ was conducted in order to assess whether there was a difference in number of incarcerations between offenders with clinically significant scores on the composite predictor compared to offenders without clinically significant scores on the composite predictor. Thus, the sample was divided into two groups: offenders greater than or equal to one standard deviation above the mean on the composite predictor and offenders less than one standard deviation above the mean on the composite predictor. Offenders that scored higher than or equal to the cutoff on the composite predictor had a higher average number of incarcerations ($n = 460, M = 1.53, SD = .93$), while offenders that scored lower than the cutoff on the composite predictor had a lower average number of incarcerations ($n = 2,555, M = 1.39, SD = .72$). The difference between offender groups on number of incarcerations was statistically significant, $t(3013) = 3.72, p < .0005$. Thus, the hypothesis that offenders with clinically significant scores (i.e., offenders who scored greater than or equal to one standard deviation above the mean) on a composite of the Antisocial Personality Disorder, Conduct Disorder, Substance Abuse, and Psychotic Thinking scales would have a higher number of incarcerations was supported. Offenders with higher self-reported rates of antisocial personality disorder, conduct disorder, substance abuse, and psychotic thinking had a significantly higher number of incarcerations than offenders with lower self-reported rates of those disorders.
CHAPTER 5
DISCUSSION

The goal of the criminal justice system, in part, is to rehabilitate criminals and prevent future crimes; however, the criminal justice system is currently at a point in which increasing incarceration rates may be more harmful to society than beneficial, and the increase in national spending on corrections has not corresponded to a decline in recidivism rates. This means that more state and national funding is being funneled into the correctional system, but the correctional system is not performing on a level that corresponds to its massive budget. High recidivism rates place a toll on society, not just financially, but also in the communities of both victims of crime and those that commit crimes. In order to decrease that toll on society, research must establish a better understanding of how criminal recidivism works and what can be done to not only predict recidivism, but also to prevent it.

In an effort to better understand the causes of criminal recidivism, the current project sought to assess the general hypothesis that antisocial personality disorder and its common co-occurring disorders would be predictive of recidivism. Due to a large sample size, many weak relationships were found to be statistically significant; thus, the results are interpreted cautiously to suggest that there is a small relationship between antisocial personality disorder, conduct disorder, and substance abuse such that those variables are slightly predictive of number of incarcerations. Psychotic thinking, on the other hand,
did not emerge as being related to number of incarcerations, which does not support the body of previous research that suggests psychotic thinking either increases or decreases criminal recidivism based on severity of the disorder and treatment history (Collins et al., 2010; Keers, Ullrich, DeStavola, & Coid, 2014; Prins, Skeem, Mauro, & Link, 2015).

One finding to note is that in Hypothesis 5 the addition of the Antisocial Personality Disorder scale affected the observed relationship between the Conduct Disorder scale and number of incarcerations, such that the Conduct Disorder scale was no longer a unique predictor of incarcerations when the Antisocial Personality Disorder scale was included in the model. This result is reasonable, as the criteria for antisocial personality disorder necessitates some history of conduct disorder. There is some evidence that antisocial personality disorder and conduct disorder do not directly relate to one another, but rather, that there are multiple mitigating factors that contribute to the transition from childhood misconduct to adult antisocial behaviors (Loeber et al., 2002; Swanson et al., 2008). As the relationship between antisocial personality disorder and conduct disorder may be affected by other factors, the current study included both antisocial personality disorder and conduct disorder in order to potentially gain further insight into that relationship. Results suggested that conduct disorder was independently predictive of recidivism, but that antisocial personality disorder likely encompasses conduct disorder in the prediction of recidivism, which supports the literature’s evidence that conduct disorder falls under the larger umbrella of antisocial personality disorder (Loeber, Burke, & Lahey, 2002; Robbins, 1966).

Antisocial personality disorder emerged as a significant, although small, predictor for number of incarcerations. Based on the literature it was anticipated that antisocial
personality disorder would emerge as a strong predictor of number of incarcerations and its predictive ability would be largely affected by its co-occurring disorders; however, contrary to the hypotheses, antisocial personality disorder had a very small relationship with number of incarcerations and its predictive effect was not dependent on the contribution of its common co-occurring disorders. In addition, the hypothesis that antisocial personality disorder would emerge as the strongest personality disorder for the prediction of recidivism was partially supported. It was found that both antisocial personality disorder and self-defeating personality disorder significantly predicted recidivism such that higher scale scores for those disorders related to an increase in recidivism. In addition, despite the current study not hypothesizing that any factors would be negatively related to recidivism, it was found that depressive personality disorder and schizotypal personality disorder were protective for recidivism such that higher scale scores on those disorders related to a decreased rate of recidivism.

In addition, results supported the hypothesis that offenders with higher self-reported antisocial personality disorder, conduct disorder, substance abuse, and psychotic thinking would have higher rates of recidivism. This finding supports the literature that suggests that offenders with high levels of those disorders may be at a heightened risk of recidivism. However, the effect of this difference between groups is interpreted cautiously as the large sample size in the current study likely made the small effect statistically significant. Therefore, it is interpreted that there is a very small difference between offenders with high self-reported antisocial personality disorder, conduct disorder, substance abuse, and psychotic thinking compared to offenders with lower self-reported levels of those disorders. This small effect may be partially attributed to the
inclusion of psychotic thinking in the composite predictor as psychotic thinking consistently emerged as having a non-significant, non-meaningful relationship with recidivism across all analyses.

Taken together, the results suggest that antisocial personality disorder and self-defeating personality disorder were small predictors of increased number of incarcerations while depressive personality disorder and schizotypal personality disorder were small predictors of decreased number of incarcerations. In addition, antisocial personality disorder’s predictive ability was not found to be solely dependent upon the contribution of its common co-occurring disorders of conduct disorder, substance abuse, and psychotic thinking. This finding supports Andrews and Bonta’s (2010) assertion that criminal recidivism is an elusive and complex variable to predict, and that a combination of both static and dynamic measures (e.g., antisocial personality disorder and prior criminal history) may be the best method to predict recidivism.

**Limitations and Future Directions**

One major limitation of the current study is the measure of prior incarcerations that was used as the criterion variable for all analyses. The measure of prior incarcerations included only data from the Colorado Department of Corrections instead of national or international data. Thus, the measure of prior incarcerations only allowed for an analysis of number of incarcerations within the Colorado prison system. It is highly likely that some offenders listed as first time offenders in the current study had prior convictions in other states; therefore, the reported number of incarcerations in the current study more than likely underestimates the true rate of recidivism for offenders. In addition, it is possible that data from the Colorado prison system may not be
generalizable on a national or international level due to differences in policies, procedures, and types of offenders. Altogether, the Colorado-specific recidivism data utilized in the current study may limit the scope of the results and future research may seek to use national or international offender data in an attempt to obtain a generalizable understanding of how antisocial personality disorder and its common co-occurring disorders affect recidivism.

A second limitation is that the current study excluded age and gender from analysis. The body of literature suggests that there may be age and gender-related differences across offenders for recidivism. Offenders’ age may play a role in number of incarcerations, with older offenders having more time to recidivate than younger offenders. As there is evidence that the causes of recidivism and post-release outcomes differ across genders, future research may seek to separately assess the relationship between antisocial personality disorder and recidivism specifically across age groups and genders in order to better identify the unique relationship between mental health disorders and recidivism.

A final limitation is the inherent over-representation of antisocial personality disorder in an offender population that stems from the APA focus on quantifiable, behavioral traits. Due to the APA criteria for the diagnosis of antisocial personality disorder, it is highly likely that offenders will meet the behavioral criteria for the disorder. Antisocial personality disorder necessitates a history of misconduct, behavioral issues, impulsivity, and a disregard for others; therefore, individuals that received prison sentences for their behaviors are highly likely to meet the criteria for antisocial personality disorder. Future research may seek to assess recidivism using a modified
definition of antisocial personality disorder (e.g., antisocial personality disorder with fewer behavioral criteria) or with a combination of antisocial personality disorder and psychopathy, with its affective, socio-emotional criteria in order to better understand the relationship between antisocial emotions, antisocial behaviors, and criminal recidivism.
REFERENCES


APPENDIX

University of Colorado
Colorado Springs
Institutional Review Board (IRB) for the Protection of Human Subjects

Date: 11/23/2015

IRB Review

IRB PROTOCOL NO.: 16-087
Protocol Title: The Prediction of Recidivism in 4,872 Inmates with the Coolidge Correctional Inventory
Principal Investigator: Aimee Walsh
Faculty Advisor if Applicable: Frederick Coolidge
Application: New Application
Type of Review: Expedited Category: 5
Risk Level: No more than Minimal Risk
Renewal Review Level (If changed from original approval) if Applicable: N/A No Change
This Protocol involves a Vulnerable Population: Prisoners
Expires: 22 November 2016

*Note, if exempt: If there are no major changes in the research, protocol does not require review on a continuing basis by the IRB. In addition, the protocol may match more than one review category not listed.
Externally funded: ☐ No ☐ Yes
OSP #: Sponsor:

Thank you for submitting your Request for IRB Review. The protocol identified above has been reviewed according to the policies of this institution and the provisions of applicable federal regulations. The review category is noted above, along with the expiration date, if applicable.

Once human participant research has been approved, it is the Principal Investigator’s (PI) responsibility to report any changes in research activity related to the project:
- The PI must provide the IRB with all protocol and consent form amendments and revisions.
- The IRB must approve these changes prior to implementation.
- All advertisements recruiting study subjects must also receive prior approval by the IRB.
- The PI must promptly inform the IRB of all unanticipated serious adverse (within 24 hours). All unanticipated adverse events must be reported to the IRB within 1 week (see 45 CFR 46.103(e)(2)). Failure to comply with these federally mandated responsibilities may result in suspension or termination of the project.
- Renew study with the IRB prior to expiration.
- Notify the IRB when the study is complete

If you have any questions, please contact Research Compliance Specialist in the Office of Sponsored Programs at 719-255-3903 or info@uccs.edu

Thank you for your concern about human subject protection issues, and good luck with your research.

Sincerely yours,

Zak Cypress Valkyrie

Zak Cypress: Valkyrie, PhD
IRB Reviewer

www.uccs.edu/researchcompliance/
version 2/12/13

1420 Austin Bluffs Parkway/Colorado Springs, CO 80918 719-255-3321 phone 719-255-3706 fax