

**Exploring the Relationship between  
Mental Disorder Categories and Recidivism  
in British Columbia: A Population-Based Study**

by

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# ABSTRACT

Evidence suggests the burden of treatable mental disorders on the correctional population is substantial. However, it remains unclear whether a non-substance related mental disorder diagnosis (NSMD) is independently associated with different levels of recidivism risk.

This study estimated NSMD diagnostic rates for the BC Provincial correctional population and examined the association between NSMD diagnoses and recidivism by conducting a time to event analysis. Overall, 47% of Provincial offenders received a NSMD diagnosis. The risk of recidivism was greater among those diagnosed with personality disorder and lower for those diagnosed with depressive disorder.

Findings signify an essential component needed to improve offender health includes greater provision of correctional mental health services and research suggesting an indirect relationship exists between most mental disorder categories and recidivism is supported. Additionally, intervention strategies that target underlying mediating factors may be more effective at reducing recidivism than the exclusive treatment of psychiatric symptoms.

**Keywords:** Health Policy; Mental Health; Mental Disorder Categories; Correctional Populations; Recidivism; Mental Disorder Diagnostic Rates

# DEDICATION

I would like to dedicate this thesis to my parents, Dave and Nancy Jokinen, who have been a constant source of support and encouragement throughout my academic career. It is also lovingly dedicated to Ushuaia Shandro who, during the first four years of her life, has taught me new things about the world we live in.

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# LIST OF ACRONYMS

AOR	adjusted odds ratio
BC	British Columbia
CAIS	Correctional Assessment and Intervention System
CI	confidence interval
CRNA	Community Risk Needs Assessment
DSM	Diagnostic and Statistical Manual
HR	hazard ratio
ICD-9	International Classification of Disease, Ninth Revision
IPDE	International Personality Disorder Examination
IMRI	Inter-Ministry Research Initiative
IQR	Inter-Quartile Range
LS/CMI	Level of Service/Case Management Inventory
MSP	Medical Service Plan
MHC	mental health court
MIO	mentally-ill offender
PSSG	Ministry of Public Safety and Solicitor General
NSMD	non-substance related mental disorder
RRAC	Regional Reception and Assessment Centre
SD	standard deviation
CCHS	Canadian Community Health Survey
SUD	substance use disorder
TDCJ	Texas Department of Criminal Justice
VRS	Violence Risk Scale

# 1: INTRODUCTION

It is estimated that over 9 million individuals are currently held in prison systems throughout the world and global trends report substantial increases in prison populations over the last two decades (Walmsley, 2005). Although difficult to calculate on a global scale, prison expenditures have substantially increased in numerous regions (Mills, Silverstri & Grimshaw, 2010; Public Safety Canada, 2010; Schmitt, Warner & Gupta, 2010). In the province of British Columbia (BC), the estimated cost of providing daily correctional services per person in custody is \$193.75, which amounts to an annual cost of \$70,000 (Ministry of Public Safety and Solicitor General, 2011). Criminal justice research has identified recidivism as a potential area for programs, policy-makers and funding agencies to consider when developing and implementing new strategies to reduce the number of incarcerated offenders and the associated prison system expenditures (Almquist & Dodd, 2009; Milkman & Wanberg, 2007).

Recidivism involves relapse into criminal behavior following a previous sentence. Rates of recidivism provide a method for evaluating the ability of correctional facilities to rehabilitate and effectively reintegrate offenders into society. Although varied across geographical regions and dependent on the selection and measurement of individual post-release outcomes, high rates of recidivism are consistently reported in the literature. Sustained patterns of criminality following custodial discharge result in significant resource expenditure spent on repeatedly transitioning individuals through the criminal justice process. In addition, the enhancement of both public safety and offender health is directly linked to criminal justice initiatives that promote rehabilitation and successful community reintegration (Mckean & Ransford, 2004).

The prison population is disproportionately comprised of disadvantaged members of society. Jacobi (2005) highlights that “those we imprison are disproportionately poor, of color, uneducated, and sick. They have chronic conditions, mental illnesses, sexually transmitted diseases and other infectious diseases. They usually receive inadequate health care – and sometimes shockingly poor care” (p. 447). From a public health perspective, prior social

conditions and the experience of incarceration can facilitate the development of adverse health outcomes that are disproportionately experienced by offenders compared to those in the general population. In general, chronic and infectious disease prevalence is higher among offenders when compared to the general population. Particular attention has been given to the transmission of infectious diseases such as tuberculosis, HIV, hepatitis C and sexually transmitted diseases, within prison environments (Dumont et al., 2012; Moloughy, 2004). In addition, emerging research (for example, see, Baillargeon et al., 2009; Fazel & Danesh, 2002; Kirby & Keon, 2006) identifying the prevalence of mental disorders among offender populations has stimulated the examination of this disease category as a risk factor of recidivism (Wilson et al., 2011).

According to contemporary research examining criminal trajectories, a substantial amount of crime is committed by a relatively small number of offenders (Millie & Erol, 2006). By recognizing that a minority of the offender population is responsible for committing a disproportionate amount of crime, the identification of specific subgroups of offenders who experience an elevated risk for recidivism, based on shared characteristics, has been prioritized in the literature (Ferguson, Ogloff & Thomson, 2009). Research suggests the prevalence of mental disorders is greater among prison population groups when compared to the general population (Baillargeon et al., 2009; Wilson et al., 2011). A handful of studies examining the association between non-substance related mental disorders (NSMDs) and recidivism have concluded that little if any relationship exists; overall, groups of offenders diagnosed with NSMDs have been shown to recidivate at a similar or lower rate when compared to offender groups with no mental disorder diagnosis. Additionally, these studies suggest that offenders diagnosed with NSMDs recidivate less when compared to offender groups diagnosed with a substance use or concurrent disorder (i.e., co-occurring mental and substance use disorder).

Evidentiary issues arise when equal levels of risk are assumed for different diagnostic categories. For instance, specific personality disorders (e.g., antisocial personality disorder) are considered risk factors for recidivism and are included in modern methods used to assess risk by the criminal justice system. To date, no study has examined within-class variability to understand whether the risk of recidivism differs for specific NSMD diagnoses, including those disorders considered less severe (e.g., anxiety disorder). Further research that clarifies the independent risk associated with specific NSMD categories

will add important knowledge concerning the associations between individual mental disorders and recidivism among prison population groups.

In the following literature review, published epidemiological studies examining prevalence rates of five specific NSMD categories (i.e., schizophrenia, bipolar disorder, depressive disorder, anxiety disorder and personality disorder) for both the general Canadian and correctional population are examined. Although prevalence rates vary between studies found in the literature, there is a consensus among investigators that individuals with mental disorders are overrepresented in correctional populations. Two dominant explanations of this state are summarized: deinstitutionalization and criminalization of the mentally ill. In addition to these two overarching accounts, it has been hypothesized that a mental disorder diagnosis decreases an offender's ability to successfully reintegrate into community life following incarceration. This type of underlying assumption has guided researchers to question whether offenders with mental disorders, when compared to those without, are more likely to recidivate (Wilson et al., 2011). Recidivism is explored by examining different operational definitions, identified risk factors, risk assessment instruments and specific criminal justice strategies that target offenders with mental disorders (e.g., mental health courts).

The development of this project's hypotheses was based on the critical analysis of previous studies examining mental disorder prevalence in correctional environments and the association between NSMD and post-release outcomes (see section 1.8). A literature search was conducted for English language articles published between 1980 through January 2013 using Simon Fraser University's Academic Search Premier Database. The following key words were used in the searches performed: mental disorder, mental illness, schizophrenia, bipolar disorder, depression, anxiety disorder, personality disorder, prevalence, risk assessment, therapeutic jurisprudence, mental health court, recidivism, criminality, arrest pattern, offender, prison, and incarceration. Additionally, reference lists from retrieved articles were examined to locate other relevant reports.

## 1.1 MENTAL DISORDER PREVALENCE IN CANADA: AN OVERVIEW

Mental disorders affect thinking, behaviour and mood. There is wide variability in symptom expression, which varies from mild to severe and can be associated with distress and impaired functioning (CAMH, 2012). It is generally asserted that one out of five Canadians will meet the diagnostic criteria for a mental disorder sometime during their lifespan; the remaining four individuals will personally be acquainted with someone who has a psychosocial disability (Health Canada, 2002).

In Canada, national data describing mental disorder prevalence among Canadians are not systematically collected. With no national health database, epidemiological studies are used to estimate mental disorder prevalence at the population level. Statistics Canada's Canadian Community Health Survey (CCHS) is the nation's largest cross-sectional survey that collects data related to health status, health care utilization and determinants of health. In 2002, the CCHS released a report summarizing health-related information obtained from Canadians (n= 36,984) over the age of 15. Although the survey provided one-year prevalence rates for only a limited number of mental disorders, additional information published by Health Canada (2002) and Offord et al. (1996) helps to improve estimation of mental disorder prevalence at the national level. Table 1.1 summarizes the estimated one-year and lifetime prevalence rates for specific mental disorders (i.e., schizophrenia, bipolar disorder, depressive disorder, anxiety disorder and personality disorder) for residents of Canada.

**Table 1.1: Estimated one year and lifetime mental disorder prevalence among adults in Canada**

<b>Mental Disorder</b>	<b>Estimates of One-Year Prevalence (%)</b>	<b>Estimates of Lifetime Prevalence (%)</b>
Schizophrenia	0.3	0.2 – 2.0
Bipolar disorder	0.2 – 0.6	1.0
Major depression	4.8*	8.0
Anxiety disorder	12.0**	-
Personality disorder	-	-

(Health Canada, 2002; Offord et al., 1996\*\*; Statistics Canada, 2002\*)

Currently, the ability to accurately estimate the prevalence of personality disorders among Canadians is limited by the lack of studies found within

the literature. While health research from the United States reports approximately 6–9% of the population meets the diagnostic criteria for a personality disorder, a range of 1–10% is generally accepted for the Canadian population (Health Canada, 2002; Samuels et al., 1994).

## 1.2 MENTAL DISORDER PREVALENCE AMONG THE CORRECTIONAL POPULATION

Epidemiological studies consistently report higher prevalence rates of mental disorders among the offender population when compared to the general population (Fazel & Danesh, 2002; Kirby & Keon, 2006). Blaauw, Roesch and Kerkhof (2000) synthesized results of prevalence studies from 13 European countries and determined 63% of sentenced offenders would meet the diagnostic criteria for at least one mental disorder during their lifetime. Five years later, evidence from a systematic review of 22 international studies estimated the range to be between 55% and 80%. According to Brink, Dorherty and Boer (2001), the lifetime prevalence rate for mental disorders among federal prisoners (n=267) in Canada was substantially higher, with 84% of federal prisoners meeting the diagnostic criteria for at least one Diagnostic and Statistical Manual (DSM) Axis I diagnosis. More recently, a smaller Canadian study examined computerized medical and prison files and found 61% (n=671) of offenders housed in a short-term correctional facility were previously diagnosed with a mental disorder (Lafortune, 2010).

Although a general consensus regarding the overrepresentation of individuals with mental disorders in the criminal justice system exists, reported prevalence rates vary greatly (Baillargeon, 2009; Blaauw, Roesch & Kerkhof, 2000; Brink, Dorherty & Boer, 2001; Kirby & Keon, 2006; Lafortune, 2010). Brink, Dorherty and Boer (2001) further clarify this issue:

Some of the reasons that could explain this variance include the use of different psychiatric classification systems (DSM-II, III, III-R, IV, ICD, Feighner's research criteria), differential sampling and selection methods, inconsistency in assessor number, qualification, training or inter-rater reliability, and the utilization of divergent assessment instruments (file review, unstructured or semi-structured interview, DIS, SCID). (p. 343)

Despite considerable variation in both methodological procedures and reported rates of prevalence across studies, the incarceration of individuals with mental disorders has reached epidemic proportions (Baillargeon, 2009). The following five sections provide a brief overview of prevalence studies by specific diagnostic category (i.e., schizophrenia, bipolar disorder, anxiety disorder, depressive disorder and personality disorder).

### **1.2.1 Schizophrenia**

During the last two decades, there has been a growing interest in the association between schizophrenia and criminality. In particular, a substantial body of research has focused on whether the diagnosis of schizophrenia elevates the risk of violent behavior. Although contemporary research has determined only a small proportion of offences (including those deemed violent) are committed by individuals with the disorder, prevalence rates of schizophrenia are higher within prison populations when compared to the general population (Angermyer, 2000).

A systematic review by Fazel and Danesh (2002) examined 49 international studies and determined 3.7% of sampled male offenders (n=16,047) were diagnosed with a psychotic disorder (i.e., mainly schizophrenia, but also included diagnoses of schizophreniform, manic episodes and delusional disorder). Similar findings were published by Fallisard et al. (2006), who randomly sampled 800 French inmates and found 3.8% of offenders met the diagnostic criteria for schizophrenia. In New Zealand, Brinded et al. (2003) found last month prevalence rates for schizophrenia and other related disorders to be 4.2% and 2.2% for women and men, respectively. Within Canada, Brink, Doherty and Boer (2001) randomly selected a sample of 202 offenders admitted to Regional Reception and Assessment Centre (RRAC) and found 3% met the diagnostic criteria for current schizophrenia. At the provincial level, Somers, Carter and Russo (2007) reported 4% of BC offenders diagnosed with schizophrenic disorder (ICD-9 code 295) during the seven-year period of assessment. On average, schizophrenia affects 1% of the general population, however, previous research suggests this rate more than doubles when correctional samples are examined (Brinden et al., 2003; Brink, Doherty & Boer, 2001; Fallisard et al., 2006; Somers, Russo & Carter, 2008).

### **1.2.2 Bipolar Disorder**

Kemp et al. (2008), describes bipolar disorder as “a chronic and recurrent illness characterized by high morbidity including widespread role impairment, substantial health care costs and a lifetime rate of attempting suicide that exceeds any other psychiatric illness” (p. 778). It is estimated, that on average, a delay of 8–10 years between symptom onset and disease identification exists. This is due in part to inadequate detection and misdiagnosis by health professionals (Hirschfeld et al., 2003). Furthermore, researchers have questioned whether the prevalence of bipolar disorder in prison populations is being underreported, since available resources from prison health services are limited (Kemp et al., 2008). Apart from the previous conjecture, in New Zealand, a national study on the prevalence of psychiatric disorders in prison, reported last month prevalence rates of 1.2% (women; n=162) and 1.1% (sentenced men; n=640) for bipolar disorder (Brinded et al., 2003). More recently, Baillargeon et al. (2009) examined 234,031 prisoners from the Texas Department of Criminal Justice (TDCJ) and found an average prevalence rate of 2.6% for bipolar disorder. When broken down, 2.3% of male offenders and 5.7% of female offenders were diagnosed with the disorder. Furthermore, Lafortune (2010) determined 7.2% of males and 12.9% of female offenders (n=671) in Quebec met the diagnostic criteria for affective disorder (the majority were diagnoses of bipolar disorder).

### **1.2.3 Depressive Disorder**

Depressive disorder prevalence among prison populations has been extensively researched. According to Boothby and Durham (1999), “due to the uncontrollable, undesirable, and threatening nature of imprisonment, it follows that physical or psychological symptoms may result from a period of incarceration. Lloyd (1980) argues that events having these characteristics are especially likely to precede depressive disorders” (p. 108). A systematic review of 31 studies found 10–12% of adult offenders (n=10,529) were diagnosed with major depression (Fazel & Danesh, 2002). Vicens et al. (2011) sampled 707 male offenders from five correctional facilities, across three regions in Spain, and found a lifetime prevalence rate of 22.3% for depression. In Brazil, a study comparing mental disorder prevalence between inmates (n=497) housed in closed and semi-open prison systems, reported life time prevalence rates of 17.6% and 18.8% for depressive disorder, respectively (Ponde, Freire &

Mendonca, 2011). In Canada, Lafortune (2010) examined the psychopathological characteristics of 671 offenders held in short-term correctional facilities in Quebec and found 21% had received a previous diagnosis of depressive disorder during the five pre-period.

#### **1.2.4 Anxiety Disorder**

Comparable with depressive disorder, a diagnosis of anxiety disorder is common when examining prison population. It is theorized that due to environmental conditions of imprisonment, offenders are more likely to meet the diagnostic criteria for this disorder when compared to the general population (Senol-Durak & Gencoz, 2010; CMHA, 2012). Felson et al. (2012) analyzed data from the 2004 Survey of Inmates in State and Federal Correctional Facilities, which included a U.S. nationally representative sample of inmates in state and federal penitentiaries. One component of the survey examined whether an inmate had received a psychiatric diagnosis from a mental health professional (e.g., psychiatrist or psychologist). Of the 16,285 offenders who participated, 12% received an anxiety disorder diagnosis during the past year (Felson et al., 2012). In Canada, Brink, Doherty and Boer (2001) reported a prevalence rate of 17.3% for anxiety disorder among federal prisoners (n=202). More recently, Lafortune (2010) found 40.2% of offenders (n=671) in Quebec were diagnosed with an anxiety disorder during the period of assessment (2002–2007).

#### **1.2.5 Personality Disorder**

A number of studies have confirmed the association between personality disorder and criminality (Hart & Hare, 1996; Ruitter & Greevan, 2000). While 1–10% of Canadians are thought to meet the diagnostic criteria for a personality disorder, research on prison populations tend to report a much higher rate (Health Canada, 2002). Fazel and Danesh (2002) examined four studies reporting overall prevalence rates for any personality disorder and found 65% of male offenders (n=1529) met the diagnostic criteria. In conducting clinical interviews using the International Personality Disorder Examination (IPDE), Vicens et al. (2011) found 82.3% of Spanish offenders (n=707) met the diagnostic criteria for a personality disorder. In Canada, lower prevalence rates of 18% and 7% have been described by both Lafortune (2010) and Somers,

Cater and Russo (2008), respectively. Some amount of this variability may be attributable to the category of Personality Disorders itself, which have been described as “inaccurate, largely unreliable, frequently wrong and in need of improvement” (Tyrer, 2007, p. 51). One partial explanation for this observation includes the fact that operational criteria characterizing specific conditions often overlap with one another. As a result, the assessment of a personality disorders may produce the potential diagnosis of several personality disorder conditions when a single construct is examined (Clark, Watson & Reynolds, 1995). Additionally, there are over sixty different self-rated questionnaires and interview assessments for personality disorder and when examined, cross-instrument reliability has been poor (Clark et al., 2007).

### 1.3 DEINSTITUTIONALIZATION, “CRIMINALIZATION OF THE MENTALLY ILL” AND COMMUNITY REINTEGRATION

The overrepresentation of individuals with mental disorders housed in correctional facilities is generally agreed upon, however, there is less agreement regarding what causal factors have directly produced these current conditions (Kirby & Keon, 2006). Although a detailed analysis of the debate is beyond the scope of this paper, a brief explanation of two theoretical perspectives (i.e., deinstitutionalization and the “criminalization of the mentally ill”) and issues regarding community re-entry is indicated (Brink, 2001; Sealy & Whitehead, 2004; Wilson, 2011).

For over forty years, the process of deinstitutionalization has been replacing long-standing psychiatric facilities with community-based mental health services (Sealy & Whitehead, 2004). While this shift recognized a right to treatment for individuals with mental disorders, it is argued that adequate community-based treatment options were neglected and inadequately resourced (Waslyenki, Goering & MacNaughton, 1992). Due to this deficiency, it is theorized that a significant proportion of the population previously housed in psychiatric facilities were reinstitutionalized back into the prison system (Perez, Leifman & Estrada, 2003). In addition to deinstitutionalization, according to Brink, Doherty and Boer (2001), the “criminalization of the mentally ill hypothesis proceeds from the basic premise that mentally ill persons access health care and social support services through the criminal

justice system and, thus, are expected to be overrepresented in transient, short-term remand and jail settings” (p. 339). The theory highlights how the expression of symptomatic behavior in public environments may increase and individual’s likelihood of being arrested and subsequently, incarcerated in short-term penitentiary facilities for minor offences.

Each year, a significant portion of offenders released from custody will meet the diagnostic criteria for at least one mental disorder. It has been hypothesized that, in general, a mental disorder diagnosis decreases an individual’s ability to successfully reintegrate back into the community following incarceration. In part, this may be due to the level of experienced vulnerability by individuals with mental disorders and the number of needs that remain unmet upon custodial release. These specific factors help support the notion that recidivism rates among offenders with mental disorders are higher when compared to those of offenders with no mental health diagnosis (Wilson et al., 2011).

## 1.4 RECIDIVISM

Criminal justice research has identified recidivism as a potential area of focus for the development of new programs and policies designed to reduce the number of incarcerated offenders and associated prison system expenditures (Almquist & Dodd, 2009; Milkman & Wanberg, 2007). As a time sensitive, multifactorial event, no common operational definition of recidivism has been agreed upon. Variance in the operational definition of recidivism used by corrections, criminal justice agencies and researchers is based on the selection of a single post-release outcome (e.g., arrests, reconvictions and reincarcerations) that is measured over a determined length of time. For example, Langen and Levin (1994) used two measures (reconvictions and reincarcerations) to calculate the rate of recidivism among 272,111 adult offenders released from penitentiaries in the United States in 1994. According to the authors,

Within the first year of release, an estimated 21.5% of the 272,111 released offenders were reconvicted for a new felony or misdemeanor; within the first two years, a combined total of 36.4% were reconvicted; and within the first three years, a combined total of 46.9% were reconvicted. (p. 3)

However, the use of reincarceration as a measurement for recidivism produced a significantly lower rate; 10.4% of offenders were readmitted to prison within the first year, 18.8%; within the first two years, and 25.4% within the first three years (Langen & Levin, 1994).

It is established in the literature that upon release from prison, a significant proportion of offenders are reconvicted for subsequent criminal offences (Bonta, Law & Hanson, 1998; Weatherburn, Froyland, Moffatt & Corben, 2009). For example, the BC Ministry of Public Safety and Solicitor General identified the rate of recidivism as the “percentage of offenders who returned to BC Corrections within two years of their release from custody or commencement and/or continuation of community supervision” (2011, n.p.). In 2010/11, the recidivism rate was 31%. This indicates that 31% of offenders who were released in 2007/08 returned to BC Corrections during the two year follow-up (Ministry of Public Safety & Solicitor General, 2011).

According to Millie and Erol (2006), it has “been recognized for some time that a small proportion of persistent or prolific offenders commits a large proportion of crime” (p. 691). With global trends reporting substantial increases in prison populations and expenditures over the last two decades, major efforts have been made to identify risk factors of recidivism and provide intervention-based programming to subgroups within the offender population who disproportionately come into contact with the criminal justice system (Walmsley, 2005; Mills, Silverstri & Grimshaw, 2010; Schmitt, Warner & Gupta, 2010).

## 1.5 IDENTIFIED RISK FACTORS FOR RECIDIVISM

There are a number of demographic variables that have been identified as determinants of criminal behavior within the literature. According to the Department of Justice Canada (2012), “demographic variables have been cited as the strongest determinants of crime rates and hence have been central to predictions about the future of crime” (n.p). Gender, age, ethnicity and education are considered powerful risk factors for predicting criminal behavior in the general population, as well as among individuals diagnosed with mental disorders (Bonta, Law & Hanson, 1998; Sirotich, 2008). For example, when compared to females, males are much more likely to engage in criminal behavior and an increase in both the incidence and prevalence of criminal behavior during adolescence and young adulthood is well documented within

the literature (Bonta, Law & Hanson, 1998; Gendreau et al., 1996; Dhiri, Brand, Harries & Prince, 1999; Moffitt, 1993). Although potentially moderated by other factors (e.g., socioeconomic status, structural racism), there is a consensus within a large body of criminological literature that ethnicity should be recognized as a third variable associated with criminal activity (Ellis, Beaver & Wright, 2009). Ethnic differences in the rates of adult offending have been repeatedly observed. For example, in the United States, the lifetime risk of incarceration is higher for African American and Hispanic males when compared to Caucasian males (Bonczar & Beck, 1997). In Canada, Aboriginal people are vastly overrepresented within provincial correctional facilities throughout the country and are more likely to come in contact with the criminal justice system when compared to other ethnic groups. Roberts and Doob (1997) attempt to contextualize this disturbing phenomenon by explaining:

It is further recognized that this disproportion is likely to be a consequence of some combination of the following: higher rates of offending by the Aboriginal population, higher use of the criminal justice system in some Aboriginal communities to deal with certain types of crime, direct and indirect discrimination by the criminal justice system, and the socially disadvantaged role occupied by Aboriginals in Canadian society. (p. 481-482)

In addition to ethnicity, individuals who attain higher levels of education are less likely to engage in criminal activity when compared to individuals who have attained a lower level of education (Ellis, Beaver & Wright, 2009). One study examining the effects of education on crime determined that a one year increase in the average years of education attained reduced violent crime by 30%, vehicle theft by 20% and burglary and larceny by approximately 6% (Grogger, 1998; Lochner & Moretti, 2003). Furthermore, according to the Justice Policy Institute (2007), “increased graduation rates, higher levels of educational attainment in a jurisdiction, and increased investments in higher education are associated with better public safety outcomes than places that invest less, or have lower educational outcomes” (p. 9).

Prior criminal history and substance use have also been identified as strong predictors of criminality. Within criminological literature, prior criminality (e.g., arrests, convictions and self-reported violent behavior) is recognized as a robust predictor of future criminal activity among both general offender populations and among mentally disordered offender samples (Bonta,

Law & Hanson, 1998; Feder, 1991; Sirotich, 2008). To determine the relationship between criminal activity and substance use, Correctional Service Canada (2011) administered a Computer Assessment of Substance Abuse survey to approximately 10,845 offenders serving a Federal sentence between 2002 and 2009. According to the study, a large proportion of the offender population (63%) reported using alcohol or drugs on the day of committing the offense they were currently imprisoned for. These findings are in line with previous studies that have established substance use as a valid predictor of criminal behavior and recidivism (Bonta, Law & Hanson, 1998).

## 1.6 OFFENDER RISK ASSESSMENT

The implementation of risk assessment instruments by the criminal justice system has provided evaluation-based methods for predicting the probability of sustained criminal behavior among offenders released from custody. According to Bonta (2007), “risk/need assessments used by most of the correctional jurisdictions in this country [Canada] try to accomplish two goals. They help to differentiate higher-risk offenders from lower-risk offenders, and identify the criminogenic needs of offenders” (p. 525). These two goals are necessary for both enhancing public safety and reducing offender recidivism. While it is impossible to obtain perfect accuracy when measuring risk, numerous studies have demonstrated risk assessment instruments as stable tools that provide valid results when predicting post-release patterns of recidivism.

To date, two types of empirically supported indicators have been used to measure risk. The first type includes static factors that were initially utilized by risk assessment instruments and valued as statistically predictive constructs of recidivism. Static factors (e.g., age, gender, ethnicity, prior criminal history) cannot be modified and, therefore, are unresponsive to treatment interventions. A second category of indicators, dynamic factors (e.g., employment status, social interaction, substance use, interpersonal conflict, and attitude) include predictors of recidivism that can be modified and targeted through intervention. Common examples of assessments using dynamic factors include the Violence Risk Scale (VRS), Level of Service/Case Management Inventory (LS/CMI) and Correctional Assessment and Intervention System (CAIS).

(Andrews, Bonta & Hoge, 1990; Andrews, Bonta & Wormith, 2006; National Council of Crime and Delinquency, 2004; Roberts & Benders, 2006).

In BC, evidence-based research guided BC Correction's operational framework to include comprehensive risk assessments that are considered valid instruments for measuring risk. The primary operative tool, the Community Risk Needs Assessment (CRNA), was developed specifically for BC Corrections by Dr. Bill Glackman of Simon Fraser University and introduced by the community division in 1996. In addition to use with the male offender population in BC, the CRNA was deemed a valid instrument for use with female and Aboriginal offenders in 2002. By assessing both static and dynamic factors, the CRNA recommends the level of supervision required and the type of intervention needed to reduce the overall risk of future reoffending when an individual is released from custody (Howell, 2006).

## 1.7 THERAPEUTIC JURISPRUDENCE AND MENTAL HEALTH COURTS

Therapeutic jurisprudence refers to "the use of social science to study the extent to which a legal rule or practice promotes the psychological and physical well being of the people it affects" (Slobogin, 1995, p. 194). Recognized as a social force, the law produces both therapeutic and anti-therapeutic consequences. Therapeutic jurisprudence encourages critical evaluation of the legal process and promotes awareness regarding the impact on individuals who come in contact with the criminal justice system. Stemming from this theoretical perspective, problem-solving courts are specialized tribunals that deal with criminal cases involving individuals who may benefit from voluntary treatment (Toki, 2010).

In response to the growing number of individuals with mental disorders coming into contact with the criminal justice system, mental health courts (MHCs) are well established in the United States and a number of Canadian cities. MHCs are problem-solving courts that partner with mental health professionals to provide alternatives to criminal sanctions for individuals with mental disorders. Guided by the therapeutic jurisprudence model, MHCs operate under the theoretical assumption that by linking offenders diagnosed with mental disorders to mental health services, recidivism can be reduced or all together prevented (Lurigio & Snowden, 2009; Steadman et al., 2009; Wolff, Fabrikant & Belenko, 2010).

MHC admission is “based on a complicated and often variable decision-making process that involves multiple parties representing different expertise and interests (e.g., judges, prosecutors, defense attorneys, victims, clients, clinicians ... etc.)” (Wolff, Fabrikant & Belenko, 2010, p. 402). To date, little research has examined operational procedures used by MHCs for case selection and evaluation of eligibility. While the requirements for program eligibility are largely based on the identification of a mental disorder, no definitive criteria have been established for the process of clinical assessment. For example, the National Survey of Mental Health Courts found one-third of MHCs based eligibility on the identification of a DSM Axis I diagnosis alone (e.g., Disorders involving Mood, Anxiety, Psychosis) and less than three percent of MHCs permitted individuals with an Axis II disorder (i.e., Personality Disorders) to participate in 2005. In other instances, rather than differentiating between Axis I and Axis II disorder classification, 25% of courts included within the survey based eligibility on the overall severity of mental disorder; the identification of a “severe and persistent mental illness” during clinical assessment was needed prior to program admission. Additionally, four percent of MHCs implemented further restrictions on eligibility by accepting individuals who had a severe and persistent mental disorder from one of the following diagnostic categories: schizophrenia, schizoaffective disorder, bipolar disorder and major depression (Lurigio & Snowden, 2009). Further research conducted by Steadman et al. (2009) showed similar variability regarding MHC case selection and eligibility. Upon analyzing referral data from seven MHCs in the United States, it was found that individuals with specific mental disorder diagnoses (i.e., schizophrenia/schizoaffective disorder, bipolar disorder and depressive/mood disorder) were significantly more likely to have their referral approved (i.e., 75% were accepted) when compared to individuals diagnosed with other mental disorders (i.e., 44% were accepted).

## **1.8 CONVERGENCE: MENTAL DISORDERS AND RECIDIVISM**

Research confirms that the tendency to recidivate is common among offenders, including those with mental disorders (Baillargeon et al., 2009; Contantine et al., 2010; Ventura, Cassel, Jacoby & Huang, 1998; Wilson et al., 2011). While there is a general consensus among researchers that offenders have a tendency to recidivate, regardless of diagnostic status, only a handful of studies have

examined whether a diagnosed NSMD elevates recidivism risk. Among these studies, most found little or no association between NSMD diagnosis and recidivism (Bonta, Law & Hanson, 1998; Rezansoff, 2012; Teplin, Abram & McClelland, 1994 and Wilson et al., 2011).

In 1991, Feder examined the relationship between mental illness and post-prison adjustment among 447 New York state offenders. A mentally ill offender (MIO) was defined as any individual who required psychiatric hospitalization during incarceration. When post-prison adjustment data collected during an 18-month follow-up period were compared between groups (MIOs versus non-MIOs), Feder (1991) determined:

No significant differences were found in rates of rearrest or types of rearrest (with the exception being for drug offences, which the MIO was less likely to be involved in) between the two groups. In other words, MIOs recidivate but no more often and for no more violent crimes than those from the general population. (p. 487)

Three years later, similar findings were reported by Teplin, Abram and Mclelland (1994), who identified predictors of violent crime in a sample of 728 randomly selected offenders from the Cook County Department of Corrections in Chicago, Illinois. The analysis included a 6-year follow-up period and although nearly half the sample was rearrested for a violent crime, the presence of a psychiatric disorder was not found to increase the overall risk. More recently, Wilson et al. (2011) compared the readmission rates of over 20,000 Pennsylvania offenders by extracting health data from state Medicaid claims to create four mutually exclusive diagnostic groups (i.e., no diagnosis, diagnosis of serious mental illness alone, substance abuse diagnosis and dual diagnosis). This analysis found that individuals diagnosed with a serious mental illness alone, which was defined as including diagnoses in the schizophrenia spectrum or major affective disorders, had the lowest readmission rate over the four year follow-up period, when compared to the other three diagnostic groups. Similarly, Rezansoff (2012) conducted a population-based retrospective cohort study to examine relationships between four mutually exclusive groups (no diagnosis, NSMD, substance use disorder and dual diagnosis) and recidivism among Provincial offenders (n=31,014) in British Columbia. According to Rezansoff, "individuals diagnosed with a NSMD were less likely to recidivate than those with no ND status, although this directional difference was non-significant. The odds of re-conviction were considerably higher

among offenders diagnosed with SUD and/or DDx than for either of the other groups” (p. 27). These findings suggest that individuals with mental disorders are no more likely to recidivate than the general offender population, however, much is yet to be learned about the independent risk associated with diagnoses from specific disorder categories.

In summary, despite overwhelming evidence suggesting that individuals with mental disorders are overrepresented within correctional settings, only a handful of studies have examined the relationship between NSMDs and recidivism. Until recently, the relevant literature has primarily consisted of relatively small studies using highly selective sampling methods (see as example Feder, 1991; Teplin, Abram & Mclelland, 1994) and frequently compares the “mentally ill offender” to the “non-mentally ill offender.” This type of research overlooks the potential for within-class variability; the association between mental disorder diagnosis and recidivism is assumed to remain constant across disorder type. Although it is unclear whether the risk of recidivism is equivalent for different NSMD diagnoses, there is an extant body of literature that indicates otherwise. For example, contrary to the underlying assumption that there is no within-class variation, investigators have determined antisocial personality disorder to be strongly associated with criminality and sustained patterns of criminal behavior (Hemphill, Hare & Wong, 1998). Although the isolation and subsequent analysis of this specific mental disorder is predominately examined by studies using highly selected samples of subgroups from the offender population (e.g., violent and sexual offenders), the association remains uncontested and currently guides recidivism risk assessment analysis (Bonta, Hanson & Law, 1998). Additionally, independent analyses measuring the association between specific mental disorders and recidivism have, until recently (for example, see, Rezansoff, 2012), been restricted to disorders identified as “severe” (e.g., schizophrenia and bipolar disorder). While more commonly prevalent among offenders, the relationship between “less severe” mental disorders, such as anxiety disorder, and recidivism has not been extensively explored. To date, there have been few, if any, studies that have independently examined whether the risk for recidivism varies between separate disorder categories.

## 2: PURPOSE AND HYPOTHESES

The purpose of this project is to add current knowledge to the existing body of literature on mental disorder diagnostic rates among individuals who come in contact with the criminal justice system and to further understand whether a specific NSMD diagnosis independently increases or decreases the relative risk of recidivism. To date, no study has determined the independent effects of NSMD diagnoses on recidivism using population-level data. Five physician-diagnosed NSMDs (i.e., schizophrenia, bipolar disorder, anxiety/neurotic disorder, personality disorder, and depressive disorder) will be examined to estimate five-year prevalence rates for mental disorders in the provincial correctional population in BC. By linking NSMD diagnoses with convicted offences recorded during the three-year follow-up period, this project will further examine whether a specific NSMD diagnosis increases or decreases the risk of recidivism following correctional discharge. This study will therefore address the following research questions:

1. What is the five year diagnostic rate of NSMDs among the correctional population in BC?
2. What is the most common NSMD diagnosis received by provincial offenders?
3. Is the diagnosis of a specific NSMD associated with different (increased or decreased) levels of recidivism risk among provincial offenders who have received at least one NSMD diagnosis?

In the previous section, a review of the literature provided an underlying foundation that assisted with the generation of the following hypotheses to be tested by this research project:

1. A significant proportion of the provincial offender population will have received a NSMD diagnosis during the five year period of assessment.

2. Depressive disorder will be the most commonly received physician diagnosis.
3. Within the NSMD cohort, the relative risk for recidivism will be greater for individuals diagnosed with personality disorder when compared to those without this specific diagnosis. The remaining disorder categories will not be associated with increased levels of recidivism risk during the post-period of assessment.

# 3: METHODS

## 3.1 DATA SOURCES

This study examines data provided by the Inter-Ministry Research Initiative (IMRI); sector partnership and information sharing within BC's Provincial Government assists integrative planning, delivering and evaluations of social services utilized by the entire population within the Province. Three independent Provincial departments (Ministry of Health, Ministry of Justice and the Ministry of Social Development) linked non-identifying administrative data to facilitate social research at the Provincial level. One initiative identified by the IMRI is to enhance health services and reduce adverse outcomes experienced by specific subgroups that come in contact with BC Corrections. Provincial offenders with diagnosed mental disorders have complex needs. Inter-agency collaboration can promote and enhance both service planning and the allocation of health and social services needed to improve offender health and public safety. The dataset analyzed by this current study includes Medical Service Plan (MSP) billing data provided by the Ministry of Health and sentence data from the Ministry of Justice.

Mandatory enrollment for MSP is applied to all individuals living in the Province of BC. Through the administration of personal health numbers, MSP insures medically required services and processes medical claims submitted by physicians, supplementary health practitioners, laboratory, and diagnostic services. When submitting medical claims, MSP requires physicians to include the applicable diagnostic code. Diagnostic coding is based on the ninth edition of the International Classification of Diseases (ICD9), developed by the World Health Organization (BC Ministry of Health, n.d.). This study extracted and analyzed the following information from the MSP dataset: cases of physician-diagnosed NSMD, specified ICD-9 codes, and dates of diagnosis. Records for all adults sentenced to a BC Correctional facility during the period of assessment were extracted from the BC Ministry of Justice dataset.

## 3.2 STUDY DESIGN AND POPULATION

This research used a population-based retrospective cohort study design. Sentence data from the BC Ministry of Justice identified all adults, aged 18 years or older, who were convicted of a criminal offence in the Province of BC and sentenced under BC Corrections between April 1, 2005 and March 31, 2007. In total, 31,014 individuals were sentenced to BC Corrections. Exclusion criteria included adult offenders with missing MSP coverage (n=2143) and those that died (n=473) during the post-period of assessment. After exclusion, 28,398 cases were studied and 13,280 individuals were identified as having received at least one non-substance related mental disorder diagnosis during the pre-period of assessment.

A criminal conviction under provincial statutes resulting in a sentence to be served between April 1st, 2005 and March 31st, 2007 was defined as the index sentence. During the period of exposure (five years prior to index sentence) ICD-9 NSMD diagnoses were examined using MSP billing data. A follow-up period of three years subsequent to the initial index sentence date was examined for post-release recidivism.

## 3.3 DEFINING VARIABLES

Disease classification and terminology distinct to the ICD-9 was used to define independent variables. Three digit codes are used for disease categorization; the list of ICD-9 codes for NSMD is from 290 to 319. NSMD selection was based on (1) major categories reflected by the ICD-9, (2) disorders that have been examined (e.g., schizophrenia) by previous studies, and (3) disorders that appear to be more prevalent among the correctional population (e.g., anxiety/neurotic disorder), but have not largely ignored by studies examining the relationship between mental illness and recidivism. The following ICD-9 diagnostic codes were extracted from MSP records: schizophrenia (code 295), bipolar disorder (code 296), anxiety/neurotic disorder (code 300), personality disorder (code 301) and depressive disorder (code 311). Extracted NSMD cases facilitated the construction of five NSMD diagnostic groups that were labeled as follows:

1. Schizophrenic disorder (no or yes)
2. Bipolar disorder (no or yes)
3. Anxiety/neurotic disorder (no or yes)
4. Personality disorder (no or yes)
5. Depressive disorder (no or yes)

As the primary outcome variable, recidivism was defined as the time to first convicted criminal offence during the three year follow-up period of assessment and was measured by sentence data extracted from PSGG records.

### 3.4 DATA ANALYSES

Estimated 5-year NSMD diagnostic rates and corresponding 95% confidence intervals (CI) were based on all participants (n=28,398) sentenced to a BC Correctional facility between April 1, 2005 and March 31, 2007. Diagnostic rates for each specific mental disorder were estimated using the following numerators and denominators: depressive disorder (8,081/28,398), anxiety/neurotic disorder (6,600/28,398), bipolar disorder (2,283/28,398), personality disorder (1,437/28,398) and schizophrenia (1,306/28,398). The corresponding 95% CIs for diagnostic estimates were calculated using the Binomial Exact method:

$$p \pm 1.96 \sqrt{\frac{p(1-p)}{n}}$$

Descriptive statistical techniques were first conducted to display characteristics of all participants (n=13,280) who had received at least one NSMD diagnosis during the five-year period of exposure. The following variables are included when describing socio-demographic characteristics of the sample:

*Age*: recorded age at time of index sentence. Mean, standard deviation (SD), median and inter-quartile range (IQR).

*Gender*: male, female or unknown.

*Ethnicity*: Caucasian, Aboriginal or other.

*Education Level:* highest level of educational attainment categorized as “less than grade 10”, “grade 10 or 11”, “grade 12”, “vocational/university” or “unknown”.

*History of substance use disorder (SUD) during pre-period:* no or yes.

*History of NSMD mental disorder diagnosis (five years prior to index sentence):* Schizophrenia (no or yes), bi-polar disorder (no or yes), anxiety/neurotic disorder (no or yes), personality disorder (no or yes), depressive disorder (no or yes) or missing.

Descriptive statistical analyses were also performed to report correction-related characteristics of the cohort. The following variables were included for analysis:

*History of prior sentence during pre-period (5 years):* no or yes.

*Recidivism during post-period (3 years):* no or yes.

The association between specific NSMD disorder diagnoses (i.e., depressive disorder, anxiety/neurotic disorder, bipolar disorder, personality disorder and schizophrenia) and recidivism was modeled using a time to event (i.e., survival) analysis. Cox regression models with robust variance were applied to compare the time to first convicted offense during the three year post-period of assessment between each NSMD diagnostic grouping. The hazards of convictions associated with these NSMD disorders were estimated in a univariate and multivariate setting. All individuals included in the analysis had the same length of follow-up period (three years). Results obtained from univariate analyses were used to build multivariable models that adjusted for potential confounding variables. Multivariable Cox regression was used to model Hazard Ratios (HRs) for the associations between NSMD diagnoses (i.e., schizophrenia, bipolar disorder, anxiety/neurotic disorder, personality disorder and depressive disorder) and recidivism risk.

Potential confounding variables (i.e., age, gender, ethnicity, achieved education level, prior substance use disorder diagnosis and prior sentence during pre-period) were selected based on a large body of previous literature addressing risk factors of criminal behavior. Those factors found to be associated ( $p$ -value < 0.05) with recidivism in the univariate Cox regression analyses were then included in the multivariable model. The proportional hazard (PH) assumptions were assessed for all covariates: primary independent variables and confounders. The PH assumption “requires that the

hazard ratio is constant over time, or equivalently, that the hazard for one individual is proportional to the hazard for any other individual and the proportionality constant is independent of time" (Fabsic, Evgeny & Zemmer, 2011, p. 3). Several confounders (i.e., gender, ethnicity, achieved education level and prior sentence during pre-period) did not meet this assumption and were included in the multivariable Cox models as stratification variables. Unadjusted and adjusted HRs with the corresponding CIs were reported as a measure of risk between NSMD disorder diagnoses and recidivism.

An alpha level of 0.05 was used to report the significant associations between the independent and outcomes variables. All reported p values were two-sided. Descriptive and inferential statistical techniques were performed using Stata data analysis software (version 12.1). The study protocol was reviewed and approved by the Office of Research Ethics at Simon Fraser University.

## 4: RESULTS

In total, 31,014 individuals were sentenced between April 1st, 2005 and March 31st, 2007. Of these, 2,143 and 473 cases were excluded (8%) due to missing MSP coverage and death during the post-period of assessment, respectively.

Overall, 13,280 provincial offenders (47%) received at least one NSMD diagnosis during the five year period of assessment prior to the initial index sentence date. Estimated five-year diagnostic rates for specific NSMDs are described in Table 4.1.

**Table 4.1: Estimated 5-year diagnostic rates of specific NSMDs (n= 28,398)**

NSMD diagnosis	# of diagnosed cases	Estimated of 5-year diagnostic rate (%)	Confidence Interval (CI) = 95%
Depressive disorder	8,081	29	0.279 – 0.290
Anxiety/neurotic disorder	6,600	23	0.228 – 0.237
Bipolar disorder	2,283	8	0.077 – 0.084
Personality disorder	1,437	5	0.048 – 0.053
Schizophrenia	1,306	5	0.044 – 0.049

Individuals were more likely to have received a diagnosis of depressive disorder, when compared to other NSMDs examined. Five-year estimates of NSMD diagnostic rates for provincial offenders (N=28,398) in BC were: depressive disorder, 29%; anxiety/neurotic disorder, 23%; bipolar disorder, 8%; personality disorder, 5% and schizophrenia, 5%.

Socio-demographic and correction-related characteristics of individuals diagnosed with at least one NSMD (n=13,280) are presented in Table 4.2.

**Table 4.2: Socio-demographic and correction-related characteristics of NSMD cohort (n=13,280)**

<b>Variables</b>	<b>N (%)</b>
<b>Age at admission (in years)</b>	
Mean (SD)	36 (11)
Median (IQR)	35 (25–43)
<b>Gender</b>	
Male	10,262 (77)
Female	3,018 (23)
<b>Ethnicity</b>	
Caucasian	9,444 (71)
Aboriginal	2,275 (17)
Other	1,255 (10)
Unknown	306 (2)
<b>Level of education</b>	
< Grade 10	1,850 (14)
Grade 10 or 11	4,374 (33)
Grade 12	4,434 (33)
Vocational/University	1,862 (14)
Unknown	760 (6)
<b>History of prior sentence during pre-period</b>	
No	7,208 (54)
Yes	6,072 (46)
<b>History SUD* during pre-period</b>	
No	6,410 (48)
Yes	6,870 (52)
<b>History of schizophrenia during pre-period</b>	
No	11,974 (90)
Yes	1,306 (10)
<b>History of bipolar disorder during pre-period</b>	
No	10,997 (83)
Yes	2,283 (17)
<b>History of anxiety/neurotic disorder during pre-period</b>	
No	6,680 (5)
Yes	6,600 (50)
<b>History of personality disorder during pre-period</b>	
No	11,843 (90)
Yes	1,437 (10)
<b>History of depressive disorder during pre-period</b>	
No	5,199 (39)
Yes	8,081 (61)

\*SUD: Substance use disorder

A total number of 13,280 individuals had received at least one NSMD diagnosis and were included in this analysis. Individuals ranged in age from 18–86 years, with a mean age of 36 reported. A majority of the sample was male (77%) and Caucasian (71%). Additionally, 17% of individuals admitted to BC Corrections self-identified as Aboriginal. Further examination of achieved education levels showed 33% of the cohort completed grade 12 and 33% grade 10 or 11. Fourteen percent of individuals attended post-secondary training, which is equivalent to those who achieved a lower level of education (< Grade 10). In total, 45% (n=5,925) of offenders were convicted of an offence during the 3 year post-release period (not tabulate). Slightly less than half (46%) of the NSMD cohort had served a prior sentence in the BC Correctional system during the pre-period of assessment and over half (52%) was diagnosed with an additional substance-use disorder (SUD). The following specific NSMDs were recorded: depressive disorder, 61%; anxiety/neurotic disorder, 50%; bipolar disorder, 17%; personality disorder, 10% and schizophrenia, 10%.

To measure which NSMD made an independent contribution to the risk of recidivism, Cox regression models (Table 4.3) were constructed.

Table 4.3 provides results from both the univariate and multivariable Cox regression. Variables found to be significant in the univariate tests were chosen for inclusions in the multivariable model. Hazard ratios (HRs) were reported before and after adjusting for potential confounders (i.e., age, gender, ethnicity, education level, prior sentence during pre-period and history of SUD).

Overall, two significant associations were found between specific NSMD diagnoses and the risk of recidivism. Individuals diagnosed with personality disorder were at greater risk (adjusted HR=1.10; 95% CI=1.01–1.19) to recidivate during the 3 year post-release period when compared to individuals with no diagnosis of this specific disorder. Additionally, offenders diagnosed with depressive disorder were at less risk (adjusted HR=0.93; 95% CI=0.88–0.99) to recidivate. No significant associations between the remaining NSMD categories (i.e., schizophrenia, bipolar disorder and anxiety/neurotic disorder) and recidivism during the post-period were observed after adjusting for confounding factors.

When examining the relationship between socio-demographic/correction-related characteristics and recidivism recorded in the three year post-period, several significant findings were observed. The risk of recidivism during the 3 year post-period of assessment is significantly greater among male offenders

(adjusted HR=1.17; 95% CI=1.10–1.19) than females. Additionally, a 37% (adjusted HR=1.37; 95% CI=1.23–1.53) increase in recidivism risk was examined for individuals of Aboriginal ethnicity when compared to Caucasian or other ethnicities.

**Table 4.3: Univariate and multivariable Cox regression analysis of factors associated with recidivism (time to first event) during the post-period (3 years) among NSMD cohort (n=13,280)**

Variables	Unadjusted Hazard Ratio (95% CI)	p-value	Proportional Hazard Assumption p-value	Adjusted Hazard Ratio* (95% CI)	p-value
<b>Age<sup>2</sup> (per year)</b>	1.00 (1.00 – 1.00)	<0.001	0.183	1.00 (1.00 – 1.00)	<0.001
<b>Gender</b> Male versus Female	1.16 (1.09 – 1.24)	<0.001	0.003	1.17 (1.10 – 1.19)	<0.001
<b>Ethnicity</b> Caucasian Aboriginal Other	1.30 (1.18 – 1.44) 1.81 (1.63 – 2.02) <i>Reference</i>	<0.001 <0.001	0.038	1.19 (1.08 – 1.31) 1.37 (1.23 – 1.53) <i>Reference</i>	<0.001 0.001
<b>Education Level</b> < Grade 10 Grade 10 or 11 Grade 12 Vocational /University	1.70 (1.54 – 1.88) 1.76 (1.61 – 1.92) 1.32 (1.21 – 1.44) <i>Reference</i>	<0.001 <0.001 <0.001	0.019	1.33 (1.20 – 1.47) 1.29 (1.18 – 1.41) 1.12 (1.02 – 1.22) <i>Reference</i>	<0.001 <0.001 0.015
<b>Prior sentence during pre-period</b> Yes versus No	2.64 (2.50 – 2.78)	<0.001	0.002	2.06 (1.95 – 2.19)	<0.001
<b>History of SUD</b> Yes versus No	2.16 (2.05 – 2.28)	<0.001	0.364	1.73 (1.63 – 1.83)	<0.001
<b>History of schizophrenia</b> Yes versus No	1.24 (1.14 – 1.34)	<0.001	0.916	1.04 (0.91 – 1.19)	0.562
<b>History of bipolar disorder</b> Yes versus No	1.08 (1.01 – 1.16)	0.024	0.196	0.98 (0.88 – 1.09)	0.660
<b>History of anxiety disorder</b> Yes versus No	1.08 (1.02 – 1.14)	0.003	0.372	0.99 (0.93 – 1.08)	0.990
<b>History of personality disorder</b> Yes versus No	1.34 (1.24 – 1.44)	<0.001	0.104	1.10 (1.01 – 1.19)	0.022
<b>History of depressive disorder</b> Yes versus No	0.96 (0.91 – 1.01)	0.100	0.168	0.93 (0.88 – 0.98)	0.009

\* Adjusted for age, gender, ethnicity, education level, prior sentence during pre-period and history of SUD

The estimated association between education and recidivism emphasizes the risk of recidivism decreases when higher levels of education

are attained. Individuals who attained an education level of less than grade 10, were more likely to recidivate (adjusted HR=1.33; 95% CI=1.20–1.47), than those who attained grade 10 or 11 (adjusted HR=1.29; 95% CI=1.18–1.21) or graduated from high school (adjusted HR=1.12; 95% CI=1.02–1.22). Both a prior sentence and diagnosed SUD recorded during the five year pre-period were strongly associated with recidivism. After adjustment, the risk of recidivism (adjusted HR=2.06; 95% CI=1.95–2.19) was approximately two times greater for individuals with a prior sentence during the pre-period of assessment and for those with a SUD diagnosis, the risk (adjusted HR=1.73; 95% CI=1.63–1.83) increased by 73%.

When testing the proportional hazard assumption (i.e., the hazard ratio remains constant over time), several violations were examined. P-values less than 0.05 were recorded and the proportional hazard assumption was rejected for the following covariates: gender (p-value = 0.003), ethnicity (p-value = 0.038), education level (p-value = 0.019), prior sentence during pre-period (p-value = 0.002). Due to these observed violations, the analysis was repeated by stratifying on the covariates that exhibited non-proportional hazard. Table 4.4 provides hazard ratio estimates from the stratified multivariable Cox regression analysis.

After stratifying by sex, ethnicity, education level and prior sentence during the pre-period, both personality and depressive disorder remained independently associated with recidivism risk. Individuals diagnosed with personality disorder were at greater risk (HR=1.09; 95% CI=1.01–1.18) to recidivate during the 3 year post-release period when compared to individuals with no diagnosis of this specific disorder. Furthermore, a 7% decrease in the risk of recidivism during the 3 year post-release period was examined for offenders diagnosed with depressive disorder (HR=0.93; 95% CI=0.88–0.99) when compared to individuals who had not received this NSMD diagnosis. No significant associations between the remaining NSMD categories (i.e., schizophrenia, bipolar disorder and anxiety/neurotic disorder) and recidivism during the post-period were observed after stratification.

**Table 4.4: Multivariable Cox regression analysis to investigate recidivism (time to first convicted offence) by NSMD diagnoses in post-period (3 years) among NSMD cohort (n=13,280)\***

<b>Variables</b>	<b>Adjusted Hazard Ratio (95% CI)</b>	<b>p-value</b>
<b>Age<sup>2</sup> (per year)</b>	1.00 (1.00 – 1.00)	<0.001
<b>History of SUD</b> Yes versus No	1.72 (1.62 – 1.82)	<0.001
<b>History of schizophrenia</b> Yes versus No	1.02 ( 0.94 – 1.12)	0.607
<b>History of bipolar disorder</b> Yes versus No	0.97 (0.90 – 1.04)	0.381
<b>History of anxiety/neurotic disorder</b> Yes versus No	1.01 (0.96 – 1.06)	0.741
<b>History of personality disorder</b> Yes versus No	1.09 (1.01 – 1.18)	0.028
<b>History of depressive disorder</b> Yes versus No	0.93 (0.88 – 0.99)	0.012

\*Stratified by sex, ethnicity, education level and prior sentence during pre-period

## 5: DISCUSSION

Overall, the current study determined 47% of the provincial prison population had received at least one mental disorder diagnosis during the five year pre-period of assessment. When examining the association between specific NSMD categories and recidivism (i.e., time to first convicted offense) during the three year post-release period, the hazard ratio for recidivism was 1.09 (95% CI 1.01–1.18,  $p = 0.028$ ) times greater among offenders diagnosed with personality disorder when compared to offenders who had not received this specific diagnosis. In addition, offenders who had received a diagnosis of depressive disorder were 7% less likely than those without the diagnosis to recidivate during the 3 year post-release period (HR 0.93, 95% CI 0.88–0.99,  $p = 0.012$ ). The following two sections examine these findings in relation to results reported by previous researchers. Additional recommendations, limitations and implications for future research are also discussed.

### 5.1 MENTAL DISORDER DIAGNOSES AND THE CORRECTIONAL POPULATION

During the pre-period (five years prior to initial date of index sentence), findings from this study indicate that the diagnosed rate for any mental disorder among the provincial offender population was 47%. In contrast, according to Health Canada (2002), one out of five (20%) of Canadians will meet the diagnostic criteria for a mental disorder during their lifetime. When specific disorders were examined, the rates in this study for schizophrenia (5%), bipolar disorder (8%) and depressive disorder (28%) were substantially higher among the correctional population than the estimated lifetime prevalence rates for the general population (schizophrenia, 0.2–2.0%; bipolar disorder, 2%; and major depression, 12%). The five-year diagnostic rate for anxiety/neurotic disorder found by this study was 23%; no lifetime prevalence rate estimate for this disorder was found for the general Canadian population.

Furthermore, this study found 5% of provincial offenders were diagnosed with a personality disorder (which satisfies the reported range of 1–10% for personality disorder prevalence estimated for the general population) (Health Canada, 2002; Statistics Canada, 2002).

The results of the current study confirm previous findings that suggest the prevalence of mental illness is greater for those who come in contact with the criminal justice system when compared to the general population. Currently, there is no single causal factor for this trend that has been agreed upon within the literature, yet several explanations offer partial insight into why this is consistently being observed by researchers. Although a thorough examination of all factors is beyond the scope of this current project, several contributing factors that are most prevalent within the literature will be described.

First, the ‘criminalization of the mentally ill’ hypothesis offers a partial explanation for the increase of mental disorders among individuals who come in contact with the criminal justice system. As a result of deinstitutionalization and a lack of comprehensive community-based support services, a proportion of individuals with mental illness are reinstitutionalized back into the criminal justice system. For these individuals, minor criminal offences (e.g., mischief, failure to appear in court, theft under \$5,000) are the primary source of arrests and convictions (Wilson et al., 2011). Although a plausible explanation for a small proportion of the offender population, previous studies that have examined the prevalence of mental disorders among federally incarcerated offenders also report high rates of disease. In Canada, a convicted offense that results in a custodial sentence of two years or more is served at a federal penitentiary. A federal sentence often reflects crimes that are regarded as more serious in nature. Therefore, it appears that individuals with mental illness who come in contact with the criminal justice system commit a wide variety of offenses and the “criminalization of the mentally ill” fails to fully explain the high prevalence rates of mental illness among different criminal justice population groups (Brink, 2001).

Second, individuals with mental disorders may be more likely to experience risk factors that are strongly related to criminality and have difficulty adhering to sentence conditions when compared to those who are not diagnosed. For example, approximately 52% of the Provincial offender population who had received at least one NSMD diagnosis had also received

an additional SUD. In itself, substance use is an illegal activity and may contribute to the high prevalence rates of individuals with mental disorders who come in contact with the criminal justice system. With an increased risk for substance abuse and homelessness, individuals with mental illness may be more vulnerable to arrest because they are more visible to law enforcement officers. In addition, a large body of literature has established that individuals with mental illness are more likely to have their community term of parole revoked (Baillageon et al., 2009; Eno Louden & Skeem, 2011; Messina, Burdon, Hagopian & Prendergast, 2004). It becomes plausible that mental disorder prevalence among convicted offenders may be partially the result of higher visibility for arrest along with the experience of poor criminal justice outcomes.

Finally, for individuals who received a judicial sentence requiring incarceration, there is no doubt that factors (e.g., overcrowding, lack of privacy, forced isolation, exposure to violence, and limited or inadequate access to health services) in many prisons can have a negative effect on mental health (Birmingham, 2004). For example, Nurse et al. (2003) examined the influence of environmental factors on mental health among incarcerated individuals and found lengthy periods of isolation with marginal mental stimulation, contributed to poorer mental health outcomes and increased feelings of anxiety, anger and frustration. The diagnostic information used by this current study does not indicate whether an individual received an NSMD diagnosis while incarcerated for a sentence served during the pre-period of assessment. For some, it remains plausible that the environmental conditions of imprisonment may be related to the diagnosis received and examined by this study.

## 5.2 THE ASSOCIATION BETWEEN MENTAL DISORDERS AND RECIDIVISM

A second set of major findings from this study determined that the majority of mental disorder diagnoses do not appear to be associated with an increase in the overall risk of recidivism among offenders diagnosed with at least one mental disorder. Alongside previous results, the current findings add detail to studies that have concluded that no significant relationship exists between broad groups of offenders diagnosed with NSMDs and recidivism. The current results suggest when the broad NSMD group is disaggregated, there is

heterogeneity between specific disorder categories which generates the impression that some diagnoses are indicative of an increased risk for recidivism (i.e., personality disorder), some are indicative of decreased recidivism (e.g., depressive disorder) and, when observed as a broad class, these differences apparently cancel each other out, thereby showing little to no relationship as previously reported.

Furthermore, a diagnosis of schizophrenia, bipolar disorder, and anxiety disorder did not appear to increase or decrease the level of recidivism risk among offenders diagnosed with at least one mental disorder. These findings are consistent with the study's hypothesis that a diagnosis of schizophrenia, bipolar disorder, anxiety/neurotic disorder and depressive disorder will not independently increase the risk of recidivism, however, the risk of recidivism is elevated for individuals diagnosed with personality disorder.

The findings of the current study are inconsistent with those of Feder (1991), who found no association between mental disorders and post-release outcomes. This discrepancy may be partially explained by the general assumption that the level of recidivism risk remains constant across disorder categories. Feder (1991) compared the association between mental illness and post-prison adjustment among 447 offenders in New York. Participant grouping was based on whether an offender had received inpatient psychiatric hospitalization during incarceration (MIO) or not (non-MIOs). Over an 18-month follow-up period, the author found no difference between MIOs and non-MIOs in terms of arrest frequency or types of arrest.

Teplin, Abram and McClelland (1994) and Wilson et al. (2011) reported little to no association between NSMD diagnosis and recidivism, which is partially supported by the findings from this current study. The previous two studies defined mental illness as including a diagnosis of schizophrenia, major affective or depressive disorder. This current study did not observe any significant associations between NSMDs traditionally defined within the literature as "severe" (e.g., schizophrenia and bipolar disorder), and recidivism during the post-period of assessment. Similar findings were also reported by Rezansoff (2012), who examined the relationship between diagnostic groupings (i.e., no diagnosis, NSMD, substance use disorder and dual diagnosis) and recidivism among provincial offenders in BC. Individuals who had received at least one NSMD diagnosis were less likely to be reconvicted during the post-period of assessment (three years) when compared to offenders with no

psychiatric diagnoses. The NSMD group included a wide range of diagnoses (ICD-9 non-substance related codes 290–319). When compared to findings reported by this current study, evidence suggests when grouped together, no significant associations between NSMDs and recidivism risk are observed but when unpacked and assessed independently, specific NSMD diagnoses may be directly associated with increased or decreased levels of recidivism risk.

Findings from the current study suggest a significant proportion of the provincial offender population have received at least one NSMD diagnosis and within this group, the majority of mental disorders commonly diagnosed do not appear to independently increase the risk for recidivism. Despite this finding, special consideration is warranted for individuals diagnosed with personality or depressive disorders. When compared to diagnoses received from other NSMD categories, a diagnosis of personality disorder received during the five-year pre-period of assessment appears to increase the risk of recidivism during the post-period of assessment. In contrast, depressive disorder appears to have a small protective effect against repeated criminal justice involvement. Although high NSMD prevalence rates signify that the burden of treatable psychiatric conditions within the correctional population is substantial, findings from this study suggest that most mental disorder diagnoses may be indirectly related to recidivism.

### 5.3 THE CURRENT POLICY MODEL

It is hypothesized that the process of deinstitutionalization replaced long-standing psychiatric facilities with insufficient community-based mental health services. As a result, individuals with mental disorders were often reinstitutionalized in the prison system (Perez, Leifman & Estrada, 2003). Skeem, Manchak and Peterson (2011) note “there is little evidence that the risk of incarceration has uniquely increased for those with mental illness ... as a function of ‘get tough on crime’ policies, incarceration rates for the entire population – most of whom do not have severe and persistent mental illness – grew sharply in the 1980s and 1990s” (p. 116). Additionally, the “criminalization of the mentally ill” hypothesis presents the argument that (untreated) mental illness has led to individuals with mental disorders becoming increasingly involved and overrepresented in the criminal justice system (Brink, Doherty & Boer, 2011). In essence, a direct relationship between mental illness and criminal behavior has

long been assumed and is presented as a rationale for the dramatic rise of specialized courts (e.g., MHCs) that provide alternatives to criminal sanctions in order to reduce or all together prevent recidivism. As a result, the current policy model has emphasized the provision of correctional mental health services to reduce the involvement of individuals with mental disorders in the criminal justice system. Unfortunately, there is a lack of evidence supporting recidivism reduction through the proliferation of mental health services or symptom improvement (Skeem, Manchak & Peterson, 2011). A number of studies have determined mental health treatment has no affect on criminal justice outcomes (see: Clark, Ricketts & McHugo, 1999; Calsyn, Yonker, Lemming, Morse & Klinkenberg, 2005; Chandler & Spicer, 2006).

Although the current policy model is guided by the underlying assumption that mental illness is directly related to criminal behavior, previous research (e.g., Wilson et al., 2011 and Rezansoff, 2012) challenges this assumption. In conjunction with previous research, results from the current study further challenge this underlying assumption as four of the five mental disorder categories included in this analysis were not found to independently increase the risk of recidivism within the NSMD group. As a result, a number of current policy initiatives may have little to no effect on reducing the rate of recidivism among the majority of offenders with mental disorders. In part, these results may be viewed positively by the criminal justice system. Although the burden of treatable mental illness is substantial, emerging evidence suggests that only a small proportion of the provincial offender population is diagnosed with a NSMD that independently increases their risk of recidivism. As noted by Skeem, Manchak and Peterson (2011), the current policy model can be applied to a relatively small proportion of offenders. These authors further suggest the relationship between mental illness and criminal behavior for a larger proportion of the offender population is “fully mediated by a third variable (e.g., poverty, social learning) that establishes general risk factors for crime” (p. 118).

Studies across the literature suggest a large proportion of offenders, regardless of diagnosis status, recidivate (Bonta, 1998; Baillargeon et al., 2009; Wilson et al., 2011). Risk assessment instruments have been developed to measure static and dynamic factors that help predict sustained criminal behavior following custodial release. For example, Hanson (2009) assessed risk factors for commonality in a) general recidivism among adult male offenders,

b) sexual recidivism among sexual offenders, and c) violent recidivism among offenders diagnosed with a mental illness. Hanson's study measured the effect of specific risk factors associated with recidivism across these offender types and determined general, sexual and violent recidivism were all associated with prior criminal history, young age, substance abuse, negative peer association and antisocial personality disorder. Supplementary research has further identified unstable employment and family relationships as possible indicators of criminal recidivism (Loucks & Zamble, 1994; Simourd & Andrews, 1994; Van Voorhis & Presser, 2001; Visher & Travis, 2003).

#### 5.4 MENTAL DISORDERS, DISPROPORTIONATE RISK AND CRIMINOGENIC NEEDS

It is hypothesized that offenders with mental disorders may experience a disproportionate risk for recidivism "based on their having even more general risk factors for recidivism than their relatively healthy counterparts." (Skeem, Manchak and Peterson, 2011, p. 117). In part, this may be partially explained by "the distal features of mental illness, the poverty experienced by persons with mental illness as a consequence of their psychiatric disorder or as an independent feature of their backgrounds, increased opportunities for engaging in substance abuse, and the general physical/social environment that accompanies that poverty" (Fisher, Silver & Wolff, 2006, p. 553). For example, according to Draine, Solomon, Salzer, Culhane and Hadley (2003), individuals with mental disorders sometimes engage in deviant and criminal behavior because of factors associated with low socioeconomic status. Although low socioeconomic status is not a direct cause of crime (i.e., many individuals who reside low socio-economic neighborhood do not commit crime), the distal features (e.g., restricted access to resources and material goods) of poverty provide conditions that foster at-risk residents who are predisposed to criminal behaviour. Their social and geographical situations are stipulated by the poverty they experience, which often increases their risk of engaging with individuals without mental illness who commit crime. Poverty is often characterized by limitations in both educational and employment opportunities. On one hand, educational activities and employment promotes daily time that is structured. On the other hand, limited educational activities and unemployment promotes daily time that is unstructured and is thought to

provide increase opportunity for offending. How an individual spends their time and with whom they spend it with, is thought to encourage or discourage criminal behavior. Also, individual norms and values related to criminality may be developed when situated near to and socializing with groups of individuals whose values deviate from socially and legally approved forms of behaviour (Fisher, Silver & Wolff, 2006, p. 553).

In addition, upon release, individuals with mental illness may experience increased vulnerability and have a number of complex needs that remain unmet (Wilson et al., 2011). For instance, when assessing eight risk factors for recidivism using the LS/CMI, both Girard and Wormith (2004) and Skeem et al. (2008) found that those with mental illness achieved higher scores than those without. According to Bonta, Law & Hanson (1998), “the most effective programs for reducing recidivism are those that target needs closely related to criminality” (p. 138). Therefore, enhanced identification of personal risk factors related to offending is needed to develop individual service plans that target specific criminogenic needs. Findings from this study also suggest most mental disorder diagnoses do not increase the risk of recidivism among individuals diagnosed with at least one NSMD. Criminal justice interventions that identify and target possible underlying mediating factors (e.g., poverty) and criminogenic needs (e.g., substance abuse, employment, social support) strongly associated with recidivism may potentially improve post-release outcomes for offenders with mental illness (Castillo & Alarid, 2010; Skeem, Manchak and Peterson, 2011). Rotter and Carr (2011) highlight that “integrated treatment, supported employment, multi-family therapy and housing first initiatives target these needs which are shared by individuals with mental illness with and without justice involvement and should therefore theoretically address the criminal recidivism that has been directly associated with these factors” (p. 724).

## 5.5 MENTAL HEALTH COURTS AND RECIDIVISM

From a public health perspective, diverting individuals with mental disorders away from the correctional environment is beneficial for a number of reasons. The environmental conditions of incarceration have been linked to adverse outcomes related to both physical and mental health (Boothby & Durham, 1999; Jacobi, 2005). Furthermore, Fisher, Silver and Wolff (2006) note “Individuals

with severe psychiatric disorders in correctional facilities face a range of potentially serious clinical and public safety risks, and correctional settings themselves are, by and large, not well equipped to treat or even manage such individuals” (p. 121). Although adverse health outcomes associated with incarceration may be minimized through programs such as Mental Health Courts, diversion programs may be less successful at reducing rates of recidivism. For example, Rotter and Carr (2011) examined criminal justice and health related outcomes among approximately 1,000 offenders who participated in diversion programs in the United States. The investigators reported significant decreases in the number of re-arrests and in psychiatric symptoms following program completion when compared to pre-program values. However, symptom reduction was not found to be related to decreased patterns of re-arrest. Rather, re-arrests were best predicted by the number of arrests prior to program enrollment. Examining the effectiveness of mental health courts for recidivism reduction “is challenging because it is unclear with regard to the extent to which the improved outcomes can be attributed to the mental health court intervention itself, its process for selecting clients, or some combination of these and other unmeasured factors” (Wolff, Fabrikant & Belenko, 2010, p. 402).

Alongside previous results, this current study’s findings add detail to existing literature which examined broad groupings of offenders based on diagnostic status. Previous studies determined equal or lower rates of recidivism for groups of individuals diagnosed with NSMDs when compared to groups with no diagnosis. The results of this current study, however, suggest that when the broad NSMD group is unpacked, there is heterogeneity among the disorder categories. Although within-group variability was measured, four of the five of mental disorder categories examined were not found to independently increase the risk of recidivism. Therefore, it could be hypothesized that mental health treatment provided through diversion programs may have little to no effect on rates of recidivism since most mental disorders may not directly “cause” sustained criminal behavior. In addition, MHCs vary in terms of operational procedures used to identify and select eligible cases. For example, Steadman et al. (2005) described a national survey that found MHC eligibility was predominantly based on the presence of an Axis I disorder and less than three percent allowed the review of cases that included individuals diagnosed with an Axis II disorder. Additionally, cases

involving a disorder category that is traditionally recognized as “severe and persistent” (e.g., schizophrenia and bipolar disorder) are significantly more likely to result in an approval of referral. Unfortunately, this current study provides no evidence to suggest the treatment of these specific disorder categories will result in reduced rates of recidivism among offenders participating in diversion programs (i.e., individuals diagnosed with a mental disorder). However, a direct relationship between personality disorder and recidivism is supported by evidence from this study and suggests this specific subgroup may respond to appropriate mental health treatment with reduced rates of recidivism. Consequently, MHCs should broaden the eligibility criteria to include cases from this specific mental disorder category in order to potentially reduce recidivism.

## 5.6 THE PROVISION OF CORRECTIONAL MENTAL HEALTH SERVICES

Public health outcomes for offenders with mental disorders may be improved through the provision of greater mental health services. For example, by linking offenders to appropriate services a reduction of symptoms, substance use and hospitalizations may be experienced (Skeem, Manchak & Peterson, 2011). Results from this current study found that a large proportion of the provincial offender population had received at least one NSMD diagnosis during the 5 year pre-period of assessment. Enhanced correctional psychiatric services that are readily available and encouraged, is essential for improving offender health during incarceration. Comprehensive mental health programs, which include specialized treatment units and case management along with a continuum of community care following release, are identified as effective interventions for individuals with mental disorders who are incarcerated and should be emphasized within the operational framework for delivering correctional mental health care (Ruddell, 2006). In particular, results from the current study suggest the treatment of personality disorder may warrant some additional consideration by health service providers, since individuals diagnosed with this specific disorder may respond to appropriate mental health treatment with a reduced pattern of recidivism. Over the past two decades, evidence-based research suggests personality disorders are treatable. Pidd and Feigenbaum (2007) highlight, “a range of psychological therapies has been shown to be the most effective treatment for personality disorders, though

medication can have some additional effect in reducing the severity of symptoms” (p. 8). Therefore, offenders with personality disorders should be targeted with effective treatment programs in correctional settings. To do so may not only improve offender overall health, but potentially reduce the risk of recidivism following custodial release.

## 5.7 THE ENHANCEMENT OF MENTAL HEALTH SCREENING FOR IMPROVED DETECTION

Although correctional mental health services have the capacity to improve offender health and potentially reduce recidivism by linking individuals diagnosed with personality disorder to evidence-based treatment, a significant proportion of offenders with mental disorders apparently remain undetected and untreated (Borum & Rand, 2000). Screening for mental disorders is an essential component for providing mental health, social and supportive services to offenders. Not every individual who meets the diagnostic criteria for a mental disorder will receive a physician diagnosis. The diagnostic rates of specific disorder categories identified by this study indicates that depressive disorder is the most common diagnosis received by offenders in BC and that the burden of this treatable disorder on the correctional population is substantial. Yet investigators have determined that, in particular, offenders with depressive disorder often remain undiagnosed due to discreet symptom expression (e.g., fatigue, loss of appetite, and problematic sleeping patterns) (Lurigio, 2000). The implementation of sensitive screening instruments that are easily administered, such the Correctional Mental Health Screener and the Jail Screening Assessment Tool should be increased through correctional facilities (Nicholls, Roesch, Olley, Ogloff & Hemphill, 2005; Ford, Trestman & Wiesbrock, 2007). According to Correctional Service Canada (2012) “a number of initiatives in the area of mental health care, such as the revised Computerized Mental Health Intake Screening System will better identify offenders who require more in-depth mental health assessment and/or intervention” (p. 12). This strategy not only promotes early mental disorder identification but assists with the development of individual mental health treatment plans.

## 5.8 LIMITATIONS

The present study has a number of important limitations that should be noted. First, estimates of NSMD diagnostic rates among the correctional population in BC were based on ICD-9 diagnostic information extracted from the Provincial billing data. The estimates are subject to several sources of potential bias, including physician compensation models, the feasibility of treating conditions that are identified, the severity of symptoms, the willingness of patients to acknowledge symptoms, and training of physicians in the area of psychiatric diagnostics. Second, the ability to generalize the findings of this study is restricted by potentially unique characteristics of the Provincial offender population and the operational framework guiding correctional facilities in BC. Lastly, statistical analyses were based on the ability to link associated MSP coverage to individuals identified within the provincial correctional population. Furthermore, 473 individuals died during the post-period of assessment and were excluded from the study. Although sensitivity analyses failed to identify any significant differences between unmatched and matched groupings, 8% of individuals were excluded from the study due to missing data and death.

Despite these limitations, findings from the current study contribute new knowledge to the growing body of literature on mental disorder diagnostic rates among the correctional population and the association between specific mental disorder categories and recidivism. To date, few if any studies have examined the relationship between a wide spectrum of mental disorders and recidivism using population-level data. The addition of a large population-based study to the current body of literature is a meaningful contribution to this area of research. Additionally, previous studies have used a variety of methodological procedures to establish the diagnostic status of inmates, however, some these methods have been questioned by investigators. For example, mental health screening techniques administered by personnel in correction facilities during intake have been critiqued for their ability to accurately assess and categorize mental disorders (Birmingham, Mason & Grubin, 1996; Parsons, Walker & Grubin, 2001). Estimations of mental disorder prevalence reported by this study were based on physician diagnoses. In addition, the current study used comprehensive administrative records as the basis for determining recidivism. Finally, this study was able to examine “less severe” mental disorder categories, which is particularly important given their

relative absence from previous analyses assessing the relationship between mental disorders and recidivism in the existing literature to date.

## 5.9 FUTURE RESEARCH

Previous research that has integrated elements from the fields of public health, psychology and criminology has made important contributions to our current knowledge of the relationship between mental disorder diagnostic groupings and recidivistic behavior. The current study aimed to further understand this relationship by exploring whether the risk of recidivism independently varied by disorder categories contained within the broad NSMD grouping. Several mental disorder categories (i.e., anxiety/neurotic disorder, bipolar disorder and personality disorder) include a number of psychiatric conditions that were not independently examined by this study. It remains possible that recidivism risk varies across conditions and therefore, provides a new area for future research initiatives.

## 6: CONCLUSION

The current study provides evidence that supports previous research (e.g., Brink, Doherty & Boer, 2001) that suggests the burden of treatable mental disorders on the correctional population is substantial. Overall, 47% of the Provincial offender population in BC had received at least one physician-diagnosed mental disorder during the pre-period of assessment. This finding indicates an essential component needed to improve offender health includes the provision of correctional mental health services. Alongside previous research (e.g., Rezansoff, 2012; Wilson et al., 2011), results from this current study also suggest that when the broad NSMD grouping is unpacked, offenders diagnosed with a personality disorder are at greater risk for recidivism when compared to offenders without this specific diagnosis. Furthermore, individuals with a diagnosis of depression are less likely to recidivate during the three year follow-up period. These findings add support to previous studies (e.g., Skeem, Manchak & Peterson, 2011; Wilson et al., 2010) that suggest that an indirect relationship exists between most mental disorder categories and recidivism. In fact, some mental disorders (i.e., depressive disorder) may have a protective effect against repeated criminal justice involvement. Therefore, intervention strategies that target underlying mediating factors, such as poverty, and specific criminogenic needs may be more effective in reducing recidivism than exclusively treating psychiatric symptoms among diagnosed offenders.

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