

Mental Health, Substance Use, and Co-Occurring Disorders among Jail Inmates:
Prevalence, Impact on Recidivism, and Gender Differences

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Abstract

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Very few studies have examined the relationship between mental health, substance use, co-occurring disorders (CODs), and recidivism among the jail population. Mental health problems, substance use, and their co-occurrence are significant predictors of maladaptive outcomes such as aggression, criminal behavior, and recidivism. Research shows that mental health problems, substance use, and especially their co-occurrence, also leads to misbehavior among prison inmates during incarceration. Among the offender population, it is theorized that these problems hinder healthy adjustment to confinement within institutional settings, and as such, raise the risk of violating prison rules. Upon release, offenders who suffer from mental health problems, substance use problems or CODs may also have difficulty adjusting to supervision in the community, or staying away from criminal behavior, which in turn, may lead to their recidivism. Further, these problems are theorized to be more prevalent and problematic among women in correctional settings than among men.

It is possible that these processes are also at work in jail settings. However, very few studies have examined the relationship between mental health problems, substance use, and CODs among the jail population, nor have they examined gender differences in these relationships among jail inmates. This study seeks to fill these gaps by examining:

- a) the prevalence mental illness, substance use problems, and CODs among jail inmates,
- b) their effects on recidivism among jail inmates, and c) whether there are gender differences in these relationships.

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Mental Health, Substance Use, and Co-Occurring Disorders among Jail Inmates:
Prevalence, Impact on Recidivism, and Gender Differences

Chapter 1: Introduction

Incarceration in prison or jail costs millions of dollars per inmate in the United States each year. Recidivism – offenders’ relapse into criminal behavior, often after receiving a sanction or intervention – accounts for much of that cost, with over 40 percent of offenders rearrested within one year of release and over 17 percent being re-incarcerated in prison or jail within that time (Durose, Cooper, & Snyder, 2014). Research demonstrates that certain risk factors such as criminal history, race, age, employment status, homelessness, mental illness, and substance use problems enhance the likelihood of recidivism (Gendreau, Little, & Goggin, 1996). A risk factor increases one’s likelihood of criminal behavior; offenders with more risk factors are more likely to recidivate. The strongest predictors of recidivism, dubbed the “big four,” are criminal history (e.g., prior arrests, incarcerations, seriousness of offenses, etc.), antisocial personality (stimulation seeking, low self-control, and hostility), antisocial peers, and antisocial attitudes (Gendreau et al., 1996; Andrews & Bonta, 2010). The “big eight” risk factors (including the “big four”) for recidivism include substance abuse, employment unsteadiness, family complications, and low involvement in prosocial leisure activities (Andrews, Bonta, & Wormith, 2006). For instance, younger offenders, males, those with antisocial attitudes, low education and/or employment, those who have engaged in violence in the past, those with more family-related problems, those with antisocial peers,

or who use or abuse substances are more likely to recidivate than offenders who do not have these risk factors (Andrews, Zinger, Hoge, Bonta, Gendreau, & Cullen, 1989).

Mental illness, though not identified as one of the “big eight” predictors of recidivism, is nonetheless a strong correlate of criminal behavior (Swartz, Swanson, Hiday, Borum, Wagner, & Burns, 1998), and is increasingly present in the correctional population. For instance, the national data (James & Glaze, 2006) estimates the percentage of mentally ill offenders to be as high as 56 percent. Mental illness also tends to co-occur with substance use problems (one of the “big eight” predictors of recidivism¹). Further, substance use, mental illness, and the co-occurrence of these problems (termed “co-occurring disorders,” or CODs) exist at an alarming rate among jail inmates (Belknap, Lynch, & DeHart, 2015) - a population less often studied by criminologists in comparison to prison inmates. Yet, these problems may be just as detrimental to jail inmates’ institutional misbehavior and eventual recidivism in the community. Moreover, the interconnectedness between drug use and mental illness among female offenders is particularly strong, and in many cases, this means that jail settings must respond to the problems and needs that females bring with them into jail – including high rates of mental illness, substance use, and CODs. This study attempts to contribute to the limited evidence on recidivism among jail inmates by exploring the prevalence of mental health problems, substance use, and CODs in this population, their impact on inmates’ recidivism, as well as gender differences in these effects.

¹ For the current study, mental illness and substance use are considered as two separate disorders and their co-morbidity is defined as co-occurring disorders (CODs).

Substance Abuse, Mental Illnesses and Co-Occurring Disorders

Mental health problems, substance use, and their co-occurrence are significant predictors of maladaptive outcomes such as aggression, criminal behavior, and recidivism. These problems are known to initiate delinquent and criminal behavior among youth, adults, men, and women (Hiller, Knight, Broome, & Simpson, 1996). Recently, research has shown that mental health problems, substance use, and especially their co-occurrence, also leads to misbehavior among prison inmates during incarceration (Houser, Belenko, & Brennan, 2012). This research suggests that inmates with CODs may pose complications to correctional system administration such as jail/prison staff, correctional officers and administrators. Researchers have theorized that these problems hinder healthy adjustment to confinement within institutional settings, and as such, raise offenders' risk of violating prison rules (Houser & Welsh, 2014). Upon release, offenders who suffer from mental illness, substance use problems or co-occurring disorders may also have difficulty adjusting to supervision in the community or staying away from criminal behavior, which in turn, may lead to their recidivism (Sacks, 2004). For instance, it is estimated that 60 percent of inmates with substance use disorders also have co-occurring mental disorders (Volkow, 2007), and as many as 50 percent of female inmates may be in urgent need of extensive in-house treatment for drug abuse disorders (Belenko & Peugh, 2005). These numbers suggest that the prevalence of CODs among inmates is high and their associated needs are varied.

It is possible that problems related to mental illness, substance use and CODs are also at work in jail settings. However, very few studies have examined the relationships between mental health problems, substance use, and co-occurring disorders among the

jail population (DeHart, Lynch, Belknap, Dass-Brailsford, & Green, 2013). This is likely due to many practical and methodological concerns, including the transiency of the jail population – many inmates are confined for less than a day and it is therefore difficult to assess their needs within that timeframe. Further, most jails do not have programming available to treat such problems among their population (Trestman, Ford, Zhang & Weisbrock, 2007), so identifying mental illnesses, substance use problems and their co-occurrences would hold very little value for many jail administrators.

However, it is possible that mental health, substance use, and CODs are even more problematic among jail inmates than prison inmates. First, the prevalence of these problems may be even higher among jail inmates than prison inmates, given that jails house any person who has been arrested, while prisons house only those convicted of serious crimes. Therefore, jails are likely to house individuals whose mental health and substance use problems have brought them to the attention of the police, but whose offenses may not be serious enough to progress through the criminal justice system and result in a prison sentence (e.g., drunk driving, homelessness, nuisance crimes, bar assaults, and so forth). Second, the lack of programming and classification in jails may exacerbate the problems created by mental health, substance use, and CODs in terms of jail inmate misbehavior (Trestman et al., 2007). That is, without housing units designed for inmates with mental health problems, substance use, or CODs, jail inmates who suffer from these problems are often housed with inmates who do not have these problems, and the potential for misbehavior and/or victimization between the two increases (e.g., an inmate with mental health problems may assault another inmate, or vice versa). Finally, due to the lack of programming offered by jails, it is more likely that mental health

problems, substance use problems, and CODs go untreated while the offender is incarcerated. Therefore, it is more likely that these problems will again impact their misbehavior in the community, which will, in turn, lead to their subsequent arrest and return to jail.

As mentioned, however, very few studies have examined these issues as they pertain to jail inmates. This study seeks to fill this gap in the research by examining the prevalence of mental illness, substance use, and their co-occurrence among an intake cohort of jail inmates in a Midwestern county. Further, this study will examine whether inmates with mental illness, substance use problems, or CODs are at increased risk for returning to jail within one year of release. Because it has been documented that mental health problems, substance use problems, and CODs are more prevalent among women offenders (Bloom & Covington, 2008), this study will also examine whether these patterns exist among female jail inmates, and whether the effects of mental health, substance use, and CODs on recidivism are stronger for women offenders than men offenders. A discussion of gender as it pertains to mental illness, substance use, and CODs and their relation to recidivism will be provided in Chapter 2.

Current Study

The primary purpose of this thesis is to examine the role of mental illness, substance use and CODs on recidivism among jail inmates, and to determine if there are gender differences in these effects. Known risk factors for recidivism, including criminal history, age, gender, race, unemployment, and homelessness will be examined as control variables. Chapter 2 provides the theoretical rationale for the study. Chapter 3 will report

the methodology used for this study. Chapter 4 will present the results from the quantitative analyses performed to address the research questions of this study. Finally, Chapter 5 will discuss the main conclusions from this study and any implications from the study to the jail population.

Chapter 2: Literature Review

The United States' correctional population has both a “prevalence” problem and an “effects” problem when it comes to mental health problems, substance use, and their co-occurrence – that is, these problems are both highly prevalent among this population and have many detrimental effects, including institutional misbehavior and continued criminal behavior (Houser et al., 2012; Messina, Burdon, Hagopian, & Prendergast, 2004). It is likely that these problems disrupt adjustment to confinement and fulfillment of supervision conditions, and increase the likelihood of continued criminal behavior when the offender is in the community. For many correctional systems – both jails and prisons – supervision of inmates with these problems raises notable concerns for management regarding safety and the allocation of resources that are necessary to appropriately respond to them (Houser et al., 2012).

Prevalence of Mental Illness, Substance Use, and Co-Occurring Disorders among Offenders

The prevalence of mental illness and substance use problems – and their co-occurrence – among the offender population is noteworthy. Numerous studies have demonstrated that a significant proportion of offenders in jail and prison settings suffer from mental illness, with rates much higher in these settings compared to the general population (Sacks, 2004). The percent of mentally ill offenders has increased from 16 percent in 1998 (Ditton, 1999) to 56 percent in 2005 (James and Glaze, 2006). Rates of mental illness among inmates in the correctional system have been steadily on the rise (Kleinsasser & Michaud, 2002), perhaps as a result of deinstitutionalization across the

nation which replaced long-stay psychiatric hospitals with smaller, less secluded community-based substitutes for the care of mentally ill people (Lamb & Weinberger, 1998). Researchers have speculated that deinstitutionalization of psychiatric hospitals and community care for those with mental illness is at least in part to blame for the rise of mentally ill and co-disordered offenders in the U.S. correctional system (Novella, 2010). The rationale given for the widespread closing of these institutions during the 1950s-70s was that the mentally ill could be better taken care of in the community in more humane and economical ways than in psychiatric hospitals (Sporer, 2016). It is possible that this impacted jails disproportionately, since jails report higher proportions of inmates with mental illness than prisons (James & Glaze, 2006).

Although the rates for mental illness are high, the prevalence rates for alcohol and drug problems in correctional populations are even higher – it is estimated that over 50 percent of inmates in jails and prisons suffer from substance dependence or abuse (James & Glaze, 2006). Jail inmates who fit the norm of substance dependence are more likely to have a criminal record compared to those who do not abuse substances, and they are more likely to be homeless in the year preceding their arrest (James & Glaze, 2006). Inmates' substance use is likely related to their criminal behavior - more than 50 percent of jail inmates were using substances at the time of their arrest, with over 70 percent of drug or property offenders and 60 percent of violent or public-order offenders evidencing drug dependence or abuse (Karberg & James, 2005).

Given the high rates of mental illness and substance use among inmates, it is not surprising that co-occurring disorders (CODs) are also very prevalent among correctional populations – including jail inmates. CODs refer to the presence of one or more disorders

related to alcohol or drugs in concurrence with one or more mental disorder(s) (Center for Substance Abuse Treatment, 1999). It is estimated that approximately 48 percent of jail inmates are co-disordered, suffering from mental health problems simultaneously with substance dependence or abuse (James & Glaze, 2006). Estimates of CODs among correctional populations can vary depending on certain factors. Havassy and colleagues (2004) reported that approximately 90 percent of inmates with schizophrenia, bipolar disorder or antisocial personality disorder also suffered from substance abuse or substance disorder. James and Glaze (2006) reported slightly lower percentages of inmates (under 76 percent) with any mental health problem also evidencing substance dependence or abuse. Regardless of the disorders which are included, whether they are self-reported or officially diagnosed, or the correctional population (i.e. jail versus prison) under consideration, the numbers of CODs are considerably high.

Research Question 1 – What is the prevalence of mental health, substance use and CODs among an intake cohort of jail inmates?

Effects of Mental Illness, Substance Use, and Co-Occurring Disorders on Recidivism

Individuals with mental illnesses are presumed to be more prone to recidivism, compared to the individuals without any mental illness (Wilson, Draine, Hadley, Metraux, & Evans, 2011). Hartwell (2004) and Messina et al. (2004) found that among a sample of inmates, those with CODs were more at risk of recidivating within the first year of their release compared to those with mental illness only. I attempt to examine in my thesis whether mental illness, substance use and CODs are, in fact predictors of recidivism among jail inmates.

Research Question 2 – Does having a history of mental illness predict recidivism among jail inmates after controlling for covariates?

Research Question 3 – Does having a history of substance use predict recidivism among jail inmates after controlling for covariates?

Research Question 4 – Does having a COD predict recidivism among jail inmates above having only mental illness and only substance use?

Supervision Challenges Created by Mental Illness, Substance Use, and Co-Occurring Disorders

Behaviors and maladjustment from substance abuse, mental illness, and COD symptoms can create concerns for the management of an institution². For instance, prison inmates with mental illnesses are more likely to be charged with violence inside correctional facilities compared to other inmates (57 vs. 43 percent, respectively), and are more prone to physical injuries (20 vs 10 percent, respectively) (James & Glaze, 2006). According to a study by Houser and colleagues (2012), within the correctional population, mental illness, substance abuse, and CODs manifest in different ways. For instance, mentally ill offenders report symptoms of major depression, mania, or psychotic disorders, which encompass a wide range of feelings and behaviors. Major depression and mania symptoms include continual sadness, nil interest in physical activities, loss of sleep or being sleepy or fatigued all the time, hypersomnia, psychomotor agitation, and perennial irritability. Almost half of inmates (49 percent) report manic episodes involving

² This study does not examine inmate's behavior within the institution, but for future research considerations, I outline reasons why institutional behavior may be higher among mentally ill, substance abusing, or co-disordered offenders.

insomnia or hypersomnia (Houser et al., 2012). Substance dependence can impact behavior in a variety of ways, too. For instance, intravenous drug users are at a higher risk of contracting infectious diseases and are harmful to themselves as well as fellow inmates, especially when experiencing withdrawal symptoms, or “coming down” from drug use (Wright, 2000).

An unruly prison environment leads to general turmoil, makes adjustment difficult for fellow inmates (Adams, 1983), and strains correctional human resources (O’Keefe & Schnell, 2007). In such an environment, management becomes extremely difficult and other organizational goals like rehabilitation take a back seat (Adams, 1983; O’Keefe & Schnell, 2007). Life in confinement is not easy by any means and is riddled with stressors. There are feelings of being belittled and loss of autonomy among the inmates (Fellner, 2007). The correctional structure is strict, rigid and noisy (Gelman, 2007), with limited access to family and significant risks of victimization (Fellner, 2007). It becomes very difficult for an inmate suffering from CODs to adjust to such an environment because symptoms like emotional instability, delusions, physical pain/withdrawal and hallucinations make it difficult for them to follow the prison rules and regulations; further, these conditions increase the likelihood of triggering a mental-health or COD-related episode among at-risk inmates (Houser et al., 2012). Prison policies and the rigid environment may further aggravate these conditions and worsen inmates’ adjustment if they are housed with the general population (Houser et al., 2012).

Because distorted understandings, emotional volatility, social segregation and withdrawal distress people with many severe mental illnesses, inmates with mental illnesses are likely to have a tougher time acclimating to prison life. For example,

distorted rationale and cognitive distortions may cause inmates to misjudge their reaction to other inmates' behavior and to prison officials' demands. Additionally, inmates with dual mental illnesses and substance use disorders (i.e., CODs) may have an even more difficult time coping with the daily rigidities of prison and involvement in prison-based assaults (as victim and/or perpetrator) (Wood, 2013).

Therefore, COD inmates' supervision needs are different and more demanding than that of other inmates. Often, inmates who display violence are subjected to solitary confinement, which can have further detrimental effects on clinical conditions and may aggravate COD symptoms further (Houser et al., 2012). Because this is not optimal, inmates with mental illness, substance use problems, or CODs may pose a safety hazard for the general inmate population, correctional staff and other mentally ill inmates. As discussed above, they are likely to be disruptive with their behavior (e.g., coming "down from drugs, going through withdrawal, etc.), which may cause injury to correctional staff and fellow inmates, and can lead to increased costs of healthcare and loss of staff productivity and security (Goetting & Howsen, 1986; Wolff & Shi, 2009).

Unruly behavior within the jail is important to recidivism for at least two reasons. First, institutional misbehavior is related to reoffending risk post-release (Cochran, Mears, Bales, & Stewart, 2014). Second, the lack of programming that is available within jail settings not only impacts behavior within the institution – as discussed here – but may also raise the risk of subsequent re-offending after release. I discuss these issues below.

Gender Differences in Mental Illness, Substance Use, and Co-Occurring Disorders

The number of women in jails, prisons, and on parole or probation has been rising for over two decades (Mumola, 1999), and for the last four decades, rates of incarceration for women increased at a higher rate than men's incarceration rates (Belknap et al., 2015). For example, from 1960 to 2011, the rate of imprisonment for women rose by 14 percent and only 7 percent for men (Minton & Golinelli, 2014). In jail settings (where women represent approximately 14 percent of the population), women's numbers rose by 13 percent (2010-2013), whereas the number of men incarcerated in jails *decreased* by 4 percent during this time (Minton & Golinelli, 2014).

Researchers argue that the rise in females' incarceration rates can be attributed to the War on Drugs, which affected women disproportionately (Harmon & O'Brien, 2011; Peugh & Belenko, 1999). The War on Drugs policies targeted drug offenders (e.g., users and dealers) with harsh laws with the hope of curbing drug problems throughout the U.S. The collective effect of this war on drugs pushed many women toward arrest and incarceration (Reynolds, 2008). Indeed, the numbers are compelling: between 1996 and 2001, female arrests for drug felonies rose by 13 percent (Harrison & Beck, 2003), and in 2000, 40 percent of convictions for females resulted from drug offenses. The War on Drug's focus on drug use and drug crimes impacted women disproportionately in the correctional system primarily because women are arrested for non-violent drug crimes more often than men (Peugh & Belenko, 1999, Bloom et al., 2004). The non-violent nature of women's offenses means they are more likely to enter jail settings than prisons – in fact, females are 17.6 times more likely (and males 8.9 times more likely) to be incarcerated in jails rather than prisons (Banks, Stone, Pandiani, Cox & Morchauer,

2000). As will be discussed below, the interconnectedness between drug use and mental illness among female offenders is particularly strong, and in many cases, this means that jail settings must respond to the problems and needs that females bring with them into jail – including high rates of mental illness, substance use, and CODs.

According to James and Glaze (2006), women in correctional settings pose a substantial risk for mental health and substance use problems (and their co-occurrence). Compared to women in general community population (non-offender population) samples, female inmates have heightened rates of substance abuse and mental health disorders, including substance abuse and dependence, mood disorders, borderline personality disorders and anti-social personality (James & Glaze, 2006; Jordan, Schlenger, Fairbank, & Cadell, 1996; Maden, Swinton, & Gunn, 1994). They also exhibit heightened levels of exposure to traumatic life events like childhood victimization and/or domestic violence (Jordan et al., 1996; Radatz & Wright, 2016). The interconnectedness of mental illness and substance use among female offenders is often attributed to their experiences of trauma, such as abuse and victimization (Bloom, Owen, & Covington, 2004). It is theorized that females develop mental health problems in the aftermath of this victimization (Radatz & Wright, 2016; Tripodi & Pettus-Davis, 2013). Additionally, they may use substances to cope with victimization and/or the mental illness (Bloom, Owen, Covington, & Raeder, 2003). Indeed, even correctional staff who work closely with female offenders are unable to decipher the advent of one condition over another – that is, they are not sure if the mental illness exists first and is followed by trauma or vice versa (Belknap, Lynch, & DeHart, 2016).

Further, women in correctional settings suffer from mental illness, drug use disorders, and CODs more than their male counterparts (Houser et al., 2012).³ Again, this could be related in part to their victimization histories: female prisoners are more likely to report physical, sexual, and emotional victimization, as well as victimization during childhood than their male counterparts (Cain, Steiner, Wright, & Meade, 2016; Messina, Burdon, Hagopian, & Prendergast, 2006). Teplin (1990) found that 6 percent of incarcerated men at the Cook County Jail met the diagnostic criteria for schizophrenia, mania or major depression, while 15 percent of women had experienced these psychiatric disorders in the last six months (Teplin, Abram, & McClellan, 1996). James and Glaze (2006) reported that approximately 40 percent of women in jail settings had a recent mental health problem, compared to 18 percent of male jail inmates.

Drug use differs for men and women as well. In federal prisons, men report higher alcohol consumption and women report higher non-alcoholic (hard drugs) substance use. While drug use is related to both male and female offending, females are more likely to be using hard drug(s) at the time of their offense, and are more often arrested and incarcerated for drug-related activities (Mumola & Karberg, 2006). Approximately 73 percent women in state institutions and 47 percent in federal institutions were addicted to a controlled substance on a regular basis prior to their arrest (Mumola, 1999). Women report higher use of heroin and cocaine on a daily basis compared to men and were more often involved in poly-drug usage. Female inmates reported methamphetamine usage at 15 percent compared to only 10 percent of male inmates. Further, while male inmates

³ This is true in the general (non-offender) population as well, but I focus on male inmates from this point forward, given the correctional nature of the sample used here.

appear to take drugs for hedonistic pleasures, female inmates appear to use drugs to assuage physical and emotional pain (Langan & Pelissier, 2001).

Finally, COD rates are very high among incarcerated women. Houser and colleagues (2012, 2014) report between 42 and 64 percent of incarcerated women have co-occurring mental health and substance use disorders, a rate much higher than estimates of CODs among women in the general (non-correctional) population (James & Glaze, 2006; Sacks, 2004). Although extremely high, Houser and Welsh (2014) note that the COD prevalence rates for women may be even higher because prison data often reflects only serious diagnoses for mental health and CODs but leave out the common psychiatric diagnoses for women like anxiety disorders, post-traumatic stress disorders, and borderline personality disorders (see also Bloom et al. 2003). Houser and Welsh (2014) also suggest that many CODs may be undiscovered because there is a lack of dual disorder screening instruments in these settings.

It is clear that women in correctional settings may suffer from mental illness, substance use, and CODs at a higher rate than male inmates. To examine whether these patterns hold among the jail population, and to inform efforts for jail programming and gender-responsive responses to jail inmates, this study will examine whether there are gender differences in the prevalence and effects of mental illness, substance use, and CODs. Based on this literature reviewed here, I suspect that the prevalence and effects of each of these problems will be higher and stronger, respectively, for women. The literature regarding whether the effect of mental illness, substance use, and CODs should differ across genders is scarce, primarily because studies tend to examine these issues among women and men separately, but not simultaneously (Messina et al., 2004; Tripodi

et al., 2013; Wilson et al., 2011). I suspect, however, that the effects may be stronger for women, primarily because I also expect that the prevalence of these problems will be higher for women, too.

Research Question 1(i), 2 (i) & 3 (i) – Do the prevalence and effects of mental illness, substance use and CODs differ for men versus women?

Mental Illness, Substance Use, and CODs May Be Even More Relevant in Jails

Research shows that mental health problems, substance use, and their co-occurrence, leads to misbehavior among prison inmates during incarceration (Houser et al., 2012; James & Glaze, 2006) because these problems hinder healthy adjustment to confinement within institutional settings, and as such, raise the risk of violating prison rules (Houser & Welsh, 2014). Upon release, offenders who suffer from mental health problems, substance use problems or CODs may also have difficulty adjusting to supervision in the community or staying away from criminal behavior, which in turn, may lead to their recidivism (Sacks, 2004). Within jails, there are at least three reasons why the effects of mental illness, substance use, and CODs among inmates may pose greater problems than they do among prisons. First, the prevalence of these problems may be even higher among jail inmates than prison inmates, given that jails house any person who has been arrested, while prisons house only those convicted of serious crimes (Greenberg & Rosenheck, 2008). This may be related to the deinstitutionalization of mental health and other wellbeing facilities in the community (discussed above), where jails have begun to house individuals whose mental health and substance use problems have brought them to the attention of the police, but whose offenses may not be serious

enough to progress through the criminal justice system and result in a prison sentence (e.g., drunk driving, homelessness, nuisance crimes, bar assaults, and so forth).

Second, the lack of programming and classification in jails may further the problems created by mental illness, substance use, and CODs in terms of inmate misbehavior (Solomon, Osborne, LoBuglio, Mellow, & Mukamal, 2008). Jails often screen and assess inmates according to their risk levels, using primarily static variables such as prior arrests, but they often do not assess for therapeutic and programming needs, such as mental health problems (Solomon et al., 2008). Jails may use the classification levels to house inmates into high, medium, and low risk levels, but they likely do not house inmates per their needs, such as mental illness. This means that jail inmates who are suffering from mental illness, substance use problems (such as withdrawal symptoms), and CODs are housed with “general population” inmates who do not have these problems. Without housing units designed for inmates with mental illness, substance use, or CODs, jail inmates who suffer from these problems are often housed with general population inmates, and the potential for misbehavior and/or victimization between the two increases (e.g., an inmate with mental health problems may assault another inmate, or vice versa). By contrast, in prisons, inmates with problems (e.g., mental health, substance use, CODs) can be housed separately from the general population and can be supervised with a lower staff-to-inmate ratio (meaning, the staff oversee fewer inmates, which reduces opportunity for problems or misbehavior and can mean that the staff can respond to problems more quickly). The opportunities for institutional misbehavior (rule violation) and violence among inmates with mental illness,

substance use problems, and CODs therefore may be higher in jails, in part because of these housing and staffing situations.

Finally, due to the lack of programming offered by jails, it is more likely that mental health problems, substance use problems, and CODs go undiagnosed and/or untreated while the offender is incarcerated (Trestman et al., 2007). Therefore, it is more likely that these problems will again impact their misbehavior in the community, which will, in turn, lead to their subsequent arrest and return to jail. For instance, there are many psychosocial factors that lead to violence (e.g., substance abuse) that can be treated via programming in the facility which would lower inmates' risk of misbehavior within and outside of the jail (Andrews & Bonta, 2010). However, many of these programming options are not available in jails.

Additional Risk Factors: Socio-demographic Predictors of Recidivism

There are additional risk factors besides mental health problems, substance use and co-occurring disorders among jail and prison inmates that enhance their chances of recidivism, and that need to be accounted for in models predicting recidivism. Among these are demographic and background characteristics such as age, gender, race, employment, and housing status. Age is one of the most potent risk factors when it comes to recidivism among adult inmates incarcerated in correctional facilities, with younger inmates being more vulnerable to subsequent criminal behavior and recidivism, while males and minorities are also more likely to recidivate than females and non-minorities (Gendreau et al., 1996). According to a meta-analysis of more than 130 studies, race is one of the strongest predictors of recidivism among adult offenders (Gendreau et al.,

1996). According to a study by Kubrin and colleagues., (2007), recidivism is higher among blacks and Native Americans than Caucasians, perhaps because the social contexts in which minorities live are more conducive to crime, and subsequently, recidivism. Offenders with less stable employment and income opportunities, as well as housing stability (e.g., risk being homeless upon release) are also more likely to return to criminal behavior (Gendreau et al., 1996; Bonta, Blais, & Wilson, 2014). Unemployment is closely related to homelessness because it can lead to difficulties in obtaining stable living arrangements, which in turn raises offenders' risk of recidivism (Grace, Batterham, & Cornell, 2008); in fact, homelessness raises one's risk for recidivism by almost four-fold (Fischer, Shapiro, Breakey, Anthony, & Kramer, 1986). Measures of risk and criminal history that tap into offenders' propensity for crime and violence, as well as their past misbehavior (both in and outside of correctional facilities) have been linked to recidivism among offenders (Bonta et al., 2014); these measures include length of stay in the institution, prior criminal history, prior incarceration history, prior violence, gang affiliation, and offense seriousness. All of these measures will be accounted for in the statistical analyses used in the current study.

Summary

The prevalence of mental health and substance use problems – and their co-occurrence – among the offender population is higher than the rates found among the non-offender population (James & Glaze, 2006), and these problems are associated with misbehavior within prison facilities (Houser et al., 2012; Houser et al., 2014), as well as with recidivism (Messina et al., 2004; Peters, Wexler, & Lurigio, 2015). Mental illness,

substance use, and CODs appear to vary across gender, too, with incarcerated women experiencing higher levels of mental illness, using mood altering substances more frequently, and suffering from CODs more often than their male counterparts. Finally, these problems are more prevalent in jail settings than in prison settings (James & Glaze, 2006), but the majority of research on the topic has been conducted in prison settings. The effects of mental illness, substance abuse, and CODs among jail inmates may be even more pertinent to institutional misbehavior and criminal behavior upon release (i.e., recidivism): not only are these problems more prevalent in jail, but the lack of special housing for co-disordered inmates may exacerbate the problems they create for administration (e.g., violent outbursts in the facility), and the lack of programming may mean that their needs go untreated and result in higher rates of returns to jail after release. This study seeks to examine the effects of mental illness, substance use and co-occurring disorders on recidivism among men and women jail inmates.

Chapter 3: Methodology

Primary Goals

The primary goals of this study are to understand the prevalence of mental illness, substance use problems and CODs among inmates within a jail setting, to determine their effects on recidivism, and to examine gender differences in these relationships. The target population chosen for this study is an inmate intake cohort in a Midwestern County Jail.

The following research questions and hypotheses will be addressed:

1. What is the prevalence of mental health, substance use, and CODs among an intake cohort of jail inmates?

Hypothesis: The prevalence of mental health, substance use, and CODs will be high among jail inmates.

- i) Does the prevalence of mental health, substance use, and CODs differ significantly for men and women?

Hypothesis: The prevalence of mental illness, substance use, and CODs will be significantly higher among women than men.

2. Does having a history of mental illness predict recidivism among jail inmates after controlling for covariates?

Hypothesis: A history of mental illness will significantly predict recidivism among jail inmates after controlling for covariates.

- i) Does this effect differ for men and women?

Hypothesis: The effect will be stronger for women than men.

3. Does having a history of substance use predict recidivism among jail inmates after controlling for covariates?

Hypothesis: A history of substance use will significantly predict recidivism among jail inmates after controlling for covariates.

i) Does this effect differ for men and women?

Hypothesis: This effect will be stronger for women than men.

4. Does having a COD predict recidivism among jail inmates above having only mental illness and only substance use?

Hypothesis: Having a COD will significantly increase recidivism beyond having only a mental illness and only substance use problem.

i) Does this effect differ for men and women?

Hypothesis: This effect will be stronger for women than men.

Sample

The site for the current research is a Midwestern County Jail. The sample for this study included all the inmates admitted to the jail during the month of January 2015 [$N = 1,368$ ($n_{\text{males}} = 989$, $n_{\text{females}} = 379$)]. Inmates were only included in the sample if they were at the jail long enough to be assessed and classified into the system at intake (usually about three hours after arrest); if they “bonded out” and/or were transferred to another facility before being assessed and classified, they were not included in the sample because the assessment and classification tool provided the main independent variables for this study (mental illness, substance use, and CODs). Approximately 9% percent of inmates booked into the jail “bond out” immediately.

Measures

Independent and Dependent Variables

One dependent variable measuring recidivism was used in this study: *Return to Jail* indicated whether an inmate came back to jail within 1 year after release (coded as 1= yes, 0=no). The primary independent variables used in this study were *any mental illness*, *any substance use*, *mental illness only*, *substance use only* and *co-occurring disorders*. Each of these variables was assessed upon jail entry and were self-reported. Mental illnesses included: adjustment disorder, bipolar disorder, schizophrenia, attention deficit with hyperactivity, impulse control disorder, panic disorder without agoraphobia, mental disorder and psychosis. *Any mental illness* reflects whether inmates reported having any of these illnesses. *Mental illness only* is a dichotomous variable that reflects that the inmate only reported having an aforementioned mental illness, but did not self-report having substance use problems.

At intake, inmates were interviewed about any drugs (legal/illegal) that they had been using and whether they felt any withdrawal symptoms after they stopped using the drugs. Additionally, they were asked to disclose if they have ever received any treatment for substance or alcohol use. Substance use problems upon jail entry included: alcohol dependence, drug withdrawal, drug abuse, drug dependence, and stimulant abuse. *Any substance use* indicates whether inmates responded affirmatively to having any of these substance use problems. *Substance use only* is a dichotomous variable that reflects the inmate only reported having a substance use problem, but did not report a mental illness problem. *Co-occurring disorders (COD)* indicate that the inmate suffered from both a mental illness *and* a substance use problems upon jail entry (coded 1= yes, 0=no).

Table 1 shows the mean, standard deviation and minimum/maximum values for all the variables.

Table 1. Definitions, Means and Standard Deviations of Measures Included in Analyses

Variable	Definition	$\bar{x}$	sd	Min-Max
Returned to Jail	Dichotomous variable indicating if inmate recidivated to the jail in the next 365 days after their first arrest during the research period	.40	.49	0-1
Any Mental Illness	Dichotomous variable indicating if inmate has any mental illness	.20	.40	0-1
Any Substance Use	Dichotomous variable indicating if inmate has any substance use disorder	.78	.41	0-1
Mental Illness Only	Dichotomous variable indicating if inmate only has a mental illness without any substance use disorder	.03	.16	0-1
Substance Use Only	Dichotomous variable indicating if inmate only has a substance use disorder without any mental illness	.61	.49	0-1
Co-occurring Disorder	Dichotomous variable indicating if inmate has a co-occurring disorder (mental illness + substance use disorder)	.17	.37	0-1
No Mental Illness & No Substance Use*	Dichotomous variable indicating inmate has no mental illness and no substance use disorder	.19	.39	0-1
Offender is Female	Dichotomous variable indicating inmate is female	.28	.45	0-1
Offender is Caucasian*	Dichotomous variable indicating inmate is of Caucasian descent	.41	.49	0-1
Offender is African-American	Dichotomous variable indicating inmate is of African-American descent	.45	.50	0-1
Offender is Hispanic	Dichotomous variable indicating inmate is of Hispanic descent	.11	.31	0-1
Offender is Other Race	Dichotomous variable indicating inmate's race/ethnicity other than Caucasian, Hispanic or African-American	.04	.18	0-1
Age	Variable indicating inmate's age in years at the time of their arrest	32.65	11.17	18-78
Unemployed	Dichotomous variable indicating if inmate was unemployed at the time of their arrest at the jail	.60	.49	0-1
Homeless	Dichotomous variable indicating if inmate is homeless or is at a risk of being homeless at the time of their arrest or after their release	.08	.27	0-1

Custody Level	from the jail Variable indicating the final custody level assigned for inmate housing (1=minimum security, 2=medium security and 3=maximum security)	1.21	.46	1-3
Arrested for Drug Offense*	Dichotomous variable indicating if the inmate was arrested for a drug offense	.21	.41	0-1
Arrested for Felony	Dichotomous variable indicating if the inmate was arrested for a felony	.43	.50	0-1
Arrested for Violent Offense	Dichotomous variable indicating if the inmate was arrested for a violent offense	.12	.33	0-1
Arrested for Property Offense	Dichotomous variable indicating if the inmate was arrested for a property offense	.14	.35	0-1
Arrested for Public Order Offense	Dichotomous variable indicating if the inmate was arrested for a public order offense	.22	.42	0-1
Arrested for Other Offense	Dichotomous variable indicating if the inmate was arrested for any other offense	.31	.47	0-1
Gang Member	Dichotomous variable indicating if the inmate has a gang affiliation	.12	.33	0-1
Time Served in Days (Logged)	Variable indicating the time served by an inmate after their arrest during January 2015	1.86	1.59	0-6.43
Number of Times Admitted (Logged)	Variable indicating the number of times an inmate was admitted to the jail	1.68	1.19	.00-4.51

*=Reference category

Control Variables

Covariates potentially related to mental illness, substance use, CODs and recidivism were included as control variables. *Female* is a dichotomous variable indicating the gender of the inmate (coded as 0 = male, 1 = female). Race of the inmate consists of dichotomous variables for *Caucasian* (reference category), *African-American*, *Hispanic* and *Other race* (each coded 1= yes, 0=no). *Age* reflects how old the inmate was at the time of jail intake, and was coded in years. *Unemployed* was a dichotomous variable indicating that the inmate was unemployed at the time of admission (coded 1= yes, 0=no). *Homeless* indicates an inmate's risk of homelessness after their release if they do not have a place to live upon release (coded 1= yes, 0= no). *Custody level* indicates the final custody level assigned for the inmate's housing (coded 1=minimum security,

2=medium security and 3=maximum security). Offense Type of the inmate indicates the offense they were arrested for: *drug offense* (reference category), *felony*, *violent offense*, *property offense*, *public order offense* and *other offense* – all are dichotomous variables. *Gang member* indicated if the inmate had any type of gang affiliation self-reported or known to the jail (coded 1=yes =no). *Time served (logged)* reflects the number of days an inmate stayed in jail after their arrest during January 2015. This variable was logged to reduce skew. Lastly, *Number of times admitted (logged)*, indicated the number of times an inmate had been previously admitted to the jail. It was also logged in order to reduce skewness.

Statistical Analyses

Several analytic techniques were used to address the research questions of this study. First, descriptive statistics were provided for the “total” sample (men and women combined), as well as for men and women, separately. Difference of means tests (i.e., t-tests and chi-square tests) were conducted to examine whether men and women differed significantly regarding recidivism, mental health, substance use, co-occurring disorders, and other measures of risk (control variables). Next, I conducted a series of multivariate logistic regression models to examine the independent effects of mental illness, substance use, and co-occurring disorders on recidivism among the “total” sample, and for men and women separately. I used the equality of coefficients test (Clogg, Petkova, & Haritou, 1995) to examine whether variables’ effects differed significantly by gender.

Chapter 4: Results

Descriptive Statistics and Difference of Means Tests

Table 2 presents the descriptive statistics for the “total” sample (pooled men and women), as well as for men and women, separately. The last column provides the results from the difference-of-means tests, which indicate whether there are statistically significant differences in the means between men and women. The non-significant tests mean that the levels of the variable are statically similar or the same for men and women. Regarding the total sample, 40 percent of inmates returned to jail within one year of being released, 20 percent suffered from any mental illness, 78 percent suffered from any substance use problems, three percent suffered from problems relating only to mental illness, and 61 percent suffered from problems pertaining only to substance use. Additionally, 17 percent of inmates suffered from co-occurring disorders (mental illness and substance use) and 19 percent inmates had no substance use and no mental illness problems.

Turning to the gender sub-samples, 43 percent of male inmates returned to jail within one year of their release, compared to only 34 percent of females ($p \leq .001$, a statistically significant difference). Regarding mental illness, 23 percent of females suffered any mental illness, compared to 18 percent of males; this difference was not statistically significant, however. The prevalence of any substance use was higher among men (81 percent) than women (70 percent) and this difference was statistically significant ($p \leq .001$). The prevalence of only having mental illness was higher among women (five percent) than men (two percent) and was statistically significant ($p \leq .05$). The prevalence

of only having a substance use problem was higher for men (65 percent) compared to women (52 percent) and the difference was significant ($p \leq .001$). Among men, 16 percent suffered from co-occurring disorders, compared to 18 percent of women (a nonsignificant difference). The percentage of men and women inmates who had no substance use problems or mental illness issues was 17 percent and 25 percent respectively, and the difference was also statistically significant ($p \leq .001$).

Table 2. Descriptive Statistics (All Samples)

	Total Sample			Men			Women			Difference of Means Test
	$\bar{X}$	<i>sd</i>	<i>Min-Max</i>	$\bar{X}$	<i>sd</i>	<i>Min-Max</i>	$\bar{X}$	<i>sd</i>	<i>Min-Max</i>	
	<i>n</i> = 1,368			<i>n</i> = 989			<i>n</i> = 379			
<i>Dependent Variables</i>										
Return to Jail	.40	.49	0-1	.43	.50	0-1	.34	.48	0-1	2.95***
<i>Independent Variables</i>										
Any Mental Illness	.20	.40	0-1	.18	.39	0-1	.23	.42	0-1	-1.77
Any Substance Use	.78	.41	0-1	.81	.39	0-1	.70	.46	0-1	4.23***
Mental Illness Only	.03	.16	0-1	.02	.14	0-1	.05	.21	0-1	-2.31*
Substance Use Only	.61	.49	0-1	.65	.48	0-1	.52	.50	0-1	4.33***
Co-Occurring Disorder	.17	.37	0-1	.16	.37	0-1	.18	.38	0-1	-0.72
No Mental Illness & No Substance Use	.19	.39	0-1	.17	.37	0-1	.25	.44	0-1	-3.37***
Offender is Female	.28	.45	0-1	--	--	--	1.00	.00	0-1	--
Offender is Caucasian (reference)	.41	.49	0-1	.40	.49	0-1	.46	.50	0-1	-1.94
Offender is African American	.45	.50	0-1	.45	.50	0-1	.44	.47	0-1	0.45
Offender is Hispanic	.11	.31	0-1	.12	.32	0-1	.07	.26	0-1	2.81**
Offender is Other Race	.04	.18	0-1	.03	.18	0-1	.04	.20	0-1	-0.23
Age	32.65	11.17	18-78	33.41	11.48	18-78	30.68	10.07	18-65	4.30***
Unemployed	.60	.49	0-1	.59	.49	0-1	.64	.48	0-1	-1.80
Homeless	.08	.27	0-1	.08	.27	0-1	.08	.27	0-1	-0.14
Custody Level	1.21	.46	1-3	1.25	.50	1-3	1.10	.32	1-3	6.55***
Arrested for Drug Offense (reference)	.21	.41	0-1	.21	.40	0-1	.21	.41	0-1	0.02
Arrested for Felony	.43	.50	0-1	.45	.50	0-1	.38	.49	0-1	2.53*
Arrested for Violent Offense	.12	.33	0-1	.14	.34	0-1	.09	.29	0-1	2.18*
Arrested for Property Offense	.14	.35	0-1	.13	.34	0-1	.17	.38	0-1	-1.84
Arrested for Public Order Offense	.22	.42	0-1	.21	.40	0-1	.26	.44	0-1	-1.76
Arrested for Other Offense	.31	.46	0-1	.32	.47	0-1	.27	.45	0-1	1.65
Gang Member	.12	.33	0-1	.15	.36	0-1	.03	.18	0-1	8.42***
Time Served (In Days) (Logged)	1.86	1.59	.00-6.43	2.00	1.62	.00-.43	1.50	1.44	.012-.21	5.59***
Number of Times Admitted (Logged)	1.68	1.89	.00-4.51	1.87	1.23	.00-4.51	1.22	0.94	.00-4.29	10.47***

Multivariate Logistic Regression (Full Sample)

Table 3 shows the multivariate logistic regressions predicting whether or not the inmate returned to jail for the total sample (men and women combined). Two models were used to examine the research questions – Model 1 is used to answer research question two and three – *Does having a history of mental illness predict recidivism among jail inmates after controlling for covariates?* and *Does having a history of substance abuse predict recidivism among jail inmates after controlling for covariates?* – and thus shows the separate effects of any mental illness and any substance use while accounting for the control variables (e.g., gender, race, age, employment status, homelessness, custody levels, offense type, gang affiliation, length of stay and number of times arrested). Model 2 then replaces *any mental illness and any substance use* with *mental illness only, substance use only and co-occurring disorders* along with the control variables in order to answer research question number four – *Does having a COD predict recidivism among jail inmates above having only mental illness and substance use?*

Findings in Model 1 demonstrate that inmates with any mental illness are significantly more likely to return to jail than inmates without any mental illness – the odds ratio suggests that any mental illness increases the odds of recidivism by 130 percent. Any substance use, however, was not significantly related to recidivism in the total sample. Model 2 shows that co-occurring disorders were also significantly related to returning to jail within one year, with inmates with co-occurring disorders being approximately 114 percent more likely to recidivate than inmates with no disorders. Age maintained an inverse relationship with return to jail, meaning older inmates were less likely to recidivate (by approximately 5 percent in both models) ($p \leq .001$). Homelessness

was significantly related to recidivism among the full sample in Model 1 and Model 2. Across both Models 1 and 2, time served had an inverse relationship with recidivism, meaning that the longer inmates are incarcerated, the less likely it is that they will recidivate. Finally, the number of times an inmate was previously admitted to jail increased the odds of recidivism for both the models. The remaining variables, including any substance use, only substance use, only mental illness, gender, race, employment status, custody level, offense type and gang affiliation were not significantly related to recidivism among the full sample in either Model 1 or Model 2.

The Nagelkerke R^2 values show that Model 1 (any mental illness and any substance use) and Model 2 (mental illness only, substance use only and co-occurring disorders) explained 27.4 percent of the variation in the outcome.

Table 3. Multivariate Logistic Regression Predicting Return to Jail (Full Sample)

	Model 1			Model 2		
	<i>b</i>	<i>SE</i>	<i>Exp (b)</i>	<i>b</i>	<i>SE</i>	<i>Exp (b)</i>
Constant	-.39	.06	.68	-.39	.06	.68
<i>Independent Variables</i>						
Any Mental illness	.83	.16	2.30***	--	--	--
Any Substance Use	-.07	.16	0.93	--	--	--
Mental illness Only	--	--	--	.67	.42	1.97
Substance Use Only	--	--	--	-.10	.17	0.91
Co-Occurring Disorder	--	--	--	.76	.22	2.14***
Offender is Female	-.06	.15	0.95	-.06	.15	0.95
Offender is African American ^a	-.17	.15	0.85	-.17	.15	0.85
Offender is Hispanic ^a	.30	.23	1.35	.30	.23	1.35
Offender is Other Race ^a	.47	.36	1.61	.47	.37	1.60
Age	-.05	.01	0.95***	-.05	.01	0.95***
Unemployed	.16	.13	1.18	.17	.13	1.18
Homeless	.47	.23	1.61*	.47	.23	1.60*
Custody Level	.14	.16	1.15	.14	.16	1.15
Arrested for Felony ^b	.15	.14	1.16	.15	.14	1.16
Arrested for Violent Offense ^b	-.38	.242	0.69	-.38	.24	0.68
Arrested for Property Offense ^b	-.14	.218	0.87	-.14	.22	0.87
Arrested for Public Order Offense ^b	-.15	.196	0.86	-.15	.20	0.86
Arrested for Other Offense ^b	-.28	.186	0.76	-.27	.19	0.76
Gang Member	.38	.202	1.45	.37	.20	1.45
Time Served (In Days) (Logged)	-.22	.044	0.80***	-.22	.04	0.80***
Number of Times Admitted (Logged)	.88	.072	2.41***	.88	.07	2.41***
Nagelkerke R ²		.274			.274	

* $p \leq .05$ ** $p < .01$ *** $p < .001$ (2-tailed); ^aReference category is Caucasian; ^bReference category is Drug Offense
N = 1368

Multivariate Logistic Regression – Men and Women (Model 1)

Table 4 shows the gender-specific multivariate logistic regression models predicting whether men and women returned to jail within one year of their release. These models consider any mental illness and any substance use as primary independent variables, in order to answer research questions two(i) and three(i) – *Does having a history of mental illness predict recidivism among jail inmates after controlling for covariates?* and, *does having a history of mental illness predict recidivism among jail inmates after controlling for covariates?* – and specifically address whether the magnitude of these effects differ for men and women. Equality of coefficients tests (Z-tests in the table) were conducted to indicate whether there were significant gender differences in the effects of variables. Among men, any mental illness was a significant predictor of recidivism ($p \leq .001$), increasing its likelihood by 191 percent. Any mental illness was not a significant predictor for women's recidivism and showed a 42 percent increase in the likelihood of recidivism. The equality of coefficients tests demonstrated that these effects were significantly different across genders at the $p \leq .10$ level. These results indicate that the effect of any mental illness on recidivism is stronger among men versus women. Age was inversely related to recidivism among males and females, but this was not statistically different across genders. Women who were arrested for a felony offense were significantly more likely to return to jail than females arrested for a drug offense (reference category), and this effect was slightly stronger ($p \leq .10$) for women than men. Public order offenses were not significant predictors of recidivism for either men or women but this effect was stronger for women ($p \leq .05$). Being arrested for other offenses was significant ($p \leq .01$) only for men and increased their risk of recidivism by

58 percent. Equality of coefficients tests demonstrated that this effect was significantly different across genders ($p \leq .05$). Time served was inversely related to risk of recidivism for both men and women. It significantly decreased the risk of recidivism for males ($p \leq .001$) and females ($p \leq .001$). But, according to equality of coefficients test, this was not significantly different across genders. Lastly, the number of admits (number of times arrested) was a highly significant factor of recidivism for men and women, and this effect was stronger for women.

Among men, the variables that were not found to be statistically significant were any substance use, race, unemployment, homelessness, custody level, arrested for felony, arrested for violent offense, arrested for property offense, arrested for public order offense and gang affiliation. Finally, among women, the variables that were not statistically significant were any mental illness, any sub substance use, race, unemployment, homelessness, custody level, arrested for violent offense, arrested for property offense, arrested for public order offense, and gang affiliation. Nagelkerke R^2 values indicate that the model explained 27.5 percent of the variation in men's likelihood of returning to jail and 31.3 percent of women's likelihood of recidivism.

Table 4. Multivariate Logistic Regression Predicting Return to Jail - (Men & Women, Model 1)

	Men			Women			z-test
	<i>b</i>	<i>SE</i>	<i>Exp (b)</i>	<i>b</i>	<i>SE</i>	<i>Exp (b)</i>	
Constant	-.29	.06	.75	-.65	.11	.52	
<i>Independent Variables</i>							
Any Mental Illness	1.07	.20	2.91***	.35	.31	1.42	1.95 ⁺
Any Substance Use	-.11	.20	0.90	.01	.29	1.01	-0.33
Offender is African American ^a	-.09	.17	0.92	-.27	.29	0.76	0.56
Offender is Hispanic ^a	.29	.26	1.33	.37	.51	1.44	-0.14
Offender is Other Race ^a	.69	.45	1.99	.28	.63	1.33	0.52
Age	-.05	.01	0.95***	-.04	.02	0.96**	-0.18
Unemployed	.15	.15	1.17	.23	.27	1.26	-0.24
Homeless	.46	.28	1.58	.39	.45	1.47	0.14
Custody Level	.10	.17	1.10	.72	.41	2.04	-1.39
Arrested for Felony ^b	-.03	.17	0.97	.59	.30	1.80*	-1.79 ⁺
Arrested for Violent Offense ^b	-.53	.27	0.59	.06	.58	1.06	-0.91
Arrested for Property Offense ^b	-.30	.26	0.74	.50	.44	1.65	-1.56
Arrested for Public Order Offense ^b	-.42	.23	0.66	.64	.41	1.89	-2.26*
Arrested for Other Offense ^b	-.55	.22	0.58**	.57	.41	1.76	-2.42*
Gang Member	.39	.22	1.48	.43	.70	1.54	-0.06
Time Served (In Days) (Logged)	-.21	.05	0.81***	-.28	.10	0.75**	0.66
Number of Times Admitted (Logged)	.81	.08	2.26***	1.17	.16	3.23***	-1.99*
Nagelkerke R ²		.275			.313		
		n = 989			n = 379		

⁺ $\leq .10$ * $p \leq .05$ ** $p < .01$ *** $p < .001$ (2-tailed); ^aReference category is Caucasian ^bReference category is Drug Offense

Multivariate Logistic Regression – Men and Women (Model 2)

Table 5 shows multivariate logistic regressions predicting recidivism separately for men and women jail inmates and includes mental illness only, substance use only and co-occurring disorders as the primary independent variables. This model is used to examine research question number four (i) – *Does having a COD predict recidivism among jail inmates above having only mental illness and only substance use?* – and focuses specifically on whether this effect differs for men and women. For men, findings suggest that mental illness only is a significant predictor of recidivism and increases the odds of recidivism by 280 percent – this is a stronger effect on recidivism than among women (at $p < .10$ level only). Co-occurring disorders also increase the odds of returning to jail by 161 percent among men, but there was no gender difference in this effect. Age was inversely related to recidivism among men and women – being older decreased recidivism among men and women, but there were no statistical differences in this effect between the sexes. Being arrested for a felony was significant only for women and increased their risk of recidivism by approximately 88 percent; the equality of coefficients tests showed a difference between the genders in this effect ($p < .10$). Arrests for public order offenses were not significantly related to recidivism among men or women but this effect was significantly different between sexes ($p \leq .05$). Being arrested for an “other” offense decreased men’s risk of recidivism by 43 percent ($p \leq .01$); this effect was significantly different between genders ($p \leq .05$). Time served decreased recidivism among men and women, but the effect was not significantly different across the two. Lastly, the number of times men and women were previously admitted to jail

increased the odds of recidivism for males and 223 percent for females (a statistically significant difference).

Among men, the variables that were not statistically significant were substance use only, race, unemployment, homelessness, custody level, arrested for felony, arrested for violent offenses, arrested for property offenses, arrested for public order offenses, and gang affiliation. Among women, variables that were not significant were mental illness only, substance use only, co-occurring disorders, race, unemployment, homeless, custody level, arrested for violent offenses, arrested for property offenses, arrested for public order offenses, arrested for other offenses, and gang affiliation. Nagelkerke R^2 values indicate that the model explained 27.5 percent of the variation in recidivism for men and 31.7 percent for women.

Table 5. Multivariate Logistic Regression Predicting Return to Jail (Men & Women, Model 2)

	Men			Women			
	<i>b</i>	<i>SE</i>	<i>Exp (b)</i>	<i>b</i>	<i>SE</i>	<i>Exp (b)</i>	<i>z-test</i>
Constant	-.29	.06	.75	-.65	.11	.52	
<i>Independent Variables</i>							
Mental Illness Only	1.34	.58	3.80*	-.36	.71	.70	1.85 ⁺
Substance Use Only	-.07	.21	.92	-.15	.32	.86	0.19
Co-Occurring Disorder	.96	.27	2.61***	.37	.40	1.45	1.21
Offender is African American ^a	-.09	.17	.91	-.28	.29	.75	0.59
Offender is Hispanic ^a	.29	.26	1.34	.37	.51	1.44	-0.13
Offender is Other Race ^a	.69	.45	1.10	.23	.63	1.26	0.60
Age	-.05	.01	.95***	-.04	.02	.96**	-0.30
Unemployed	.16	.15	1.17	.26	.28	1.30	-0.33
Homeless	.46	.28	1.58	.35	.45	1.43	0.20
Custody Level	.10	.17	1.10	.69	.41	2.00	-1.34
Arrested for Felony ^b	-.03	.17	.98	.62	.30	1.88*	-1.89 ⁺
Arrested for Violent Offense ^b	-.52	.27	.59	.01	.58	1.01	-0.83
Arrested for Property Offense ^b	-.30	.26	.75	.51	.44	1.66	-1.56
Arrested for Public Order Offense ^b	-.42	.23	.66	.63	.41	1.88	-2.24*
Arrested for Other Offense ^b	-.55	.22	.58**	.60	.41	1.82	-2.47*
Gang Member	.39	.22	1.48	.42	.70	1.52	-0.03
Time Served (In Days) (Logged)	-.21	.05	.81***	-.28	.10	.75**	0.64
Number of Times Admitted (Logged)	.82	.09	2.26***	1.17	.16	3.23***	1.85 ⁺
Nagelkerke R ²		.275			.317		
		n = 989			n = 379		

+ $\leq .10$ * $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$ (2-tailed); ^aReference category is Caucasian ^bReference category is Drug Offense

Chapter 5: Discussion and Conclusions

Previous research presented in this thesis indicates that mental health, substance use and CODs are risk factors of recidivism (Sacks, 2004). The main purposes of this thesis were 1) to examine the prevalence of mental illness, substance use and CODs among jail inmates; 2) to examine how these problems impact recidivism among jail inmates, and 3) to explore whether there were differences in their prevalence and effects for men and women separately with respect to their recidivism. I discuss the main findings and implications of this research below.

Main Findings

My first research question was about prevalence of mental illness, substance use and CODs among an intake cohort of jail inmates. I hypothesized that prevalence of mental illness, substance use and CODs would be high among jail inmates and that this prevalence would be higher among women than men. The findings showed that among the full sample, mental illness and substance use problems, as well as co-occurring disorders, are relatively prevalent among jail inmates: 20 percent of inmates suffered from a mental illness, 78 percent suffered from a substance use problem, and 17 percent of inmates suffered from co-occurring disorders (mental illness *and* substance use). In fact, only 19 percent of inmates had no substance use and no mental illness problems. Further, mental illness appears to occur predominantly in the presence of substance use – only three percent of inmates suffered from problems relating only to mental illness – but this is not necessarily true for substance use: 61 percent of inmates suffered from problems pertaining only to substance use, with no mental illness present.

These patterns were relatively consistent among men and women. Mental illness was fairly high, with 23 percent of women suffering any mental illness, compared to 18 percent of men (but this difference was not statistically significant), while substance use was very high for both, and was significantly higher among men (81 percent) than women (70 percent). Again, the occurrence of *mental illness appeared to occur primarily when substance use was also present*, with only two and five percent of men and women, respectively, experiencing only mental illness. Consistent with expectations, women were significantly more likely to suffer from mental illness only compared to men. However, contrary to my expectations, more men had substance use problems (only) than women. Taken together, the pattern of results suggests that substance use is a significant problem among jail inmates – men and women alike – but affects significantly more men. Mental illness is also a concern for jail inmates, and primarily co-occurs with substance use problems. While women are more likely to suffer from only mental illness, men are more likely to suffer from substance use problems, and co-occurring disorders are seen among men and women at about the same level. Importantly, less than one-quarter of inmates have *no* psychological or substance use problems, which means that *three-fourths* of the jail inmate population has some sort of mental illness or substance use problem when they enter into the jail setting.

My next research questions were whether having a history of mental illness and substance use predicted recidivism among jail inmates after controlling for covariates. I hypothesized that a history of mental illness and a history of substance use would significantly predict recidivism among jail inmates after controlling for covariates, and their effects would be stronger for women than men. Model 1 in the results chapter was

used to answer this question. It considered separate effects of *any mental illness* and *any substance use* while accounting for the control variables (e.g., gender, race, age, employment status, homelessness, custody levels, offense type, gang affiliation, time served and number of times arrested). Findings demonstrated that inmates (men and women, pooled) with any mental illness were significantly more likely to return to jail than inmates without any mental illness (increasing the odds of recidivism by 129 percent). Looking at the gender differences, men who had any mental illness were significantly more likely to recidivate (increasing this likelihood by 191 percent) than those without such problems, but this was not a significant predictor of recidivism for women, which is contradictory to the literature found on this topic and was an unexpected result of the study. Additionally, the effect of mental illness on recidivism was stronger among men than women, another somewhat unexpected finding. Substance use, however, was not significantly related to recidivism in the pooled sample, nor was it a significant predictor for either men or women, and it did not impact recidivism differently for either sex.

I expected the effects of mental illness and substance use to be stronger for women, in part because I expected their prevalence levels to be higher for women. It is possible that the effects are muted among women due to low statistical power in the analysis (sample size of 379 for females). It is also possible that the effects of mental illness were stronger for men because it is a “novel” experience (less prevalent) among men than women (see Cain et al., 2016 and Radatz and Wright, 2016 for a discussion of how novel and unique experiences may have stronger influences on behaviors for men than women). Regardless, taken together, the results suggest that mental illness increases

the risk of recidivism among jail inmates, but particularly among *men*. That substance use failed to significantly impact men and women's recidivism patterns could also be explained by the "normative experiences" argument put forth by Cain et al. (2016) and Radatz and Wright (2017) – that is, substance use is so prevalent for men and women, it fails to significant impact their behaviors. Nonetheless, the findings presented here suggest that mental illness is a more important risk factor for recidivism than substance use among jail inmates.

For my last research question, I explored whether, after controlling for relevant covariates, CODs predict recidivism among jail inmates beyond having only a mental illness and only substance use. I hypothesized that having a COD would significantly increase recidivism beyond having only mental illness and only substance use problem and that this effect would be stronger for women than men. Model 2 in the results chapter was used to answer this question. Results demonstrated that co-occurring disorders were significantly related to returning to jail among males and females (pooled together) within one year, with inmates with co-occurring disorders being approximately 114 percent more likely to recidivate than inmates without such disorders. Further, this effect was significant while the effects of having only mental illness or substance use were not significant predictors of recidivism among the total sample. Analyses separated by gender showed that co-occurring disorders significantly increased the odds of returning to jail (by 161 percent) among men, but was not a significant predictor among women; further, there was not a gender difference in this effect. Mental illness only, however, did exert a stronger effect on recidivism among men than among women, as it increased the odds of recidivism by 280 percent for men. Again, however, substance use only was not

predictive of recidivism among either sex. The effect of mental illness on men's recidivism was unexpected, as I hypothesized that the effect would be stronger for women, and again could be explained by the normative experiences argument or lack of power for the female sample.

Taken together, the results of this study demonstrate that mental illness is a significant problem among the jail population and increases inmates' odds of recidivism. Further, co-occurring disorders – psychological problems and substance use problems simultaneously – are also problematic and increase the chances of recidivism. However, the results suggest that relatively few inmates exhibit *only* psychological problems; that is, *psychological problems appear to occur primarily when substance use is also present*. While women are more likely to experience psychological problems (only) and men are more likely to suffer from substance use problems, their effects in the multivariate regressions were opposite that of the prevalence findings. That is, psychological problems impacted men's recidivism more so than women's recidivism, and substance use was not predictive for either gender. Finally, co-occurring disorders significantly raise men's likelihood of recidivism, but did not reach significance among the female sample. I discuss the implications of these findings below.

Implications for Future Research and Policy

The findings of this study suggest that mental illness and co-occurring mental illness with substance use should be important considerations for jail administrators. First, mental health problems and co-occurring disorders increased the likelihood of recidivism among jail inmates. Second, substance use was very prevalent among jail

inmates but, in the presence of mental illness, substantially impacted recidivism. As such, jail administrators would be well-served to consider implementing programs that target these needs, as they are directly related to their recidivism. In order to offer programming for these problems, administrators should first implement the use of needs assessments which would identify inmates who are at-risk (Andrews & Bonta, 2010). Second, jail administrators might consider bolstering the programs available to reduce these problems among inmates. Third, since inmates will eventually return to society, it would be beneficial for jail reentry staff to coordinate with service providers in the community who offer services for mental health and substance use (especially their co-occurrence). This way, services would not end upon reentry to society, and instead would “wraparound” to the community (Morrissey, Steadman, Dalton, Cuellar, Stiles, & Cuddeback, 2006).

Finally, findings from this study suggest that men inmates have more problems with substance use, women have slightly more problems with mental illness, and mental illness and co-occurring disorders significantly increase the likelihood that men will recidivate. At first glance, these findings might suggest that programming for mental illness and co-occurring disorders is primarily warranted for men – however, the recommendations provided here are based upon the findings regarding prevalence *and* effects of these problems. Although mental illness was not extremely prevalent among inmates (men or women), it was more prevalent among women, but it was highly related to recidivism for men. Additionally, when mental illness occurs along with substance use (CODs), it is significantly related to recidivism among males and should be targeted for treatment. Therefore, both males and females would likely benefit from programming for mental health problems – women from a prevalence standpoint, and men from a

recidivism standpoint; further, to the degree that substance use fosters CODs, it should also be targeted for treatment since CODs increased the likelihood of recidivism among inmates.

Limitations

Although this study has answered some important preliminary questions regarding mental illness, substance use, and co-occurring disorders among a jail sample, it is nonetheless limited in a few ways, and the results should be considered within this context. First, this study examined recidivism (return to jail in one year) as the outcome, but did not consider institutional misconducts as an outcome. As discussed in the literature review, there are many reasons why mental illness, substance use, and CODs might influence institutional misbehavior. I encourage future researchers to consider this outcome in jail settings, as it was beyond the scope of this thesis.

Perhaps most noteworthy is that the prevalence of mental health problems found in this study is very low (at only 20 percent) when compared against the national average of 60 percent (Steadman, Osher, Robbins, Case, & Samuels, 2009). There are a few reasons why this number may be low. One plausible explanation would be that the national average figures account for annual numbers, whereas, I considered only one month (January 2015) of data. Future studies should consider looking at annual data to get a better picture of mental illness prevalence. Another possibility is that the data considers only jail inmates at intake and does not account for inmates who have already been in the jail for some time (prior to January 2015); that is, most studies (Teplin, 1990; Fisher, Packer, Simon, & Smith, 2000) survey inmates who have been in the jail long

enough to be assessed and classified into housing units; the current study included inmates who had been at the jail for approximately three hours (only long enough to be assessed), but they had not been there long enough to be assigned a housing unit. Therefore, this sample includes some inmates who very likely would have the means to bond out of jail very soon; it is possible that those inmates who stay in jail long enough to be assigned a housing unit have proportionately more problems, which are reflected in the national surveys. Perhaps most important, the data were self-reported at the time of intake, and it may be very unlikely that inmates accurately self-reported their problems at this time. To have a better picture of mental illness, future studies will need to have official data with proper diagnoses to supplement self-reported data. It is also possible that the jail setting is somewhat unique from others around the country – in fact, another study in this facility found the mental illness prevalence at 34 percent (self-reported) among 1190 inmates (Ellison, 2017). Perhaps this percentage is higher than the 20 percent found in the current study because Ellison (2017) did not use an intake cohort, and the inmates had been incarcerated for some time, as well as assigned a housing unit. Nevertheless, this study uncovered a connection between mental illness and CODs with recidivism among jail inmates. Given the low prevalence in comparison to national estimates, it is highly likely that this relationship would have been stronger in a sample with a higher prevalence. Thus, the findings reported here should be taken as conservative estimates of the real relationship between mental illness and recidivism among jail inmates.

Conclusion

The findings of this study are important to correctional research from both a prevalence and effects standpoint. Findings from this study suggest that, in terms of prevalence, men have more problems with substance use, while women have slightly more problems with mental illness. Regarding the effects of these problems, mental illness and co-occurring disorders significantly increase the likelihood that men will recidivate, which was an unexpected finding in light of the existing literature on this topic. Further, it appears that relatively few inmates exhibit *only* mental illness – instead, psychological problems appear to occur primarily when substance use is also present. Thus, although substance use was not statistically related to recidivism, its high prevalence and co-occurrence with mental illness suggest that both mental illness and substance use should be prioritized for programming within jail settings. This study has suggested several avenues for continued research, while shedding light on some under-researched topics among jail inmates.

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