EXAMINING THE ASSOCIATION BETWEEN CO-OCCURRING MENTAL AND SUBSTANCE USE DISORDERS AND INSTITUTIONAL MISCONDUCT AMONG FEMALE STATE INMATES

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By

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ABSTRACT

Title: Examining the Association between Co-occurring Mental and Substance Use Disorders and Institutional Misconduct among Female State Inmates
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In view of the vast numbers of individuals with co-occurring mental health and addictive disorders within the offender population, the scarcity of research on the potential exacerbating effects of co-occurring disorders on prisoner misconduct is surprising. More surprising perhaps, is the lack of research focused on female prisoner misconduct, especially considering their higher prevalence rates of mental illness, substance use disorders, and co-occurring disorders compared with males. It is the purpose of this study to examine whether the additive nature of mental illness coupled with an addictive disorder aggravates misconduct for female inmates resulting in higher numbers of institutional misconduct charges. Specifically, this study assesses prisoner misconduct among four distinct groups: (1) inmates with co-occurring mental illness and substance use disorder(s), (2) those with mental illness only, (3) inmates with substance use disorders only, and (4) prisoners with no mental illness or substance use problems net the effect of other factors demonstrated in prior studies to influence institutional misconduct. Institutional misconduct was measured by the occurrence (yes or no), prevalence (number of charges), and seriousness of prisoner misconduct charges.

This study uses bivariate correlation, logistic, multinomial logistic, and negative binomial regression, and survival analysis with Cox regression to address the following research questions. First, does the additive and interactive nature of a mental illness co-

occurring with an addictive disorder exacerbate misconduct beyond singular disorders? Second, are inmates with co-occurring disorders more likely to receive harsher sanctions for misconduct compared to inmates with singular or no disorders? The current study expands on the scarce research addressing the influence of mental illness on prisoner misconduct on two critical fronts. First, it examines whether prisoner misconduct is worsened for inmates with a mental illness when there is a co-occurring substance use disorder present. Secondly, it focuses on a female offender population rather than generalizing results obtained from male samples to both genders. Focusing on female offenders is particularly crucial because pathways to substance abuse and dependence, as well as the origins of mental illness, are often different for females compared to males, suggesting the need for different treatment approaches.

The current study used official data obtained from the Pennsylvania Department of Corrections. The sample included all female inmates incarcerated in the State of Pennsylvania between January 1, 2007 and July 30, 2009 who were imprisoned for a period of no less than four months. Determination of mental health problems and substance use disorders were accomplished using the classification procedures of the Pennsylvania Department of Corrections. In sum, this study addresses the limited research on the connection between high rates of substance abuse and mental health disorders among female inmates and prisoner misconduct.

Findings showed that most female inmates regardless of mental illness, substance use disorders or co-occurring disorders were not charged with any prison misconduct. Among those inmates that were involved in prison infractions, women with either mental illness as a singular disorder or women with co-occurring mental illness and substance

use disorders were at increased odds of being charged with prison misconduct. The odds ratio from the regression analysis suggested women with co-occurring disorders [COD] had slightly higher misconduct rates than women with mental illness only, but the difference was not statistically significant. Results of the negative binomial regression did not find a significant mean difference between the mental illness only and COD groups (m = 2.1162 and m = 1.8579 respectively). These groups were, however, significantly different than inmates with substance use disorders only or no disorders. Substance use disorder as a singular disorder was not found to be significant in increasing the likelihood of a prisoner being involved or charged with misconduct.

Results of analysis examining the probability of differential groups being charged with varying levels of misconduct (e.g. serious or minor) found that inmates with co-occurring disorders were more than twice as likely to be charged with a minor misconduct (versus no misconduct) and approximately two and half times more likely to have a serious misconduct charge compared to women with no disorders. Consistent with this finding, COD inmates were over four times more likely to receive a serious disciplinary action compared to the no disorder group. Singular disorders of mental illness and substance use did not significantly predict varying levels of misconduct or seriousness of sanction.

The results of the current study suggest that the structure and stressors of the prison environment may hinder the ability of inmates with mental health and co-occurring disorders to successfully assimilate into the prison setting, resulting in increased rates of institutional misconduct. Further, the interactive and additive nature of co-occurring disorders may exaggerate these deleterious effects serving to intensify the

seriousness of these disruptive behaviors. These findings suggest a strong need for correctional institutions to address the complex challenges mentally ill and co-occurring disorder inmates pose, both to themselves and for institutional management.

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Graduate school is an experience unlike any other. It's humbling, motivating, and gratifying. I leave with a sense of personal accomplishment unlike any other and a pride that will forever be a part of me. Along the way, I have been fortunate to meet many people who have helped to enrich this experience and many that I have the honor of calling friend.

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CHAPTER 1

INTRODUCTION

> Today there are more mentally ill people in prisons than there are in our mental hospitals. These are people who have shown themselves as difficult to manage in prison as they are in community settings. These inmates experience many more difficulties in following prison regulations than other inmates, and they get into far more physical altercations with staff and other inmates (Lord, 2005, p. 1).

Adapting to the institutional environment of prison or jail poses significant challenges for any inmate entering the system. Correctional environments are laden with stressors including loss of autonomy, feelings of humiliation (Human Rights Watch, 2003), overcrowded living conditions, noisy environments, and rigid structures (Gelman, 2007). For inmates with mental illness, confronting the structure and harshness of institutional life creates a unique set of adaptation demands often displayed through rule violating behaviors (see, Adams, 1983; 1986; Hildebrand, DeRutter, & Nijman, 2004; James & Glaze, 2006; McCorkle, 1995; Toch & Adams, 1986; Toch, Adams, & Grant, 1989).

National survey findings have shown that mentally ill inmates are disproportionately involved in misconduct (James & Glaze, 2006). Addressing the higher rate of misconduct among the mentally ill is particularly relevant in that 56% of State prisoners, 45% of Federal prisoners and 64% of local jail inmates are considered to have a mental health problem (James & Glaze, 2006). Research has further demonstrated

that female prisoners have higher prevalence rates of mental illness than male prisoners[1] (James & Glaze, 2006), yet no known research has focused specifically on misconduct rates of female prisoners with mental illness.

Substance use disorders often co-occur with mental health disorders (National Institute on Drug Abuse [NIDA], 2008). Substance use disorders are categorized into eleven classes and are distinguished by the criteria of abuse and dependence (see Appendix A for a complete list of disorder classes and dependence and abuse definitions) (Substance Abuse and Mental Health Services Administration [SAMHSA], 2006a). Sixty to ninety percent of people seeking treatment in community settings are considered to have co-occurring disorders (Schneider, 2000), and 60% of people with a substance use disorder have another form of mental health disorder (Volkow, 2007). The Substance Abuse and Mental Health Services Administration's Co-occurring Center for Excellence argues that "failure to address co-occurring disorders in either substance abuse treatment or mental health programs is tantamount to not responding to the needs of the majority of program participants" (SAMSHA, 2006b, p. 2).

Although the percentage of individuals in the community with co-occurring disorders is considerable, the proportion is substantially greater within the offender population, particularly among female inmates. More than half (54%) of female state prison inmates are reported to have co-occurring disorders (COD) compared with 41% of males (James & Glaze, 2006). These estimates are based on severe mental health

[1] Seventy-three percent of female State prisoners had a mental health problem compared with 55% of males. In Federal prisons, the rate was 61% of females compared with 44% males; and in local jails, 75% of females compared to 63% of male inmates. These figures are for midyear 2005 and are based on the Survey of Inmates in State and Federal Correctional Facilities, 2004 and the Survey of Inmates in Local Jails, 2002 and are a nationally representative sample of prisons

disorders (psychosis, mania, and major depression) suggesting that estimates would likely be higher if a more comprehensive range of mental health diagnoses were considered.

The purpose of this study is to expand upon the limited prior research that has consistently demonstrated a positive association between mental health disorders and prisoner misconduct. Specifically, this study will examine whether the additive and interactive nature of a mental health disorder coupled with a substance use disorder further aggravates institutional behavioral problems for female State prison inmates. In addition, this study specifically focused on female offenders due to their higher prevalence rates of substance use disorders, mental health problems, co-occurring disorders, and gender-specific risk factors.

Currently there are no known studies that have specifically examined whether the additive effect of a substance use disorder with a mental illness aggravates the adjustment process of inmates. Co-occurring disorders, also referred to as dual diagnoses, refers to individuals diagnosed with one or more mental disorders and one or more substance-related disorders with each disorder type being independently distinguished (SAMHSA, 2006a). Co-occurring disorders are more complex than singular disorders presenting increased health risks, greater impairment of life skills, and worse treatment outcomes (Mental Health America, 2010). Therefore, findings from studies addressing singular disorders should not be generalized to those individuals with co-occurring disorders.

According to the National Institute on Drug Abuse, our understanding of why there is such a high prevalence of co-occurring disorders is still very limited, yet we do know that children with psychiatric conditions have been found to be at greater risk for future drug use and that the initiation of drug use at an early age increases the "risk of

psychiatric disorders or accelerate their course" (Volkow, 2007, p. 1). The use of drugs and/or alcohol by individuals with psychiatric disorders exaggerates the negative consequences of singular disorders including "interpersonal difficulties (arguments, fights, and violence)" (Osher, 2005, p.1). The MacArthur Violence Risk Assessment Study reported rates of violence for patients with co-occurring disorders discharged from a psychiatric inpatient facility were almost doubled, and in some cases more than doubled, compared to those with mental illness but no co-occurring substance use disorder (Steadman, Mulvey, Monahan, Robbins, Appelbaum, & Grisso, 1998).

Additional clinical implications for persons with co-occurring disorders include poor medication compliance, lower treatment completion rates, shorter periods of remission following treatment (Lehman, Myers, & Corty, 2000; Peters, Bartoi, & Sherman, 2008), poorer treatment outcomes (Bergman & Harris, 1985; LaPorte, McLellan, O'Brien, & Marshall, 1981), greater suicidal behavior, more frequent hospitalizations, and greater difficulties in social functioning (Peters, et.al, 2008). Thus, the negative and enhanced additive effect of a substance use disorder with a mental illness on behavior, prognosis, and treatment suggests that inmates with co-occurring disorders may have greater difficulty adjusting to the structure of an institution as exhibited through greater rates of disruptive behaviors.

A survey of a nationally representative sample of State prisoners found that 60.2% of female State prisoners met the criteria for drug abuse or dependence (7.2% higher than males) (Mumola & Karberg, 2006), and an estimated 50% were in need of intensive residential treatment for drug abuse disorders (Belenko & Peugh, 2005). By comparison, findings from the National Survey on Drug Use and Health indicated that

1.8% of females aged 12 or older in the general population were dependent on or were abusing illicit drugs in 2007 (SAMSHA, 2009). An estimated 73.1% of female State prison inmates in 2005 reported a mental health problem (James & Glaze, 2006), and 31% of women recently admitted to jails had a severe mental illness (Steadman, Osher, Robbins, Case, & Samuels, 2009), twice the prevalence for males (14.5%). By comparison, an estimated 12.4% of females aged 18 or older met the criteria for mental illness in the general population (James & Glaze, 2006).

With the higher prevalence of drug use disorders and mental illness among female State prisoners, it is not surprising that female inmates were also found to have increased rates of co-occurring disorders (54% vs. 41% respectively (James & Glaze, 2006). Similar to general population comparisons for mental illness and drug use disorders, the rate of co-occurring disorders among the female inmate population is considerably greater. The 2004 National Survey on Drug Use and Health Report[2] estimated that 2% of adult women in the general population have a serious mental illness and co-occurring substance use disorder, based on DSM-IV diagnostic criteria (James & Glaze, 2006). In a survey of female jail detainees between 1991 and 1993, 8% were found to have a co-occurring disorder; 72% of the women with a severe psychiatric disorder (schizophrenia or major affective disorder) had a corresponding substance use disorder (alcohol or drug abuse or dependence), 21.6% had both alcohol and drug use disorders, and 15% of those

[2] Findings from the 2004 National Survey on Drug Use and Health Report can be found at: National United States Department of Health and Human Services. Substance Abuse and Mental Health Services Administration. Office of Applied Studies. National Survey on Drug Use and Health, 2004 [Computer file]. ICPSR04373-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2006-05-12. doi:10.3886/ICPSR04373

who had a substance use disorder met the criteria for a severe psychiatric disorder (Abram, Teplin, & McClelland, 2003). Birecree et al. (1994) found that 76% of women entering prison in Oregon with Axis I mental health disorders (primarily major depression, adjustment disorders with depressed mood, dysthymia, and bipolar disorders) had a coinciding alcohol and/or drug abuse/dependence disorder, as did 100% of the women with PTSD (Birecree, Bloom, Leverette, & Williams, 1994).

Although it is well established that the co-occurrence of mental illness and substance use disorders is a pervasive problem among the offender population and that the interactive influence of dual diagnoses exacerbates negative consequences compared with singular disorders, no known research has addressed the potential worsening effect of a co-occurring disorder on prisoner misconduct. The research that has examined the influence of mental illness and prisoner adjustment has found a positive association between mental illness and misconduct (see, Adams, 1983, 1986; Hildebrand et al., 2004; McCorkle, 1995; O'Keefe & Schnell, 2007; Toch & Adams, 1986; Toch, et. al., 1989). However, most of the research has focused solely on male samples.

Despite the marked growth of females under correctional supervision in the United States over the past 20 years (Chesney-Lind, 2000), female inmates remain a vastly understudied population. Between 2000 and midyear 2008, the number of females in state and Federal prisons increased by 24% (compared with 15% for males), an average of 3% annually (West & Sabol, 2008; 2009). In spite of the fact that women are increasingly entering the criminal justice system and that their rates of mental health, substance use, and co-occurring disorders are greater, we know little about the influence of these disorders on prison misconduct. It is important that we not generalize the

findings of studies based solely on male samples to include females, particularly those addressing mental health and substance use disorders.

Women entering the criminal justice system are more likely than men to have had prior contact with mental health services in the community (Bloom, Owen, Covington, & Raeder, 2003). Many of the more commonly found mental health disorders of women differ from those reported in males including post traumatic stress disorders, anxiety, and depression (Bloom et al., 2003). For many incarcerated women, there is a correlation between their disorders and histories of prior sexual and physical victimization, suggesting additional risk and treatment needs. It has been argued that for many, if not most incarcerated women, their crimes (e.g., drugs, prostitution, and violence against abusive partners) are a reflection of their reaction to their own social problems (Fine, 1992). Although these acts are considered criminal by society, they are thought by some to be a means of coping or surviving sexual, physical, and psychological victimization (DeHart, 2005).

In summary, several studies suggest a correlation between mental illness in prisoners and higher rates of misconduct. Further, it is recognized that a substantial number of offenders with psychiatric disorders have co-occurring substance use disorders and that the additive affect of more than one diagnosis exacerbates the negative consequences above singular disorders. However, scientific understanding of the enhanced negative consequences of co-occurring disorders on prisoner misconduct remains extremely limited. In addition, studies establishing a correlation between mental illness and misconduct have based their results primarily on male samples, despite higher disorder rates among female offenders and the influence of gender-specific risk factors.

Many predictors found to reduce the likelihood of involvement in disruptive behavior, such as being married at the time of incarceration, pre-prison employment, and higher educational achievement, are lower for females than males. For example, approximately 40% of females report pre-prison employment compared to 60% of males (Bloom et al., 2003). The objective of this dissertation is to better understand the influence of a singular disorder compared with dual disorders on misconduct among female State prisoners, above and beyond the effects of factors typically reported in prior studies.

Research Questions

The *primary research question* posed in this study is "Does the additive and interactive nature of a mental illness co-occurring with a substance use disorder exacerbate prisoner misconduct beyond singular disorders?" Misconducts are the most commonly used measure in institutional adjustment research (see, Acevedo & Bakken, 2003; Adams, 1977, 1983; Cao, Zhao & Van Dine, 1997; Flanagan, 1983; Gover, Perez, & Jennings, 2008; Harer & Steffensmeier, 1996; Jiang & Winfree, Jr. 2006; McCorkle, 1995; McCorkle, Meithe, & Drass, 1995; Myers & Levy, 1978; Salisbury, Van Voorhis, & Spiropoulos., 2009; Steinke, 1991; Toch & Adams, 1986; Wright, 1991; Wright, Salisbury, & Van Voorhis, 2007; Zamble & Porporino, 1988). The *second research question* is "Does the co-occurrence of a mental illness with a substance use disorder influence the seriousness of an inmate's misbehavior?" Seriousness of misbehavior was measured using the Pennsylvania Department of Correction's guidelines for serious misconduct charges. The *third research question* is "Are inmates with co-occurring disorders more likely to receive harsher sanctions for misconduct compared to inmates with singular or no disorders?"

This Study

The current study attempts to answer the research questions using official data gathered by the Pennsylvania Department of Corrections. The data include an exhaustive sample of all females incarcerated in the State of Pennsylvania between the periods of January 1, 2007 and July 30, 2009, and who were incarcerated for a period of at least four months. The primary dependent variable is misconduct officially reported by the Department of Corrections for the current incarceration period. The second dependent variable is sanctions. Sanctions include any response officially taken by the Department of Corrections to an inmate's misconduct.

The primary independent variable was disorder type, consisting of four distinct categories: (1) no disorders, (2) mental illness with no substance use disorder, (3) substance use disorder with no mental illness, and (4) mental illness and substance use disorder (i.e., the co-occurring disorder group).

Classification for a mental health disorder in this study was based on the designation of mental illness by the Pennsylvania Department of Correction's [PADOC] Psychiatric Unit. The PADOC uses several criteria to assess the mental health of incoming inmates including a battery of psychometric tests, pre-incarceration mental health history, and symptoms of mental illness as evidenced at the intake interview. Inmates considered to have a mental health disorder are placed on the Department's Mental Health and Mental Retardation roster (MH/MR). The MH/MR refers to all inmates who are either currently or have during the current incarcerated period received some form of mental health treatment designed to meet their diagnostic needs. All inmates placed on the MH/MR roster were cross checked with psychiatric diagnostic data

provided by Dr. Nicholas Scharff, MPH, Chief of Clinical Services, Bureau of Health Care Services for the Department of Corrections, to confirm that all inmates with a mental health disorder were appropriately classified.

Substance dependence was assessed using the Texas Christian University Drug Screen (TCU) II. The TCU Drug Screen II is a standardized 15 item screening instrument developed to identify individuals with a history of heavy drug/alcohol use or dependence in the past 12 months (in the case of inmates, the 12 months prior to their incarceration) and has been used by the PADOC for all incoming inmates since January 2001 (Zajac, 2007).

Co-occurring disorder classifications were inmates who met the Department of Correction's criteria for a mental health disorder and had a score on the TCU Drug Screen II indicting a substance abuse or dependence disorder.

Inmates classified in the no disorder group were those inmates who were not considered to have a mental health disorder based on the Department of Correction's guidelines and whose TCU Drug Screen II score was not indicative of a substance use disorder.

Predictor variables controlled for in this study have been found to influence prisoner misconduct based on prior studies including prior incarceration (Flanagan, 1983; Goetting & Howsen, 1986; Light, 1991; Myers & Levy, 1978; Winfree, Mays, Crowley, & Peat, 1994; Wooldredge, 1991), educational achievement (Adams, 1977; Gover et al., 2008; Toch, et al., 1989), marital status (Acevedo & Bakken, 2003; Myers & Levy, 1978, Toch et al., 1989), age (Fernandez & Neiman, 1998; Flanagan, 1983; Goetting & Howsen, 1986; Jensen, 1977; Jensen & Jones, 1976; Myers & Levy, 1978; Toch &

Adams, 1986; Toch, et al., 1989; Welsh, McGrain, Salamatin, & Zajac, 2007; Zamble & Porporino, 1988), and race (Goetting & Howsen, 1986; Gover, et al., 2008; McCorkle, 1995; Myers & Levy, 1978; Toch, .et al., 1989). Additional control variables in this study include whether the current offense was violent, the criminal history subscale score of the Level of Service Inventory – Revised, primary institution of incarceration, intelligence quotient score, reading level, and time in treatment. Analyses for testing the hypotheses include bivariate correlations, logistic and multinomial logistic regression models, survival analysis with Cox regression, and negative binomial regression.

Chapter 2 provides a comprehensive review of the existing literature on prisoner misconduct and the correlation between mental health disorders and prisoner misconduct, including estimates of mental illness, substance use, and co-occurring disorders in the offender population. Chapter 2 also discusses gaps in the existing literature, theoretical implications, and the study hypotheses.

CHAPTER 2

LITERATURE REVIEW

This chapter begins by reviewing the importance of understanding and identifying predictive factors of prisoner misconduct to provide information valuable for institutional safety, order, management, decision-making, and cost effectiveness. More specifically, this chapter explores the positive association found in prior research between mental illness and institutional misconduct and the implications of such findings. This is followed by an examination of the prevalence and enhanced negative consequences of mental illness when coupled with a substance use disorder and why this has implications for prisoner misconduct. This will be followed by a review of the primary theoretical models of institutional adjustment, including the importation and deprivation models, and how this study seeks to advance the theoretical understanding of prisoner misconduct. Further, this chapter will discuss the importance of addressing female offenders in the misconduct literature. Female inmates are a particularly understudied population in the misconduct literature, which is a critical omission, particularly as it relates to the relationship between mental illness and co-occurring disorders.

Prison Misconduct

The primary goal of any penal institution is maintaining safety and order. Although treatment and rehabilitation are goals of the institutional process, wardens in a national survey agree that they are secondary to maintenance of order (Cullen, Latessa, Burton, & Lombardo, 1993). With the number of persons incarcerated in state and Federal prison nearing two million (West & Sabol, 2009), maintaining order has become

a significant challenge for correctional officials (Gendreau, Tellier, & Wormith, 1985; Wright, 2000).

In conjunction with the increasing numbers of persons incarcerated, there are specific concerns among correctional officials about the rising number of inmates with mental illness, substance use disorders, and co-occurring disorders (e.g. Ditton, 1999; James & Glaze, 2006; Mumola, 1999; Mumola & Karberg, 2006). Comparable to national trends, the Pennsylvania Department of Corrections reported a steady rise in the number of inmates between September 2007 and July 2009. Concurrently, there was a steady increase in the trend of monthly misconduct charges (M. Antonio, Research and Evaluation Manager for the Pennsylvania Department of Corrections, personal communication, October 6, 2009). The following charts (Figures 1 & 2) are restricted to the population and misconduct trends of females incarcerated in the State of Pennsylvania between January 1, 2007 and July 30, 2009 because this is the sample population for this study.

Figure 1 PADOC Female Offender Population Trend January 2007 –July 2009

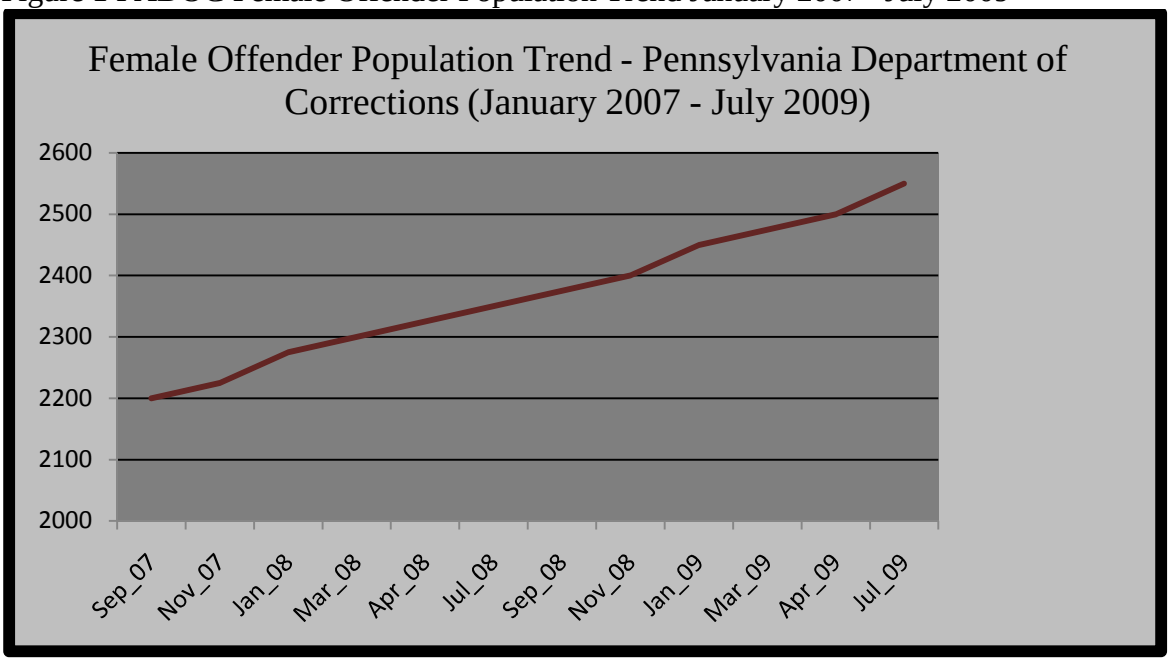
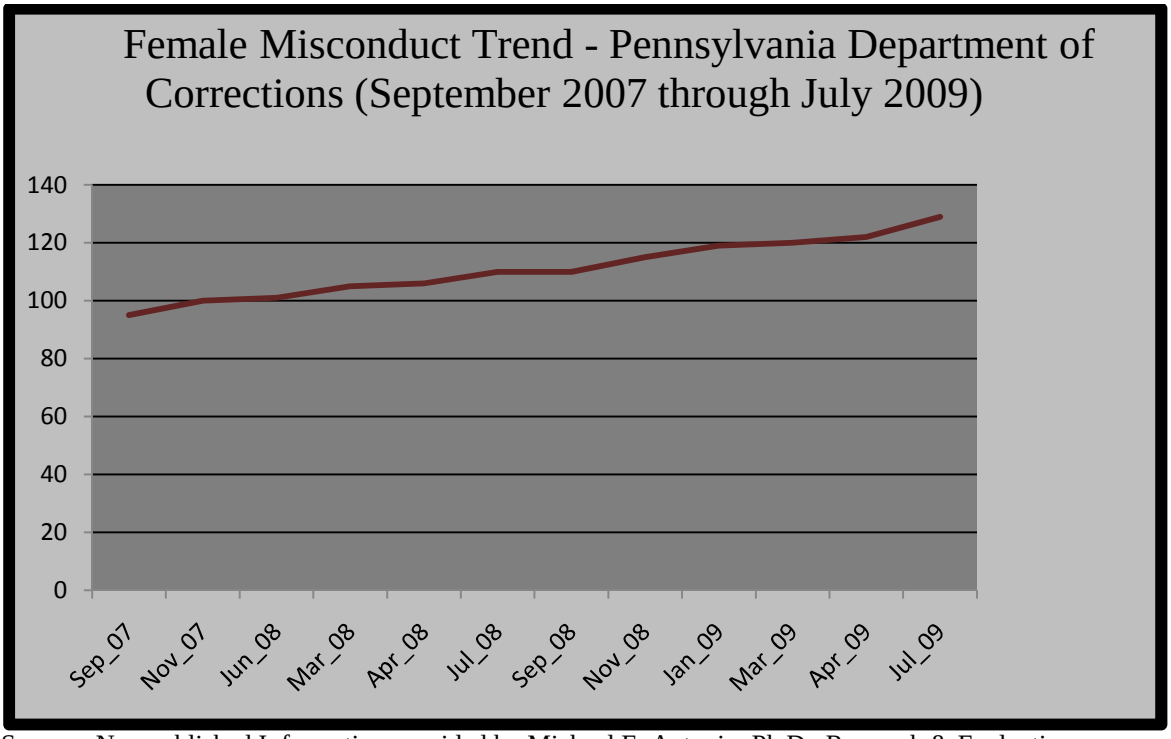


Figure 2. PADOC Female Inmate Misconduct Trend September 2007 – July 2009



Source: Non published Information provided by Michael E. Antonio, Ph.D., Research & Evaluation Manager for the Pennsylvania Department of Corrections Bureau of Planning, Research, Statistics, & Grants, October, 2009

Steiner (2008) suggests that "social order in prisons is potentially paradoxical" in that those who have violated the norms of the larger society are then coercively confined to correctional facilities with the expectation that they will abide by the rules and regulations of that institution (p. 9). Steiner proposes that it is the inherent need of individuals to have a perceived safe and secure environment that establishes a consensus between staff and inmates for the adherence to a basic set of rules.

However, for the mentally ill, conforming behaviors may not always be within their control (Human Rights Watch, 2003; Lovell & Jemelka, 1996; Torrey, 1995). Therefore, expectations of rule-abiding behavior may not always be an appropriate or reasonable prospect as demonstrated in adjustment studies examining the association

between mental illness and misconduct (see, Adams, 1983; 1986; Hildebrand et al., 2004; McCorkle, 1995; Toch & Adams, 1986; Toch et al., 1989).

For inmates who are able to weigh the benefits and risks of rule violating behavior, prisons rely on the "threat and use of infractions as their primary means of official social control" (Lovell & Jemelka, 1996, p. 165). Infractions are behaviors that may result in charges being levied against inmates by guards or other staff with potential sanctions varying from minor (e.g. suspension of privileges) to serious (e.g. loss of good time credit resulting in lengthening an inmate's sentence) (Toch, et al., 1989). Although similar to laws in the larger society with degrees of seriousness (Lovell & Jemelka, 1996), prison misconduct may encompass behaviors that would otherwise not be deemed illegal including disobeying the orders of correctional officers, leaving one's cell without permission, and failing to maintain proper hygiene. Thus, as Lovell & Jemelka (1996) suggest, institutional rules serve dual purposes. They are designed to control behaviors that threaten the safety of staff and inmates, while also maintaining control and order in the prison.

The rules of conduct for inmates are established by individual states through their prison directives. Inmates receive a list of the prison rules and regulations at the time of intake including sanctions for specific rule violations. The Commonwealth of Pennsylvania's Department of Correction (May, 2008) policy statement on inmate discipline (DC-ADM 801) states:

> It is the policy of the Department to operate a disciplinary process that provides clear notice of prohibited behavior, outlines a fundamentally fair hearing process, and establishes consistent sanctions for violations of Department rules and

> regulations. It is also the policy of the Department that information concerning an inmate's criminal acts shall be forwarded to appropriate court or law enforcement officials for consideration for prosecution (p. 1).

Similar to other studies on offending behavior showing large proportions of crime are committed by small numbers of offenders (Howell, Krisberg, & Jones, 1995; Wolfgang, Figlio, & Sellin, 1972), studies have repeatedly shown that a relatively small group of offenders is responsible for the majority of institutional misconduct (Acevedo & Bakken, 2003; Adams, 1983; Jemelka, Lovell, & Wilson, 1996; Lindquist, 1980; Toch & Adams, 1986; Toch et.al., 1989). Although misconduct rates are skewed among a small group of offenders, understanding the subgroup with the highest rates of misconduct has important safety, management, economic, and re-entry implications (Goetting & Howsen, 1986). Recognizing risk factors for disruptive behavior can be an effective tool for correctional administrators in helping to maintain control and management of the inmate population (Craddock, 1996) and determining appropriate and effective disciplinary responses.

Disruptive and violent behaviors threaten the physical safety and emotional well being of staff, inmates and the families of both (Adams, 1983; Goetting & Howsen, 1986). In a sample of almost 7,000 male inmates housed throughout 12 different prisons, Wolff and Shi (2009) examined victimization incidents and their effects. They concluded from their study that 40% of physical assaults between inmates and 67% of sexual assaults resulted in physical injury. Emotional reactions were reported in almost all victims, with anger being the most common among victims of physical assault. Fear, depression, flashbacks and nightmares were common among the sexually assaulted.

Consistent with other studies, Wolff and Shi (2009) also report that fear of future victimization resulted in avoidance techniques including self-imposed segregation, cell confinement, and avoidance of certain locations or persons (also see, Bartollas, Miller, & Dinitz, 1975; Huffman, 1961 Lockwood, 1980).

Inmates, however, do not always resort to passive methods of dealing with fear, sometimes choosing instead to display aggressive and violent behaviors to avoid the threat of future victimization. Proactive methods of dealing with fear include arming themselves with homemade weapons and conveying an aggressive persona to others (McCorkle, 1992). Thus, for some inmates, fear can elicit behaviors that would otherwise not been have exhibited (Adams, 1983).

Threats to the safety and order of correctional environments have the additional consequence of disrupting organizational goals; "Conformity is necessary for maintenance" (Goetting & Howsen, 1986, p. 50). Disruption in the order of prison environments negatively effects the organizational management of the institution and its ability to achieve its intended goals (Goetting & Howsen, 1986; Welsh, et al., 2007). For the mentally ill offender, O'Keefe and Schnell (2007) argue that rehabilitative needs often come secondary to an institution's need to maintain security.

Disruptive behaviors in prisons strain correctional resources, impede progress toward organizational goals, and are economically burdensome to institutions. Misconduct charges incur administrative and processing costs. Inmates found guilty of misconduct may be sentenced to special housing units where they are segregated from the general population, with additional staff and/or technology needed to secure and oversee these units (Goetting & Howsen, 1986; Lovell & Jemelka, 1996). There may also be

possible health care and productivity costs incurred from injuries to inmates or staff resulting from violent disruptive behavior (Goetting & Howsen, 1986).

The financial costs of prisoner misconduct for correctional facilities can be both direct and indirect. Lovell & Jemelka (1996) suggest that as costs of imprisonment are considered, infractions should be factored into the costs for inmate management, particularly as they affect inmates with mental health disorders. In a cost analysis of infractions in a medium security prison in Washington State, the annualized cost for minor and major infractions was estimated at $990,000 or $970 per infraction (or $1,351 by 2009 estimates) (Lovell & Jemelka,1996). Calculation of costs incurred for misconduct included processing costs, disciplinary segregation, loss of good time, and custody demotions. The authors suggested that if these estimates were extrapolated, the costs to the prison system may exceed $9 million annually. Although this cost analysis was conducted in one facility and in one state, the authors suggest that these findings may not be atypical because the major factors (e.g. administrative processes) accounted for in the cost analysis are legally required through court rulings on the constitutional rights of prisoners (Lovell & Jemelka, 1996).

As part of an economic analysis of in-prison therapeutic community treatment on management costs in a California prison, Zhang, Roberts, and McCollister (2009) examined the costs of filing and implementing disciplinary citations. Calculating the staff hours required to accomplish "various tasks" and their associated salaries, estimates were made for the costs of each stage of the process. Based on these calculations, the authors estimated the costs of "processing administrative and serious citations" to be $534 and $776 per citation, respectively (p. 391). Because certain extraneous factors

(e.g. bonuses, longevity pay, and remote location incentive pays) could not be accounted for in this study, the authors suggest that the actual costs of staff time were likely underestimated.

The economic implications of disruptive behavior may not always be readily visible or easily calculable. The stress incurred by disruptive and violent behavior has been associated with higher rates of staff turnover and absenteeism (Cullen,et.al., 1993), which is a financial hardship incurred both by staff and institution. Violent altercations may also result in medical costs for inmates and staff, as well as loss of work time (Goetting & Howsen, 1986).

Misconduct has individual as well as organizational consequences. Disciplinary records play a critical role in pre-release and parole decision-making (Flanagan, 1982; Gottfredson, 1979). High rates of misconduct often result in lengthening a prisoner's sentence through loss of good time or denial of parole. The resultant effect is both a hardship to the inmate and an economic burden to taxpayers and institutions (Flanagan, 1982, 1983; Goetting & Howsen, 1986; Gottfredson, 1979). Disciplinary actions are also commonly used in inmate classification decisions, reclassification, cell and work assignments, and custody level placements (Cao, et al., 1997; Flanagan, 1983; Jiang & Fisher-Giorlando, 2002).

Misconduct among the mentally ill poses additional concerns and questions different from those of other inmates. The question of an offender's mental status at the time of offense or their competency to stand trial has been the focus of much research; yet the ability of the mentally ill to adapt to prison life has received far less attention (Guyton, 2005, p.2). Thus, this raises the question of whether all mentally ill inmates are

capable of controlling their behavior in a prison setting and whether institutional misconduct is a symptom of their underlying disorder (Torrey, 1995; Wexler, 2003). This is a relevant question in light of the fact that the mentally ill have been found to be disproportionately involved in misconduct (see, Adams, 1983, 1986; Hildebrand et al., 2004; McCorkle, 1995; O'Keefe & Schnell, 2007; Toch & Adams, 1986; Toch, et. al., 1989) and disproportionately represented in segregation units (Cohen & Gebasi, 2005; Human Rights Watch, 2003; Lovell & Jemelka, 1996; Wexler, 2003). Segregation and confinement for the mentally ill may exacerbate their symptoms and worsen their clinical prognosis (Human Rights Watch, 2003; Lovell & Jemelka, 1996; Wexler, 2003). Human Rights Watch (2003) suggests that the deleterious effects of segregation and isolation on the mentally ill are further compounded because mental health treatment in such settings is often limited to medication and brief checks from mental health staff.

Frequency and severity of institutional misconduct are the most common measures of prisoner assimilation (see, Acevedo & Bakken, 2003; Adams, 1977, 1983; Cao,et al., 1997; Flanagan, 1983; Gover, et al., 2008; Harer & Steffensmeier, 1996; Jiang & Winfree, Jr. 2006; McCorkle, 1995; McCorkle, Meithe, & Drass, 1995; Myers & Levy, 1978; Salisbury et al., 2009; Steinke, 1991; Toch & Adams, 1986; Wright, 1991; Wright et al., 2007; Zamble & Porporino, 1988) because they are the only officially recorded measures available (Acevedo & Bakken, 2003; Toch, et. al., 1989). Further, misconduct rates are the only means by which chronically disruptive inmates can be distinguished from all others (Acevedo & Bakken, 2003). Because rules of inmate conduct and penalties for violations are specifically defined within correctional policy statements that all inmates are notified of at the time of intake, subjectivity about what constitutes

misconduct is minimized (Toch et al., 1989). Also limiting potential subjectivity in decision-making is the fact that sequential sources of judgment (e.g, review of charges by supervisors, inmate notification of charges. hearings, determination of guilt, and dispositions) are distributed among multiple personnel in a variety of settings (Toch, et.al., 1989). There are, however, several limitations to the reliability of officially gathered misconduct data that must be recognized including correctional officer discretion, errors in applying administrative rules and definitions, selective or non-selective enforcement of the rules, and informal organizational practices that may or may not be consistent with written policies (Light, 1990).

With the rising numbers of inmates with mental health disorders, the challenge faced by correctional institutions in how they address and respond to misconduct is even more complicated. Perhaps more challenging, however, is the growing awareness of the high percentage of inmates with mental illness that have a co-occurring substance use disorder. The additive and interactive nature of co-occurring disorders often exacerbates the symptomatic nature of the singular disorders making assessment, treatment, and institutional safety and order more difficult (Volkow, 2007).

Estimates of Mental Health, Substance Use and Co-Occurring Disorders in Prisons and Jails

By midyear 2005 more than half of all prison and jail inmates met the DSM-IV criteria for a mental health disorder (56% of State prisoners and 64% of jail inmates (James & Glaze, 2006). These estimates are for serious mental health diagnoses (psychosis, mania, and major depression), suggesting that estimates likely would be even higher if a more comprehensive range of diagnoses (e.g., personality disorders) were

assessed. By comparison, 11% of the general population over the age of 17 has a mental health diagnosis based on 2001-02 findings from the National Epidemiologic Survey on Alcohol and Related Conditions (James & Glaze, 2006). Among state prisoners with reported mental health disorders, 74% have a co-occurring substance use disorder (James & Glaze, 2006).

Substance use disorders are also proportionately higher among offenders compared with the general population. Fifty-three percent of State prisoners meet the DSM-IV criteria for drug dependence or abuse (Mumola & Karberg, 2006); whereas 2% of U.S. adult residents are drug dependent or abusing drugs. Again, general population estimates were based on 2001-02 findings from the National Epidemiologic Survey of Alcohol and Related Conditions and were analyzed by the Bureau of Justice Statistics using the same criteria as the 2004 Survey of Inmates in State Correctional Facilities (Mumola & Karberg, 2006).

Substance use disorders and mental illness often co-occur with one another (NIDA, 2008). Co-occurring disorders are defined by the National Institute on Drug Abuse (NIDA) as "two (or more) disorders occurring in the same person, simultaneously or sequentially, implying an interaction between the illnesses affecting the course and prognosis of both" (NIDA, 2008. p.1). Substance use disorders are categorized into 11classes and are distinguished by the criteria of abuse and dependence used for each (see Appendix A for a complete list of disorder classes and dependence and abuse definitions) (SAMHSA, 2006a). Sixty to ninety percent of people seeking treatment in community settings are considered to have co-occurring disorders (Schneider, 2000), and 60% of people with a substance use disorder have another form of mental health disorder

(Volkow, 2007). The Substance Abuse and Mental Health Services Administration's Co-occurring Center for Excellence argues that "failure to address co-occurring disorders in either substance abuse treatment or mental health programs is tantamount to not responding to the needs of the majority of program participants" (SAMSHA, 2006b, p. 2).

As might be expected with the disproportionately higher rates of mental illness and substance use disorders in the offender population, the rate of co-occurring disorders is also greater than general population estimates (Dennison, 2005; Osher, 2005). Forty-two percent of state prisoners have co-occurring mental illness and substance abuse or dependence disorders (James & Glaze, 2006). Abram and Teplin (1991) found that most jail detainees with a severe mental illness (schizophrenia or major affective disorders) also met the criteria for a substance abuse or antisocial personality disorder. The National Epidemiologic Catchment Area Program estimate individuals with mental health disorders have an approximately 29% lifetime prevalence for an addictive disorder (Regier et al., 1990).

Rates by gender among offenders show that 54% of female State prisoners and 41% of males have co-occurring disorders (James & Glaze, 2006). These estimates are also limited to serious mental health disorders (psychosis, mania, and major depression) which omit many of the more common psychiatric diagnoses for women such as obsessive compulsive disorders, anxiety disorders, post traumatic stress disorder [PSTD], eating disorders, and borderline personality disorders (Bloom et al., 2003; Gomel, 1997; National Institute of Mental Health, n.d.; Russo, 1990). These percentages also are likely to represent low estimates because co-occurring disorders are frequently undetected and

underreported (Drake, Alterman, & Rosenberg, 1993; McMillan, Timken, Lapidus, C'deBaca, Lapham, & McNeal, 2008; Peters, Bartoi, & Sherman., 2008; Peters, LeVassuer, & Chandler, 2004).

Despite findings from national surveys over the past 30 years of a high prevalence of co-morbid mental health and drug abuse disorders, accurate diagnosis and assessment of co-occurring disorders is complicated by their overlapping and interactive nature (National Institute on Drug Abuse, 2008). Sacks and Melnick (2007), for example, argue that current screening instruments are not presently designed to assess the presence of more than one diagnosis; instead focusing independently on either mental health or substance abuse disorders. Such tools have also been developed for use in community-based settings and thus may not be valid for offenders in custody. The heterogeneity of symptoms presented by individuals with co-occurring disorders makes it difficult for single disorder screening instruments to assess the full spectrum of co-occurring disorder symptoms (Osher & Kofoed, 1989). For example, in a study of repeat DUI offenders who underwent mandated treatment, McMillan and his colleagues (2008) found high rates of under-diagnosed psychiatric conditions. Ninety-three percent of the participants with symptoms of bipolar disorder, 68% of those with depression, 100% with obsessive compulsive disorders, and 40% with drug use disorders went undiagnosed.

There is no doubt that the offender population is disproportionately impacted by mental illness, substance use problems, and co-occurring disorders. Addressing how these disorders relate to prisoner misconduct suggests that the symptomatic nature of these disorders influence an inmate's adjustment process to the prison environment. The

following section will address this issue drawing from the importation and deprivation theoretical models of misconduct.

Theoretical Implications

Identifying risk factors for misconduct in correctional environments has been an area of long standing interest for researchers, policy-makers and correctional officials. How well an inmate assimilates into the prison environment may affect their ability to conform to the rules and regulation of the institution. Two prevailing, yet competing, theories on inmate assimilation are the deprivation and importation models (see Goodstein & Wright, 1989; Paterline & Petersen, 1999; Thomas, 1977). Although each model explains adjustment to prison life in different ways, both have found empirical support (Hochstetler & DeLisi, 2005; Jiang & Fisher-Giorlando, 2002).

The deprivation theory found its roots almost 70 years ago when Donald Clemmer (1940) introduced his concept of "prisonization," drawing from his research on life within a maximum security prison. The "prisonization" perspective centered around the prison as a community in which inmates assimilate to the deprivations of prison by adopting the cultures, mores and folkways of the inmate society (Paterline & Petersen, 1999; Steiner, 2008; Wheeler, 1961). According to Steiner (2008) the "prisonization" concept compares with the Marxian view that the economy and cultural attributes of a society are formed by the "physical environment and its available resources for human survival" (p. 13). Thus, when individuals are confined to areas with limited resources such as prisons they adapt to the deprivations of the environment by learning to use the resources available.

Although all inmates will be exposed to the inmate subculture, Clemmer acknowledged that there would be differences in the speed and degree of its influence (Wheeler, 1961). For example, inmates with strong and positive pre-prison relationships that continue during the incarceration period would be less likely to assimilate into the prison culture, as would inmates with shorter sentence lengths due to their reduced exposure to prison culture.

Expanding on Clemmer's theory, Sykes (1958) argues that it is the "pains of imprisonment" that an inmate must learn to adapt to the deprivation of life's basic liberties of freedom, autonomy, personal possessions, material achievements, and heterosexual relationships (Sykes, 1958; Sykes & Messinger, 1960). In order to relieve these frustrations and cope with the loss of self esteem, inmates form their own codes and systems of values. Thus, the deprivation theory posits that adapting to prison life is a process that inmates go through in order to deal with the social and physical deprivations of incarceration (Sykes, 1958; Sykes & Messinger, 1960). Further, the coercive and custodial nature of prison environments and the subsequent "depersonalizing" of inmates influence the assimilation process, reducing the relevance of individual level variables (Jiang & Fisher-Giolando, 2000; Thomas, 1977).

In sum, the deprivation theory argues that inmate adjustment to the institution is explained by the distinctive traits of that institution (Gover, Mackenzie, & Armstrong, 2000). Therefore, proponents of the deprivation theory argue that prison-specific variables exert a greater influence on inmate adjustment than individual level, pre-prison characteristics. Research on the deprivation model has illustrated the predictive power of prison-specific variables on misconduct, including prison crowding (Gaes, 1994; Gaes &

McGuire, 1985; MacDonald, 1999;Nacci, Teitelbaum, & Prather, 1977; Ruback & Carr, 1984), management style (Patrick, 1998), oppositional attitudes toward staff, acceptance of violence, adoption of inmate code (Paterline & Petersen, 1999), duration of sentence (Thomas, 1977), inmate interaction (Wheeler, 1961), security and custody levels (Feld, 1981; McCorkle, Meithe, & Kris, 1995; Poole & Regoli, 1983) and feelings of powerlessness or alienation (Hyman, 1977; Thomas & Zingraff, 1976).

Critics of the deprivation model developed the importation theory originally proposed by Irwin & Cressey (1962). This theoretical model argues that despite the dominating nature of a prison environment, an inmate's pre-prison experiences, socialization, and characteristics affect their degree of assimilation into the inmate subculture (Irwin, 1970, 1981; Irwin & Cressey, 1962). In addition, the inmate subculture is not simply a product of prisonization formed by the structure of the institution, but rather is a reflection of pre-prison values and beliefs (Irwin, 1970; Irwin & Cressey, 1962). Critics of deprivation theory argue that if assimilation into an inmate subculture was based solely on the deprivations of incarceration, all inmates would be highly prisonized – an argument that has not been empirically supported (Paterline and Petersen, 1999).

The importation model has also found a considerable amount of empirical support. Variables predictive of misconduct include prior arrest and incarceration (Flanagan, 1983; Goetting & Howsen, 1986; Light, 1991; Myers & Levy, 1978; Winfree et al., 1994; Wooldredge, 1991), educational achievement (Adams, 1977; Gover et al., 2008; Toch et al., 1989), pre-prison employment stability (Adams, 1977; Goetting & Howsen, 1986; Thomas, 1977; Toch & Adams, 1986; Toch et al., 1989), and marital

status (Acevedo & Bakken, 2003; Myers & Levy, 1978, Toch et al., 1989). In a meta-analysis of 39 studies on misconduct generating 677 effect sizes, Gendreau, Goggin, and Law (1997) found that age, antisocial attitudes and behavior, and criminal history were the strongest predictors of misconduct ($r > .10$). Social achievement, race and early family factors were found to be moderate predictors ($r = .06 - .10$). Weak, but significant predictors of misconduct included cognitive abilities, personal distress, and religiousness ($r < .05$).

Age at the time of incarceration or age at the time of the study has been the most robust individual level predictor of misconduct demonstrated in the literature. As inmates age they are less likely to participate in rule violating behavior (see Fernandez & Neiman, 1998; Flanagan, 1983; Goetting & Howsen, 1986; Jensen, 1977; Jensen & Jones, 1976; Myers & Levy, 1978; Toch & Adams, 1986; Toch, et al., 1989; Welsh et al., 2007; Zamble & Porporino, 1988). For example, among female inmates in a minimum security prison, 21% of women aged 30 or above were charged with misconduct compared with 44% of inmates 21 years of age or younger (Jensen, 1977). Using data from 14 different facilities over a 3 year period, Flanagan (1983) reported age to be the strongest correlate of infraction rates ($phi = .32$, $p < .001$).

The relationship between race and misconduct has yielded mixed results. A majority of studies report African-Americans to be disproportionately involved in misconduct (see Goetting & Howsen, 1986; Gover, et al., 2008; McCorkle, 1995; Myers & Levy, 1978; Toch, et al., 1989). Gover, et al. (2008), however, found that race interacts with gender. Non-White females were associated with a significant increase in the mean number of infractions; whereas race was non-significant for males. In a study evaluating

the predictive validity of California's inmate classification system, Fernandez and Neiman (1998) initially measured the total number of serious infractions an inmate accumulated during their incarceration. Initial findings showed that both African-Americans and Mexican-Americans had lower infraction rates than Whites. However, when the investigators revised their dependent variable and used more specific measures of assaults on inmates and staff, they found that African-Americans now were significantly more likely to be involved in assaults.

Goetting and Howsen (1986) reported no difference in misconduct rates between African American and Caucasian males using data from the National Survey of State Inmates. However, they did find higher rates of misconduct among African American males compared to either African American females or Caucasian females. Using data from the 2004 National Survey of State Inmates, Houser, Belenko, and Brennan (2011) found that African American females were 1.5 times more likely to be charged with a misconduct compared to Caucasian females. However, the study was conducted using a female sample only and therefore a gender comparison between males and females cannot be made. Petersilia and Honig (1980) examined the link between race and infraction rates in three states. Whites were more likely to commit infractions in California, while African-Americans were found to have higher disciplinary involvement in Texas. Findings in Michigan, however, found no significant association between race and infraction rates.

Education has been a significant predictor of misconduct in several studies with findings generally suggesting that the higher the level of education, the less likely an inmate is to be involved in misconduct. Toch et al. (1989) found in an all male sample

that having a high school degree was associated with lower infraction rates. Similar findings were reported by Adams (1977) in a comparison study of male inmates with no infractions versus those with serious infractions. Sixty-six percent of inmates with no histories of misconduct were high school drop-outs; whereas 86% of inmates with histories of serious prison misconduct had not completed high school. In contrast, Gover et al. (2008) reported that education was a non-significant predictor of misconduct in males, but there was a significant, inverse relationship between education and misconduct rates for females.

Another socio-demographic factor found in several studies to influence the likelihood of inmate misconduct is marital status at the time of incarceration. Overall, studies have found that inmates married at the time of incarceration are less likely to be involved in disruptive behavior (Acevedo & Bakken, 2003; Myers & Levy, 1978; Toch, et al., 1989). Myers and Levy (1978) compared a group of inmates who presented chronic disciplinary problems termed "intractable" with inmates who were considered by prison officials to be "nondisciplinary problems" or "tractable". The mean number of "intractable" inmates who were unmarried was 33 compared with an average of 20 unmarried "tractable" inmates. Acevedo & Bakken (2003) examined misconduct rates for female inmates in three different groups: 1) those with no misconducts vs. those with minor infractions, 2) those with none vs. those with serious misconducts, and 3) those with none vs. those with violent misconducts. Marital status did not significantly predict infractions for the first two groups, but was negatively associated with infractions for the third comparison group (b = -1.6197, p = .05). Using a weighted nationally representative sample of over 83,000 female State prison inmates, Houser et al. (2011)

found that women who were married at the time of their incarceration were 38% less likely to be charged with a serious misconduct and 30% less likely to be involved in a minor misconduct. Conversely, Adams (1977) reported that marital status was a non-significant predictor of misconduct. However, caution should be used in interpreting these findings because infractions were calculated for serious misconduct only and the size of the sample was relatively small (N=100).

In a study examining the effects of pre-prison drug use on substance and non-substance rule violations, Jiang et al. (2005) using multilevel analysis and controlling for known correlates of misconduct (e.g. age, race, criminal history, and length of sentence), found inmates with reported pre-prison drug use histories were more likely to engage in both substance and non-substance related misconduct ($b = 0.1341$, $p < .001$ & $b = 0.0696$, $p < .001$ respectively), though the effects were stronger for substance rule violations. Consistent with Jiang's findings, an earlier study conducted by Thomas and Cage (1977) found that among a sample of 273 adult offenders in a medium security prison, 30.6% of inmates reporting pre-prison drug use stated that they continued to use drugs after confinement, compared with 4.4% of those not reporting pre-prison drug use.

Criminal history has been measured in several different ways in the misconduct literature. Studies have generally found prior involvement with the criminal justice system to be related to greater disruptive behavior within correctional institutions. Houser et al. (2011) reported that female inmates with prior arrest histories were more than one and half times more likely to be involved in misconduct (OR = 1.65). Myers & Levy (1978) found that while the number of police contacts as an adult, age at first juvenile commitment, or the type of crime committed as a juvenile or adult was not

significantly different for inmates categorized as “intractables” compared with “tractable,” they did find that “intractable” inmates were younger at the time of their first police and court contact, and had more police encounters as juveniles. Several studies suggest that the number of prior incarcerations has a positive and significant relationship to institutional misconduct (see Goetting & Howsen, 1986; Lindquist, 1980). Gover et al. (2008), however, found mixed results. There was a strong positive relationship between prior incarcerations and institutional infractions for males; however, women with more prior incarcerations were less likely to be involved in misconduct.

Length of incarceration as a predictor of misconduct has yielded mixed results. Overall, studies indicate that inmates with longer periods of incarceration are more likely to be involved in misconduct (see Acevedo-Bakken, 2003; Craddock, 1996; Gover, et al., 2008; MacKenzie, Robinson, & Campbell, 1989; Myers & Levy, 1978; Thompson & Loper, 2005). This finding may be due to the increased time at risk for misconduct involvement. Gover et al. (2008) found that while length of incarceration was positively associated with increased misconduct for both males and females, comparison of the parameters revealed that the influence of the length of stay in relation to misconduct was stronger for females. Conversely, Flanagan (1980) reported that when measuring total misconduct rates during each quarter of a term, “middle stages” or “shorter-term” inmates were responsible for higher numbers of infractions. Similarly, Fernandez & Neiman (1998) found that sentence length was not a strong predictor of misconduct and that its association was in a negative direction.

Mental Health and Misconduct

The importation model focuses much attention on static variables drawn from an individual's socialization process, life experiences, and characteristics. However, the pathways to substance use disorders and mental illness can be a product of an individual's experiences and socialization. For example, sexual, physical and psychological victimization has been found to be highly associated with mental illness and substance use disorders among women (Bloom et al., 2003). Therefore, it is as critical to understand the influence of mental illness, substance use problems, and co-occurring disorders as pre-prison characteristics influencing prisoner assimilation and their effect on misconduct rate and severity as it is an inmate's age, history or educational level. Perhaps most notably, mental illness, substance use problems, and co-occurring disorders are amenable to intervention and change.

Research examining the association between mental illness and prisoner misconduct is somewhat limited. Overall findings show an increased rate of misconduct by mentally ill inmates (see Adams, 1983; 1986; Hildeband, et al., 2004; Houser, et al., 2011; McCorkle, 1995; O'Keefe & Schnell, 2007; Steiner & Wooldredge, 2009; Toch & Adams, 1986; Toch, et al., 1989; Wright, et al., 2007). According to the Bureau of Justice Statistics 2004 National Survey of State and Jail Inmates, 58% of mentally ill state inmates are charged with violating facility rules, compared to 43% of inmates with no mental illness (James & Glaze, 2006). Mentally ill state offenders are twice as likely to be injured in a fight during their incarceration (20% versus 10% respectively). Similar findings were noted among jail inmates, with 19% of mentally ill jail detainees charged with rule violations compared with 9% of inmates with no mental illness. Further, 9% of

the mentally ill were injured in fights since admission compared to 3% of jail inmates without mental health issues (James & Glaze, 2006).

Currently, prisons and jails are the largest provider of mental health treatment in the country (American Psychiatric Association, 2004; Gelman, 2007; Human Rights Watch, 2003; Torrey, 1995). There have been many rationales offered to explain why our criminal justice system has become the repository of this country's mentally ill, including deinstitutionalization of the mentally ill through hospital closures (Lamb &Weinberger, 1998; Maue, 2001; O'Keefe & Schnell, 2007; Soderstrom, 2007), more stringent civil commitment laws (Lamb, Weinberger, & Gross, 2004; Soderstrom, 2007), an association between COD and homelessness (Drake, Osher, & Wallach, 1991) and homelessness and incarceration (Michaels, Zoloth, Alcabes, Braslow, & Safyer, 1992), lack of support systems in the community for the mentally ill (Soderstrom, 2007), as well as stricter drug laws that increase incarceration for substance abusing offenders with co-occurring mental illness (Osher, 2005). Court-mandated changes over the years have generated additional challenges by restricting eligibility criteria of mentally ill inmates for commitment to mental health prison services, forcing more of them to be housed among the general population (Toch & Adams, 1986).

Not surprisingly, greater numbers of mentally ill offenders are unemployed prior to their arrests (James & Glaze, 2006). This suggests that for many of the mentally ill, access to treatment and/or medications in the community are seriously limited, particularly in light of reports that 4 in 10 jail inmates and 3 in 10 state and Federal prisoners were found to have symptoms of mental health disorders without a history of recent clinical diagnosis or treatment (James & Glaze, 2006). For many psychiatric

conditions, medication and treatment are an integral part of controlling symptomatic behaviors (Mayo Clinic, 2010a). Untreated serious psychiatric conditions that include symptoms such as hallucinations, delusions, disordered behavior, or bipolar disorders (Mayo Clinic, 2010ab) may result in maladjustment to the prison environment and make adherence to the rules of the institution difficult. These problems may be further exacerbated by conditions within correctional institutions such as forced isolation, lack of privacy, fear of victimization, and inadequate health services causing further deterioration of their clinical conditions. (World Health Organization, n.d.).

High rates of mentally ill persons in prisons and jails create serious security, service delivery, and management challenges for prison administrations (Gendreau, et al., 1985; Wright, 2000). Correctional environments are laden with stressors for any inmate entering the system including loss of individuality, uncomfortable and restricting conditions, fear, and stress (Dvoskin, 1990; Human Rights Watch, 2003), overcrowding, noise, rigid structure (Gelman, 2007), limited family contacts, and fear of violence and victimization (Human Rights Watch, 2003). However, for the severely mentally ill and those suffering from co-occurring disorders, functioning within the rigid structure and stressors of prison environments may be considerably more difficult (Human Rights Watch, 2003; Gelman, 2007; Torrey, 1995; Wexler, 2003).

The social structure and policies of prison environments for many of the mentally ill housed in the general population can be traumatic and may exacerbate symptomatology, worsening clinical progression (American Psychiatric Assoc., 2004, Gelman, 2007; McCorkle, 1995; O'Keefe & Schnell, 2007; Torrey, 1995; Wexler, 2003). Emotional instability, impaired coping mechanisms, symptoms of delusions and

hallucinations, cognitive impairments, along with other symptoms related to mental health disorders make it difficult to follow rules and regulations, which are a primary focus of correctional institutional management (Gelman, 2007; Torrey, 1995). Thus, the relationship between mental illness and disruptive behavior has implications in custodial settings where safety is considered paramount (Adams, 1983; O'Keefe & Schnell, 2007).

Using a sample of over ten thousand male inmates released over a period of approximately 1 year from the New York prison system, Toch and Adams (1986) measured prison rule violations using the prison's official records of disciplinary infractions. Only infractions for which the inmates were found guilty were included in the study and were computed as an annual rate. Mental illness was divided into three categories based on treatment received including: (1) no mental health services; (2) only outpatient services, and (3) periods of residence in a hospital setting. Findings indicated that inmates who were considered seriously disturbed (e.g., multiple hospitalizations) had overall higher infraction rates including more violent infractions when compared to inmates with no mental health problems. Inmates with high violent infraction rates were also more likely to be responsible for majority of the non-violent infractions. Although pre-prison unemployment was related to a substantial increase in the rate of misconduct, consistent with prior research, the relationship was not found to be significant when controlling for inmates with prior hospitalizations. Similar findings were noted for inmates with prior prison experience and those who were high school graduates. Prior prison experiences and completion of high school reduced the number of violations among all diagnostic categories, but to a lesser degree among hospitalized inmates. Examination of ethnic differences among the three disorder categories showed little

change among White inmates regardless of the disorder severity, a finding that was not consistent among African-American and Hispanic inmates.

In addition, specific mental health disorders including schizophrenia, adjustment disorders featuring conduct disturbance, and antisocial personality disorders were found to have been predictive of higher than average infraction rates among disturbed inmates; whereas substance abuse and anxiety disorders were associated with low violation rates. The authors suggested that degree of pathology may influence rates of misconduct.

In a similar study, Adams (1986) drew a random sample of male inmates from two maximum security prisons. Sample groups were based on inmates who were referred to mental health units within the prison and a non-referred comparison group. Official prison records of disciplinary infractions were used. If the disciplinary record consisted of more than one violation, the most serious infraction was coded. Referred inmates were found to have higher infraction rates than non-referred inmates at both institutions. Further analysis revealed that referred inmates who were not considered to be on an active caseload had higher infraction rates than referred inmates not on an active caseload. Further comparisons between inmates who were active caseload referred and non-referred were examined to assess whether there were differences in the types of misconduct committed by the groups. Findings revealed that referred inmates were more likely to be cited for behavior which may be reflective of their mental health problems (e.g. refusing to come out of their cells, setting fire to their cells, self injurious behavior, and lack of hygiene, and destroying state property). These findings raise the question of whether symptomatic manifestations of mental disorders are being charged as

institutional misconduct and punished accordingly. Thus, some inmates may be receiving punitive sanctions for disorder-related behaviors.

Another comparison study of over three thousand former mental patients and non-mentally ill inmates released from a Federal prison over a three year period found former mental patients were involved in more disciplinary infractions than other inmates and were also more likely to be repeat offenders (Adams, 1983). Adams (1983) distinguished three types of infractions: (1) escape history referring to any escape or attempted escape during the current incarceration, (2) assaultive infractions described as (any injury or threat to injure any person by any means, and (3) prison punishment which referred to any violation that resulted in loss of good-time, withholding of privileges, segregation, any suspended sentence, or any other deprivation. A review of the two comparison groups indicated that by all measures, former mental patients had greater prior involvement with the criminal justice system than other inmates including prior convictions, incarcerations, and prison commitments. Differences were also noted in the current offense types. Former mental patients were more likely to have been involved in property or person offenses than regulatory offenses including more assaults and weapons use. Overall, former mental patients were more likely to be white, single, living alone or in an institution at the time of offense, and a known drug user. Adams (1983) controlled for many known predictors of misconduct including age, prior criminal convictions, prior prison commitments, and custody classification. After controlling for these known risk factors of misconduct, former mental patients were still found to have higher rates of misconduct (21.6% compared with 14.0% annually, respectively).

In a rare study that examined gender differences in institutional misconduct across categories of mental health disorders, McCorkle (1995) created three categories of mental health status: 1) inmates who had never been on medication or hospitalized, 2) inmates previously hospitalized or medicated, but were not currently on psychotropic drugs, and 3) inmates currently receiving medication through outpatient treatment in the prison. Data were drawn from the Bureau of Justice Statistics' 1986 Survey of Inmates in State Correctional Facilities and were therefore self-reported. McCorkle controlled for previously identified correlates of infractions including age, race, marital status, education, prior incarceration, age at first confinement, drug abuse, security level, and whether the current offense was violent.

Initial findings demonstrated female inmates were more likely to report having taken prescribed medication for mental health problems (34.0% vs. 20.3% respectively), were twice as likely to have been on medication at the time of prison admission and also after prison entry, and were more likely to have been on medication at the time of the survey. Histories of psychiatric hospitalizations were approximately the same for men and women in the sample. McCorkle's (1995) findings, however, showed that regardless of gender or race, histories of medication use or hospitalizations were not predictive of disciplinary problems. He did find that current medication use was significantly related to increased infraction rates for women, particularly African-American women. This finding was not significant for males in the sample. Age was reported as the strongest predictor of disciplinary problems regardless of race or gender, though being an African-American female currently on medications was nearly as strong. McCorkle (1995) found

that the relationship between mental health status and infraction rates appeared stronger among female inmates.

With respect to prison misconduct, findings showed that females currently on medication had annual infraction rates twice that of males *and females* with no disorders (2.6 v. 1.1 and 1.3 respectively) and were reported to have on average one additional annual infraction compared with males on medication. African-American women regardless of their mental health status were more likely to be involved in disruptive behavior. No differences were found between White and African-American males on medication in terms of infraction rates. Thus, McCorkle (1995) found no relationship between mental illness and higher rates of institutional misconduct for males. However, he did find a "strong and independent effect" for mental health disorders and institutional infractions among female inmates.

Using the data from the 2004 National Survey of State Inmates, Houser, Belenko, and Brennan (2011) examined the correlation between mental illness, co-occurring disorders and prison misconduct among female inmates. They found that female prison inmates with mental health problems only and co-occurring disorders were more than twice as likely to be written up or found guilty of a serious prison rule violation as those with no known disorders and those with drug dependence/abuse disorders, but no mental illness (19.9% and 21.1% compared with 7.1% and 8.0%, respectively). Minor prison rule violations also were more likely for those with either mental health problems or co-occurring disorders relative to those with either no disorders or substance abuse disorders only, but this difference was not statistically significant (28.7 % and 30.0% compared with 21.8% and 23.3%, respectively). Differences in prison misconduct

among female inmates with mental health and co-occurring disorders persisted net of statistical controls. Relative to female inmates with no known disorders, the odds of prison misconduct were 1.8 times greater for inmates with mental health disorders and 2.1 times higher for inmates with co-occurring disorders

In a study examining the gender responsive perspective for predicting misconduct among female offenders, Wright, et al. (2007) sampled 272 incarcerated women to determine if gender responsive needs (e.g. needs that are qualitatively different for women than men such as issues of self-concept and parenting) were related to misconduct controlling also for gender-neutral factors including mental health histories. Measures were taken at six months and twelve months post intake. Results showed that having indicators of prior mental health problems was predictive of institutional misbehavior during both the 6 and 12 month periods. Correlation coefficients ranged from $r = .12$ to $r = .19$ with significance levels of $p < .05$ and $p < .01$ respectively. Measures of misconduct were limited to serious rule violations only.

As the above review indicates, there is empirical support for both the deprivation and importation theories of adjustment. Because both theoretical models have found support, critics have suggested that each approach is overly narrow in its view (see, Gendreau, et al., 1997; Goodstein & Wright, 1989; MacDonald, 1999; Thomas, 1977; Thomas & Zingraff, 1976; Thomas, Petersen, & Zingraff, 1978). Currently, the more widely accepted approach among penologists is the integrated theoretical approach, arguing the need to incorporate factors relevant to both (Gover, et al., 2000; Hochstetler & DeLisi, 2005).

Although several predictors of institutional misconduct have been empirically supported throughout the adjustment literature, critical gaps remain. The following section will address several key areas that have yet to be examined to better our understanding of prisoner misconduct.

Gaps in the Existing Research

As stated above, the primary goal of correctional institutions is maintaining safety and order. To help accomplish this, numerous studies have sought to identify possible correlates of prisoner misconduct, of which many have been repeatedly demonstrated to influence misconduct involvement (e.g. age, race, prior criminal history, education, and marital status). However, in a meta analysis of misconduct predictors, Gendreau, et al. (1997) point out that although 90% of the studies were published, key information regarding the samples and institutions were often missing including race, education, employment, family history, psychological factors, criminal history and previous prison adjustment, all of which, except pre-prison employment and family history, are being controlled for in the current study. In addition, most of the empirical and theoretical research on institutional misconduct has used all male samples, but generalized the finding to include females (see, Adams, 1983; 1986; Adams, 1977; Flanagan, 1983; Toch & Adams, 1986; Toch, et al., 1989; Myers & Levy, 1978; Wright, 1991; Zamble & Porporino, 1988), with the exception of a few female sampled studies (Acevedo & Bakken, 2003; Jensen, 1977; Thompson & Loper, 2005; Wright, et al., 2007), and a limited number of studies that directly compared males and females (Craddock, 1996; Goetting & Howsen, 1986; Gover, et al., 2008; McCorkle, 1995).

Further, few empirical studies have specifically addressed or controlled for the potential correlation between mental illness and misconduct (see, Adams, 1983; 1986; Hildebrand et al., 2004; Toch & Adams, 1986; Toch, et al., 1989; McCorkle, 1995; Wright, et al., 2007). The limited studies that have controlled for mental illness as a potentially influencing factor on misconduct have found strong positive associations while controlling for a variety of risk factors associated with misconduct. These studies also focus primarily on male populations (see, Adams, 1983; 1986; Hildebrand et al., 2004; Toch, et al., 1989) or pooled male and female samples (McCorkle, 1995).

The lack of literature on female prison adjustment and misconduct particularly as it relates to mental illness and co-occurring disorders, suggests a significant gap in the understanding of prisoner adjustment. Rates of incarceration for women have increased substantially compared with men over the past twenty years (Chesney-Lind, 2000). Between 2000 and midyear 2008, the number of females under the jurisdiction of state and Federal prisons increased by 24%, compared to a 15% increase in the male population, an average annual change of 3.0% compared to 1.9% respectively (West & Sabol, 2009).

Mental health problems, substance use, and co-occurring disorders also are more common among female inmates compared with males and the general population (Bloom, et al., 2003; Hills, 2004; James & Glaze, 2006; Jordan, Schleger, Fairbank, & Cadell, 1996; Mumola & Karberg, 2006). An estimated 73% of female state prisoners have a mental health problem, compared with 55% of male inmates. By comparison, general population estimates suggest 12.4% of females aged 18 or older meet the criteria for a mental illness (James & Glaze, 2006). The National GAINS Center (2009) reported

31% of women recently admitted to jail have a severe mental illness, twice the rate of males (14.5%) (Steadman, et al., 2009).

Similarly, drug dependence or abuse among female State inmates is estimated at 60.2%, compared with 53.0% for males (Mumola & Karberg, 2006). In a comparative analysis between male and females, McClellan, Farabee, and Crouch (1997) found that female prisoners were more likely to be dependent on illicit drugs (45.4%) compared with males (32.1%). Belenko and Peugh (2005) found that female inmates were significantly more likely to need residential drug treatment than males (52.3% versus 31.5% respectively). General population studies estimate 1.8% of females aged 12 or older were dependent on or abusing illicit drugs (estimates are based on finding from the National Survey on Drug Use and Health) (SAMHSA, 2007).

For female inmates with mental illness or co-occurring disorders, adjustment to prison life may be further complicated by gender-specific needs and risks (Wright, et al., 2007). Mentally ill inmates are over two times more likely to report prior physical or sexual abuse (James & Glaze, 2006). Although both men and women suffer interpersonal violence, 57% of incarcerated women report pre-incarceration sexual or physical assault compared with 16% of male prisoners (Little Hoover Commission, 2004). For many of these women their abuse histories are associated with psychological trauma (Bloom, et al., 2003; Jordan, et al., 1996; Messina & Grella, 2006; Skopp, Edens, & Ruiz, 2007). Owen and Bloom (1995) found that approximately 80% of the women in California prisons reported prior physical or sexual abuse histories. Exposure to trauma has been linked to both substance use and mental health issues (Bloom et al., 2003; NIDA, 2008) as well as PTSD (Bloom et al., 2003). Inmates with PTSD may experience

flashbacks, bad dreams, frightening thoughts, and hyperarousal that will make them easily startled, tense, unable to sleep, and angry (Bloom et al., 2003; National Institute of Mental Health, 2007). Standard operating procedures in correctional institutions including strip searches, restraints and isolation could serve as a "trigger to retraumatize women who have PTSD" (Covington & Bloom, 2003, 8) causing significant adjustment issues for these women (Bloom et al., 2003).

Adjustment to prison for women is further complicated by the pains of separation from their children causing enormous guilt, their histories of physical and sexual victimization as children and into adulthood, and their unique medical needs (Lord, 1995). Lord (1995) suggests that women and men's perceptions of the world differ as do their means of "doing time" (p. 266). Men rely on their inner strengths and their ability to withstand outside pressures. Women on the other hand remain intertwined in their outside lives mostly with their children and mothers (Lord, 1995).

The means by which disciplinary procedures are applied to female offenders compared with males suggests a gender disparity (Covington & Bloom, 2003). McClellan (1994) compared the disciplinary practices in the female prisons and male prisons in Texas. Men and women were closely matched on demographics and criminal history. She found that women were cited more frequently for rule violations than men (misconduct charges were less serious overall for women than men) and were punished more severely. Disciplinary procedures were more strictly adhered to in the female prisons with many rule violations enforced for women that were overlooked in the male prisons. The women were also subjected to greater surveillance compared with males. McClellan (1994) suggested that her finding of disparity in disciplinary procedures

between male and female prisons was a function of gender-specific application on a state-wide level. Van Voorhis and Presser (2001) found that over-citation for female prisoners may in turn lead to over-classification of these women, placing them in more restrictive and secure areas than may be warranted. It could be argued that placing these women in more restrictive housing may then result in further misconduct charges due to greater surveillance. Similar findings have been noted with higher rates of technical violations for probationers and parolees mandated to intensive supervision (Petersilia, 2003).

Correctional officer's attitudes toward female prisoners are generally more negative than for males (Bloom et al., 2003). Female offenders are often viewed as harder to work with, more demanding, less compliant, and more likely to complain. National focus group surveys of correctional workers and community officers often describe female offenders as inconvenient and difficult to manage in an environment where compliance with rules is essential (Bloom et al., 2003, p. 30). Many correctional staff considers overseeing female offenders as a low status assignment (Bloom et al., 2003). Although this study does not compare disciplinary infractions between the genders, inconsistencies in disciplinary procedure adherence between male and female inmates and generally negative attitudes toward female inmates suggests that female offenders with mental health and co-occurring disorders may be viewed as an even greater hardship to manage resulting in stricter enforcement and more punitive responses to misbehavior.

Perhaps one of the most significant limitations in our understanding of prisoner misconduct is whether the additive and interactive nature of mental illness coupled with a substance use disorder aggravates the inability of inmates to assimilate into the prison

environment resulting in higher rates of inmate misbehavior. Because the clinical implications of two disorders interacting with one another exacerbates the nature of the singular disorders (Volkow, 2007), it suggests that the co-occurrence of two disorders for inmates may result in problems of behavior control within the institution beyond that of inmates with singular or no disorders.

Although there are very high rates of co-occurring disorders within the offender population and there has been empirical support suggesting that both mental illness and substance use disorders can negatively affect prisoner misconduct, the complicated nature of co-occurring disorders and its potential influence is yet unknown. The following section will review the unique complexities of dual diagnoses and why its absence from the misconduct literature is a critical omission.

Co-occurring Disorders

At the *individual level*, co-occurring disorders exist "when at least one disorder of each type can be established independent of the other and is not simply a cluster of symptoms resulting from [a single] disorder" (Center for Substance Abuse Treatment, 2005, p. 3). Disorder types refer to co-occurring substance abuse and mental health disorders. According to SAMHSA (2006a), individual level definitions should be distinguished from service definitions. Service definition refer to one established diagnosis with signs or symptoms of another evolving (prediagnosis) *or* individuals who are "postdiagnosis" in that either one or both of their disorders has been in remission for a substantial period of time (p.4). SAMSHA (2006a) argues that definitional types are critical for systems to be responsive to the long care and/or acute needs of individuals. Individual level diagnosis would be most relevant and priority in the correctional

environment. Major relevant mental health disorders associated with co-occurring disorders include schizophrenia and other psychotic disorders, mood disorders and personality disorders (See Appendix B for the full list of relevant disorders) (SAMHSA, 2006a, p. 3). Disorders that may co-exist with others but are commonly not defined as co-occurring include developmental disabilities because "other service sectors" have traditionally been responsible for their care, and behaviors that are characteristically not amenable to treatment such as dementia (SAMHSA, 2006a, p. 2).

The interactive and additive nature of multiple diagnoses affects the course and prognosis of each often magnifying their symptomatic nature and worsening treatment outcomes (NIDA, 2008). Assessment and treatment of co-occurring substance use and mental health disorders is often complicated by their overlapping nature (NIDA, 2008). Symptoms associated with substance use disorders may mimic mental illness such as dementia, amnesia, sleep disorders, anxiety and psychosis to name a few (SAMHSA, 2006a). Conversely, symptoms of mental illness can sometimes impersonate substance withdrawal symptoms.

Although epidemiologic and clinical studies demonstrate high rates of co-morbid disorders, the causal directionality is still an area of active research (NIDA, 2007). Having a better understanding of the directionality of onset is thought to be an integral aspect of creating an effective treatment design (NIDA, 2007). According to Volkow (2008):

> Drug addiction is a mental illness. It is a complex brain disease characterized by compulsive, at times uncontrollable drug craving, seeking and use despite devastating consequences – behaviors that stem from drug-induced changes in

> brain structure and function. These changes occur in some of the same brain areas that are disrupted in various other mental disorders, such as depression, anxiety, or schizophrenia. It is therefore not surprising that population surveys show a high rate of co-occurrence, or comorbidity, between drug addiction and other mental illnesses. (p. 1)

Peters et al. (2008) suggest that there are "secondary issues" which may serve to further complicate assessment of co-occurring disorders including other sexual or personality disorders and developmental disabilities (p. 3). As mentioned above, some mental health disorders are typically excluded as co-occurring disorders in community settings; however, in a correctional environment where other service sectors are not available or disorders not readily amenable to treatment still pose security and safety concerns, definitions are arguably irrelevant. Peters et al. (2008) suggest that criminal justice officials are typically forced to address more severe mental health disorders as part of their co-occurring disorder treatment programs. Thus, there is potentially a segment of the offender population with known co-morbid disorders that are not eligible for treatment modalities designed for co-occurring disorders.

The multifaceted nature of co-morbid disorders and the complexity of their assessment and treatment, particularly in correctional settings, are generally associated with poorer clinical prognosis (Dennison, 2005; Peters, et al., 2004, Peters et al., 2008). Additional clinical implications for persons with co-occurring disorders include poor medication compliance, lower treatment completion rates, shorter periods of remission following treatment (Lehman, et al., 2000; Peters, et al., 2008), worse treatment outcomes for psychiatric patients with substance abuse disorders (Bergman & Harris, 1985),

particularly those with more severe symptoms (LaPorte, et al., 1981), greater suicidal behavior, more frequent hospitalizations, and difficulties in social functioning (Peters, et al., 2008). Further, "offenders with co-occurring disorders often display aggressive and violent behaviors, have long histories of institutionalizations, and demonstrate limited capacities to operate independently in both correctional and community correctional settings" (National GAINS Center for People with Co-Occurring Disorders in the Justice System, n.d, p.2).

A national survey of co-occurring disorder treatment (CDT) programs in correctional settings reported that inmates with "severe and persistent mental health disorders were seen as among the most difficult to treat in prison CDT programs" (Peters et al., 2004:567). Specifically, they found that symptoms of hallucinations and delusions among psychotic inmates created disruptive behaviors, making group therapy difficult. Inmates with bipolar disorders were frequently non-compliant with their medications, experienced adjustment problems to medications, and displayed erratic behaviors making treatment management difficult. Individuals with both Axis I and Axis II (see Appendix F for Axis I and II definitions and list of disorders for each) personality disorders were considered to have "poor impulse control, [be] resistant to treatment, [have] difficulty in recognizing the need for treatment, [engage in] predatory behavior towards other inmates, and [show] negative attitudes about treatment" (Peters et al., 2004:567).

As part of the MacArthur Violence Risk Assessment Study, Steadman et al. (1998) followed over a thousand male and female patients aged 18 to 40 for one year after their discharge from acute psychiatric inpatient facilities. They compared rates of violence post discharge with a community sample of people living in the neighborhood in

which the patients resided. Findings suggested that the presence of co-occurring substance abuse disorders played a significant role in violence. Overall, 17.9% of patients with major mental disorders and no substance abuse diagnosis committed a violent offense in the post-discharge period, compared to 31.1% for patient with a major mental disorder and a substance abuse diagnosis, and 43.0% for patients with some other form of mental disorder and substance abuse diagnosis. Comparison with the community sample revealed that consistent with the patient findings, co-occurring mental health and substance abuse symptoms significantly increased the rate of violence.

The complexity faced by prison administrators tasked with treating and assessing co-occurring disorders is further complicated by the high prevalence of co-morbid disorders among the incarcerated population (Peters & Osher, 2004; Sacks & Pearson, 2003; Sacks, Melnick, Coen, et al., 2007; Wexler, 2003). The mentally ill are disproportionately arrested compared to individuals with no mental disorders (Lamb & Weinberger, 1998), and approximately 75% of those with mental health disorders also have co-occurring substance use disorder (National GAINS Center for People with Co-occurring Disorders in the Justice System, 2001). Despite this trend, inmates with co-occurring disorders remain largely understudied (Sacks, Melnick, Coen, et al., (2007). Sacks, Melnick, Coen, et al. (2007) suggest that research in the area of inmates with co-occurring disorders is still in the infancy stages.

Using data collected from the 2001 and 2002 National Survey on Drug Use and Health, Swartz and Lurigio (2007) found that individuals arrested were likely to have at least one psychiatric disorder as assessed by the Composite International Diagnostic Interview – Short Form (CIDI-SF). For example, 6.0% of arrestees reported major

depressive disorders compared with 2.7% of those not arrested. Additional findings indicated that "for most types of psychiatric disorders and for most types of offenses, the relationship between serious mental illness and arrests can be largely attributed to the mediating effect of substance use" (Swartz & Lurigio, 2007, p. 596). Specifically, their findings suggest that co-occurring substance use will increase the likelihood that a person with any serious mental illness will be arrested for any offense, not just violent offenses.

Seventy-eight percent of males (n=88) committed to a Finnish Psychiatric State Hospital diagnosed with a major mental disorder during commission of a homicidal act were found to have a co-occurring substance use disorder (Putkonen, Kotilainen, Joyal, & Tiihonen, 2004). Among those patients diagnosed with a substance use disorder, 72% met the criteria for alcohol abuse, 64% for alcohol dependence, and 36% for substance abuse other than alcohol and 33% dependent other than alcohol. Overall findings indicated that approximately 50% of the inpatients had a triple diagnosis (i.e. antisocial personality disorder, substance use disorder and major mental health diagnosis), 25% had a "pure" dual diagnosis (substance use and major mental health disorder), and 25% had "pure" mental health diagnosis.

In a survey of 1,272 female jail detainees, 72% of the women with a severe psychiatric disorder (schizophrenia or major affective disorder) had a corresponding substance use disorder (alcohol or drug abuse or dependence) and 15% with a substance use disorder met the criteria for a severe psychiatric disorder (Abram, et al., 2003). Overall, Abram et al. (2003) reported 8% of female arrestees had a co-occurring disorder.

Examining mental health needs of 91 women entering the prison system in Oregon, Birecree, et al. (1994) found high rates of co-morbidity. Eighty-four percent of

the women with major depression had a corresponding drug problem; 74% with adjustment disorders (with depressed moods), and 100% of the women in the sample with post traumatic stress disorder (PTSD) had a substance dependence or abuse problem.

Access to effective interventions for inmates with co-occurring disorders is still relatively rare despite their high prevalence rates (National GAINS Center for People with Co-Occurring Disorders in the Justice System, 2004; Peters, et al., 2004; Wexler, 2003). The integrated treatment model is the most widely accepted modality for effectively treating co-occurring disorders (Lehman, et al., 2000; Whitten, 2004). Integrated treatment designs consider both disorders as primary and therefore treatment is generally provided within the same setting by cross-trained staff (Lehman, et al., 2000; Whitten, 2004). Correctional institutions, however, often lack the ability to offer integrated treatment programs due in part to limited resources, staff untrained in co-occurring disorders, and space constraints limiting the ability of prisons to segregate offenders with co-occurring disorders from the general population (Peters, et al., 2004).

The multifaceted and complex nature of co-occurring disorders present unique challenges to prison administrators on many levels. The heterogeneity of symptoms in individuals with co-occurring disorders makes assessment, treatment and compliance more problematic than singular disorders. Because symptoms of singular disorders are often exaggerated when they interact with other disorders, so do the behavioral components of each. Further complicating the clinical picture, individuals with co-morbid disorders are more likely to suffer from severe and chronic medical, social and emotional problems (Foundations Recovery Network, n.d.). Acute and chronic alcohol and other drug use cannot only worsen the severity of psychiatric disorders, but prompt re-

emergence of dormant psychiatric symptoms, and/or prompt the development of psychiatric disorders (Foundations Recovery Network, n.d.). Thus, the interactive character of co-morbid disorders in conjunction with the stressful environment of a correctional setting may well serve to increase problems of maladjustment among this subgroup of the inmate population.

The Current Research Study

The empirical understanding of the role played by mental illness and substance use disorders in inmate adjustment is limited. Prior studies have showed mental illness and substance use disorders as single disorders are associated with higher rates of prisoner misconduct. There are, however, many limitations in the current institutional adjustment literature, some of which this study specifically addresses. First, this study focused on female offenders, who have been largely understudied in criminal justice research and more specifically in the prison adjustment literature. Further, no exclusions were made in terms of mental health diagnoses for inmates, thereby allowing for a more inclusive spectrum of mental illness to be evaluated, not just severe disorders. In a study evaluating the impact of mental illness on inmate adjustment, Toch and Adams (1986), created an ordinal scale of disorder severity. Their findings suggested that inmates with more severe mental health problems were more likely to be involved in prison misconduct. The current study conducted an exploratory analysis using Axis I and Axis II diagnoses to further examine whether specific types of mental health diagnoses have differential effects on inmate adjustment.

This study also expanded diagnostic classifications to look beyond singular disorders and assess the interactive nature of more than one disorder on inmate

adjustment. The study did so by not only examining co-occurring disorders, but comparing them with singular disorders and inmates with no disorders to better understand the extent of differences between these groups. Although interactional analysis between organizational level and individual level factors could not be conducted in the current study, the institution in which the inmate was primarily housed and the amount of treatment exposure an inmate had during the incarcerated period were statistically controlled for in the models.

To further advance our understanding of not only the effect of specific disorder types on inmate adjustment, this study examined disciplinary sanctions for each subgroup to assess for differences in correctional responses. Current literature, though limited, suggests that inmates with mental health disorders are more likely to be segregated from the general population or receive cell confinement (Human Rights Watch, 2003; Wexler, 2003).

Hypotheses

Based on the existing gaps in the adjustment literature and the limited understanding of the influence of co-occurring disorders on inmate misconduct, this dissertation seeks to expand this understanding by comparing inmates with co-occurring disorders with singular (e.g. mental illness only and substance use disorders only) and no disorder subgroups. In response to findings from prior studies as outlined in the literature review, the following hypotheses are proposed.

H_1 Mental illness, substance abuse/dependence, and co-occurring mental illness and substance use disorders will be positively and significantly associated with inmate

misconduct, net the effects of other known or possible correlates of institutional misconduct and socio-demographic characteristics.

H_2 The additive and interactive nature of co-occurring disorders will exacerbate inmate misconduct beyond singular disorders (e.g. mental illness or substance abuse/dependence), net the effects of other known or possible correlates of institutional misconduct and socio-demographic characteristics.

H_3 Inmates with mental health disorders *or* co-occurring mental health and substance use disorders will have higher rates of misconduct compared to inmates with no disorders, net the effects of other known or possible correlates of institutional misconduct and socio-demographic characteristics.

H_4 More serious mental health disorders will increase the likelihood of misconduct involvement.

H_5 Inmates with mental illness or co-occurring mental illness and substance use disorders will be involved in more serious misconduct per the Pennsylvania Department of Correction's guidelines compared to inmates with substance use disorders only or those with no disorders

H_6 Inmates with mental illness or co-occurring mental illness and substance use disorders will receive harsher sanctions compared to inmates with no disorders or substance dependence disorders only controlling for all misconduct charges.

H_7 Inmates with co-occurring mental illness and substance use disorders will receive harsher sanctions controlling for all misconduct compared to all other categories of inmates.

Chapter 3 presents the methodology used in this study to test the aforementioned hypotheses. The sample, data collection methods, and proposed analyses will be outlined.

CHAPTER 3

METHODOLOGY

This chapter provides a detailed description of the data source, sample, and variables used in the analysis. It further describes how the variables are operationalized and the statistical methods used to analyze the relationship between the independent (disorder category) and dependent (misconduct) variables.

Data Source and Sample

The data used in the current study is from official records kept by the Pennsylvania Department of Corrections. All data used for this study were routinely collected and maintained electronically by the PADOC. Data provided were for all female state prison inmates incarcerated in the State of Pennsylvania between January 1, 2007 and July 30, 2009 (N=2,279) who were either currently serving or had served time at one of two women's correctional facilities maintained by the PADOC (State Correctional Institution (SCI) Cambridge Springs, SCI Muncy), or the co-educational boot camp, Quehanna.

Because the intake diagnostic and classification process takes approximately four-to-six weeks, this study filtered out all inmates who were incarcerated for a period of less than four months, which was too short a time for them to receive their permanent placement in an SCI and have time to elapse for the dependent variables (i.e. misconduct to occur). This reduced the sample size to 2,164 cases. Descriptive analysis of variables related to how inmates were categorized in the current study by disorder subgroups (e.g. mental health problems, substance use disorders) revealed 398 cases (18.4%) with missing scores from the Texas Christian University Drug Screen II (TCU). Imputing

missing data for the TCU Drug Screen II was not considered appropriate since this is one of the two major criterion variables for inclusion in the sample (the other being mental health disorders). Therefore, cases with missing TCU Drug Screen II scores were removed from the sample, reducing the sample to its final size of 1,766 cases. Applications were made and subsequent approvals were obtained from Temple University's Institutional Review Board and the Pennsylvania Department of Correction's Board of Review. All data were de-identified by the PADOC with control numbers issued by the Department of Corrections instead of inmate numbers or names.

SCI Cambridge Springs is a minimum security facility located in Crawford County, Pennsylvania, and typically houses female inmates nearing their release date. SCI Muncy is located in Lycoming County, Pennsylvania, and serves as the diagnostic and classification center for state female inmates. SCI Muncy is classified as a close-security prison responsible for housing all female inmates incarcerated for capital offenses. Quehanna is a military style motivational boot camp located in Karthaus, Pennsylvania, and is classified as a minimum security facility, housing both men and women. Inmates who successfully complete the rigid six-month disciplinary and training program at Quehanna are parole upon completion (PADOC, n.d.).

All of the women in the sample were court commitments. Thirty-five percent of the sample was incarcerated in 2007, 42% in 2008, and 23% were admitted between January 1, 2009 and July 30, 2009. Among the sample, more than half (68.2%, N=1204) were still actively serving their sentences (see Appendix C for a complete list of inmate sentence statuses) (see Table 1 for demographic information).

Measures

Dependent Variables

Prison misconduct. The primary dependent variable is misconduct. Misconduct is defined by the PADOC as "a written report completed in response to a violation of a formal rule or regulation by an inmate in the custody of the Department" (PADOC, 2006, p. 10). Every rule violation receives a formal written misconduct report (DC-141), stating the charge(s) and the facts upon which the charge(s) are based (PADOC, 2008). The misconduct report is written by either the charging staff member or contracted employee with direct knowledge of the violation and submitted to the Shift Commander or Officer-in-Charge before the conclusion of their shift. The Shift Commander investigates and reviews the complaint, and if approved, provides a copy of the report to the inmate. The Shift Commander also maintains the authority to refer the matter for informal resolution rather than approving the complaint. Regardless of the Shift Commander's final decision to either approve the misconduct complaint or refer it for informal resolution, he/she enters all pertinent information related to the charge in the Department's misconduct tracking system.

Therefore, all charges of misconduct whether disposed of through an informal or formal hearing process are recorded and maintained in the PADOC's electronic database. Inmates found not guilty of their charge have the misconduct removed from their personal file, but the charge and disposition of the hearing are recorded in a separate file for the remainder of the prisoner's incarceration or until such they are transferred to another facility (PADOC, 2008) . The data used in this study contained all recorded misconducts whether or not the inmate was found guilty.

Three measures of misconduct were created for the current study. The first was a dichotomous variable noting whether the inmate was charged with *any* infraction regardless of the level of seriousness (0 = yes, 1 = no). The second was a three-category dependent variable for examining varying levels of misconduct (0 = minor misconduct, 1 = serious misconduct, and 2 = no misconduct). The definitions of "serious" or "minor" misconduct were based on the guidelines stipulated in the PADOC Inmate Handbook provided to inmates at intake as outlined in the PADOC "inmate discipline" policy DC-ADM 801(see Appendix D). The final measure was a count variable for the total number of misconduct charges.

Misconduct charges can be classified as either a Class I or Class II charge. Class I and II charges considered to be minor are subject to informal resolutions by the Unit Management Team where the Secretary has approved their use in this manner (Unit Management teams are individuals assigned to operate a housing unit with responsibility for security, risk management and program delivery) (PADOC, 2009, p. 12). Class I charges that are considered serious violations must be resolved formally by a Hearing Examiner. Each misconduct charge was compared to the PADOC disciplinary policy for Class I (formal hearing resolution only charges) and Class I and II charges subject to informal resolutions. Classification of seriousness was determined by the majority ranking. Although inmates could have multiple misconduct charges, only the most serious charge was coded.

Disciplinary sanctions. At the conclusion of disposition hearings for charges of misconduct, inmates found guilty receive a disciplinary action. As noted above, inmates found not guilty have their misconduct charge removed from their personal file, but it is

still retained in a separate file (PADOC, 2008). A dichotomous variable was created to measure the seriousness of disciplinary action (0 = minor, 1= serious) (see Appendix E for the complete list of PADOC sanctions). "Minor" actions include removal from job assignment, revocation of privileges (e.g. telephone, television, radio, commissary, visitation, and yard), reprimand, warning, counseling, confiscation of contraband, or payment of property loss. "Serious" actions include cell restriction, disciplinary custody, or revocation of pre-release status. Sanctions classified as "serious" were defined in part due to their inherently harsher nature compared with other sanction types and based on the literature review.

Independent Variables

The primary independent variables for this study included the four inmate diagnostic subgroups: (1) Mental health problems only - inmates who have met the PADOC criteria for a mental health disorder, but are not considered to have a substance dependence or abuse problem, (2) Substance abuse or dependence only - inmates that meet the criteria for a substance dependence or abuse disorder, but are not deemed to have a mental health disorder, (3) Co-occurring disorders (COD) - inmates who have met both the criteria for a mental health disorder and a substance dependence or abuse problem, and (4) No disorder - inmates that are not considered by the PADOC to have either a mental health disorder or a substance dependence or abuse problem (see Table 3 for distribution of disorder groups).

Determination of classification categories for the above four groups was based upon the diagnostic and classification assessments undertaken by the Department of Corrections at the time of intake. Any diagnostic re-assessments made by the

Department of Corrections during an inmate's incarceration period were not included in this study due to the limited availability of data and the lack of consistency in reassessing all inmates. Intake diagnostic screenings and assessments for female inmates entering facilities under the control of the PADOC are undertaken at the State Correctional Institution at Muncy or Camp Hill.

Intake screening and assessments occur over a four to six week period. During this time, inmates are administered personality inventories, intelligence quotient tests (IQ), academic achievement testing, the Texas Christian University Drug Screen II (TCU Drug Screen II) for alcohol and drug related disorders, and the Level of Service Inventory - Revised (these diagnostic instruments will be discussed in greater detail below). In conjunction with these tests, inmates undergo interviews with counselors, psychologists, and drug and alcohol treatment specialists. They are also assessed by chaplains, medical staff and educators.

Mental health disorders. Mental health disorder was coded as a dichotomous variable (0 = no disorder / 1 = yes to a mental health disorder). Criteria for meeting the diagnostic classification of a mental health disorder or mental retardation by the PADOC are established through a battery of psychometric tests[3] designed to evaluate intelligence, achievement, personality, and emotional stability, administration of the Personality Assessment Inventory (PAI) by psychology staff, inmate interviews, and prior mental health history (PADOC, 2004).

The PAI is a screening instrument that contains 344 items constituting 22 non-overlapping scales providing a comprehensive assessment of adult (18 years and older)

[3] Basic assessment screenings for inmates at intake include: (1) Test of Basic Education (TABE) to determine levels of illiteracy, (2) Hostile Interpretation Questionnaire, Criminal Sentiments Scale Modified, and (4) Personality Assessment Inventory

psychopathology (Morey, 2003). The PAI contains 4 validity scales, 11 clinical scales, 5 treatment scales, and 2 interpersonal scales. The scales were developed to provide information on 11 clinical constructs which can be divided into3 broad classes of disorders: neurotic spectrum, psychotic spectrum, and those associated with behavioral disorder or impulse control problems. Reliability and validity tests of the PAI are based on data from a U.S. census matched normative sample of 1,000 community adults, a sample of approximately 1,200 patients from 69 clinical sites and a college sample of 1,051 (Morey, 2003). Reliability studies found the PAI had a high degree of internal consistency across samples with results stable over a period of 2 to 4 weeks (Morey, 2003). Psychology staff also administers the Revised Beta III to every inmate. Any inmate scoring a 69 or below is recommended for further testing to rule out mental retardation or developmental disabilities (PADOC, 2004; Welsh, 2003).

Should an inmate display evidence of a mental illness based on the results of the psychological testing, have a past history of mental health problems, or mental illness is evidenced during the intake interview, they receive additional and more comprehensive psychiatric evaluations (M. Antonio, personal communication, October, 2009). If the comprehensive assessment warrants, the inmate is then placed on the Department of Correction's Mental Health and Mental Retardation Roster (MH/MR) with a diagnosis based on the ICD/DSM-IV[4] criteria along with a treatment plan.

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[4] The *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*) is the standard classification of mental disorders used by mental health professionals in the United States. It is intended to be applicable in a wide array of contexts and used by clinicians and researchers of many different orientations (e.g., biological, psychodynamic, cognitive, behavioral, interpersonal, family/systems). The *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (*DSM-IV*) has been designed for use across

Classification of mental health disorders by the PADOC range from any mental health disorder or mental retardation to serious disorders in which the inmate "has a substantial disorder of thought or mood which significantly impairs judgment, behavior, capacity to recognize reality, or cope with the ordinary demands of life" (PADOC, 2003, p. 1).

This study did not measure each of the independent psychiatric assessments or interview data due to the high rates of missing data and narrative style of the interview data. Rather, this study used the final assessment made by the psychiatric staff of the PADOC that a mental health disorder was present as indicated by placement on the MH/MR roster. All inmates placed on the Mental Health/Mental Retardation Roster are either currently or have in the past received some form of mental health treatment designed to meet their needs. Past treatment refers to any treatment that has been given during the current incarceration, but is not presently being provided (M. Antonio, personal communication, October, 2009).

An additional mental health variable was created specific to the DSM-IV diagnostic Axis code (e.g. Axis I or Axis II) to explore whether differential rates and seriousness of misconduct between Axis I and Axis II mental health diagnoses are present. International Classification of Disease code (ICD) data were provided by Dr. Nicholas Scharff, MD., MPH, Chief of Clinical Services, Bureau of Health Care Services

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clinical settings (inpatient, outpatient, partial hospital, consultation-liaison, clinic, private practice, and primary care), with community populations. It can be used by a wide range of health and mental health professionals, including psychiatrists and other physicians, psychologists, social workers, nurses, occupational and rehabilitation therapists, and counselors. It is also a necessary tool for collecting and communicating accurate public health statistics.

for the Department of Corrections. A dichotomous variable was created (0 = Axis I, 1 = Axis II). Axis I disorders include clinical syndromes and learning disorders; Axis II include developmental and personality disorders) (see Appendix F for a complete list of Axis I and Axis II diagnoses).

The DSM-IV employs a multiaxial system of classification and assessment referring to different domains of information relevant to treatment planning and predicted outcome (American Psychiatric Association, 2000; Erlich,n.d.). There are five Axes included in the DSM-IV multiaxial classification: Axis I (clinical disorders and other conditions that may be a focus of clinical attention), Axis II (personality disorders and mental retardation), Axis III (general medical conditions), Axis IV (psychosocial and environmental problems), and Axis V (global assessment and functioning) (American Psychiatric Association, 2000). Inmates in this study sample had mental health diagnoses meeting the criteria for only Axis I and Axis II, which are the most common diagnostic classifications.

Substance abuse or dependence disorders. Substance abuse or dependence was coded as a dichotomous variable (0 = no substance use disorders, 1 = substance use disorders). Substance dependence is assessed using the Texas Christian University Drug Screen (TCU) II. The TCU Drug Screen II is used throughout criminal justice agencies nationally and validated with inmate populations (Broome, Knight, Joe, & Simpson, 1996; Knight, Simpson, Morey, 2002; Peters, et al., 1998; Shearer & Carter, 1999; Simpson, Knight, & Broome, 1997; Zajac, 2007). It has been further demonstrated to be reliable and effective when used to assess the severity of drug use problems (Broome, et

al., 1996; Knight, et al., 2002; Peters, Greenbaum, & Edens, 1998; Shearer & Carter, 1999; Simpson, et al., 1997).

The TCU Drug Screen II is a standardized 15 item screening instrument developed to identify individuals with a history of heavy drug/alcohol use or dependence in the past 12 months (in the case of inmates, the 12 months prior to their incarceration) and has been used by the PADOC for all incoming inmates since January 2001 (Zajac, 2007). Nine of the 15 items are factored into the scoring for dependence and the final 6 items provide further clinical insights (Zajac, 2007). The first section assesses drug and alcohol use problems and the second is designed to address frequency of use and readiness for treatment (Institute of Behavioral Research, Texas Christian University, 2009). Thus, the scores range from 0 to 9 with a score of 3 or greater indicative of substance dependence (Institute of Behavioral Research, Texas Christian University, 2009; Zajac, 2007). This study measured substance use disorders as any inmates with a score of 3 or more on the TCU Drug Screen II.

The TCU Drug Screen II can be either self administered or conducted by an interviewer and takes approximately 5 minutes to complete. Clinical language for the questionnaire is at an eighth grade reading level to promote reliable self administration The clinical and diagnostic criteria for substance abuse or dependence in the TCU Drug Screen II are representative of those found in the DSM-IV and the National Institute of Mental Health Diagnostic Interview Schedule (NIMH DISC) (Zajac, 2007).

Co-occurring disorders. Co-occurring disorders was coded as a dichotomous variable (0 = no co-occurring disorders, 1 = co-occurring disorder). Any inmate meeting the criteria specified above for a mental health disorder (e.g. placement on the mental

health roster) *and* substance use disorder (TCU Drug Screen II score of 3 or greater) was classified as having a co-occurring disorder.

No disorders. No disorders was coded as a dichotomous variable (0 = no disorders, 1 = reference group). Inmates placed in the "no disorder" subgroup did not meet the criteria for either a mental health disorder or substance use disorder.

Covariates

Control variables were selected based upon prior empirical support demonstrating their relationship with inmate misconduct. The covariates in this study include age, race, educational achievement, intelligence quotient scores, reading grade level, marital status at the time of admission, prior and current criminal history as measured by the criminal history subscale of the Level of Service Inventory-Revised, prison-based treatment exposure, length of current incarceration, and primary institution.

Socio-demographic variables. Age upon the current admission date to DOC was measured as a continuous variable with a range of 18 to 79 years (mean = 37 years of age). Race was coded into four mutually exclusive categories: 0 = White non-Hispanic (N = 902, 61.4%), 1 = African-American non-Hispanic (N=446, 30.3%), 2 = Hispanic (N=106, 7.2%), and 3 = Other (N=16, 1.1%). The "other" category was originally defined by the PADOC and comprised .7% of the sample. Due to the small number of Native Americans and Asians in the sample comprising less than .5% of the total sample, these cases were merged into the "other" category. Grade level was examined in the current study as a continuous variable (range = grades 4 to 18, mean = grade 11). Grades 13 through 18 indicate continued education post high school.

This study also controlled for intelligence quotient (IQ) scores in conjunction with grade level completion. IQ scores should provide a more valid measure of intelligence compared with completed grade level; maximum grade level could be a measure of multiple factors including socio-economic status. Therefore, IQ scores may focus more specifically on the possible influence of intelligence level on prisoner misconduct. Intelligence Quotient scores have a mean of 100 and a standard deviation of 15. Individuals who scores 130 or above are considered gifted. Scores ranging between 110 and 129 are considered bright normal to very high. Average scores are considered between 90 and 109. Scores below 90 are considered low normal to severely retarded. (Kaufman & Lichtenberg, 2006). Intelligence scores were coded as a continuous variables (range = 60-153, mean = 95). The mean IQ score for the sample in the current study resembles those reported in the Pennsylvania Department of Corrections Education Outcome Study with a mean of between 92 and 94 for their comparison groups (Smith, 2005).

The current research study also controlled for the reading level of inmates using scores from The Wide Range Achievement Test – Revised (WRAT-R). WRAT-R is divided into three subtests designed to test a person's basic skills of reading, writing and arithmetic. The PADOC limits their use of the WRAT-R to reading skills only with scores converted to grade equivalents. For example a score of 450 would indicate a reading level between the 4^{th} and 5^{th} grade. These scores were coded as a continuous variable and ranged from illiterate to first year college with a mean reading level of 8^{th} grade. The mean reading level for the sample in the current study resembles those

reported in the Pennsylvania Department of Corrections Education Outcome Study with a mean between 8th and 9th grade reading level for their comparison groups (Smith, 2005).

The WRAT-R is one of the most highly used screening instruments for evaluating learning disabilities (Kareken, Gur, & Saykin, 1995; Witt, 1986). According to Witt (1986), earlier versions of the WRAT were highly criticized due to their short length, poor content and criterion-related validity and reliability figures. The revised version currently used by the PADOC has made improvements on earlier versions in the standardization sample and changes in format and item content (Witt, p. 89). Authors of the WRAT have assessed test reliability from multiple perspectives finding that the instrument is reasonably reliable across subtests and age levels. Test-retest reliability coefficients range from a low of .79 to .97. Validity tests have showed a moderately high correlation between the WRAT-R subtests and the Woodcock-Johnson Achievement subtests (Center for Psychological Studies, n.d). The manual reports very high correlations (i.e. .91 to .99) between the earlier version of the WRAT and the revised version (Center for Psychological Studies, n.d). However, there are criticisms regarding the evidence to support the validity of this instrument (see Center for Psychological Studies, n.d ; Witt, 1986 for a more thorough discussion).

Marital status was coded as a dichotomous variable (0 = no, 1 = yes). Studies have generally found inmates married at the time of incarceration are less likely to engage in misconduct. (see Acevedo & Bakken, 2003; Myers & Levy, 1978; Toch, et al., 1989). The current study coded any inmate reporting herself to be single, divorced, separated or widowed at the time of the current incarceration as “not married”.

Criminal history. Criminal history was measured using the Criminal History Subscale of the Level of Service Inventory – Revised (LSI-R), which is a 54 item actuarial classification instrument designed to assess criminogenic risk and need (Flores, Lowenkamp, Smith, & Latessa, 2006). The LSI-R is an objective instrument that is based on theory and has been empirically validated on diverse samples of offenders (Andrews & Bonta, 1995). The criminal history subscale is one of ten domains included in the LSI-R (Andrews & Bonta, 1995). The robustness of the LSI-R as a valid predictor of outcome in the correctional setting has been widely supported (Flores et al., 2006; Kelly & Welsh, 2008). Collinearity diagnostics were conducted between the full LSI-R and its criminal history subscale component to determine if both scores could be controlled for in the study. Diagnostics revealed the VIF and Tolerance levels to be within acceptable margins. However, initial regression models with scores from both the LSI-R and the criminal history subscale found the LSI-R to be consistently non-significant. Based on the non-significant findings and the fact that the full LSI-R is a more global assessment of criminogenic risk and need rather than a specific assessment of criminal history, the LSI-R total score was not considered to be theoretically or empirically relevant in this study. Thus, to create more parsimonious models, the LSI-R was removed as a covariate from the study with the criminal history subscale remaining.

The criminal history subscale is composed of ten items as follows: (1) Any prior adult convictions? (including the number of convictions), (2) Two or more prior convictions?, (3) Three or more prior convictions?, (4) Three or more present offenses?, (5) Arrested under age 16?, (6) Ever incarcerated upon conviction?, (7) Escape history from a correctional facility?, (8) Ever punished for institutional misconduct? (including

the number of misconducts), (9) Charge laid or probation/parole suspended during prior community supervision? (a charge laid means that there was a probation/parole violation), and (10) Official record of assault/violence? Each positive response is given a value of "1", which is then summed to equal the criminal history sub-scale total. Thus, the maximum point value is "10" (Andrews & Bonta, 1995). By using this sub-scale, this research was able to control for several aspects of an offenders criminal history including past conviction history and current offense(s). This measure also accounts for early versus later onset criminal behavior. Early onset of violent behavior and delinquency predicts more chronic violent and antisocial behavior (Farrington, 1991; Piper, 1985; Thornberry, Huizinga, & Loeber, 1995; Tolan & Thomas, 1995). Lastly, and perhaps most relevant to this study, is the fact that this sub-scale specifically addresses prior incidents of misconduct in correctional settings.

Institution. This study controlled for the primary custodial institution where the inmate was housed. "Move" sheets for each inmate in the sample were provided by the PADOC, which gives a complete list of all movements to and from various institutions made by an inmate and the corresponding dates. These movements include, but are not limited to medical, disciplinary, or administrative reasons. Therefore, the moves may be for very brief periods (e.g., less than 24 hours) or longer periods of time. Thus, the "move" sheets provide a detailed description of every institutional movement made by an inmate during their incarceration regardless of the time period spent at that facility. Based on this information, each inmate's record was examined and the primary institution assigned to them for the current study was based upon the institution that constituted the greatest amount of time. This had the effect of removing other

institutional locations where the inmate may have been temporarily housed for much shorter periods of time for classification, medical, security, or other reasons. The location variable was coded accordingly: 1 = SCI Muncy, 2 = SCI Cambridge Springs, and 3 = Quehanna Boot Camp.

Control Variables

Length of Incarceration. The longer an inmate is incarcerated increases their time at risk for misconduct and therefore should be controlled when examining involvement in misconduct and rates of misconduct. As noted above, all inmates having served a period of less than four months were removed from this study to allow for the diagnostic and classification period at intake limiting their ability to participate in misconduct and allowing transition to the general population.

Length of incarceration was measured as a continuous variable in months (range = 4 to 33 months, mean = 15.9 months). To create the length of incarceration variable for inmates already discharged, the date of admission was subtracted from their date of discharge and converted to months. Incarceration length for inmates still actively serving their sentence was created by subtracting their admission date from the date of the data run (October 21, 2009) and converted to months.

Treatment exposure. The PADOC offers a variety of treatment programs designed to meet the needs and risks of inmates (see Appendix G for a list of treatment programs offered by the PADOC). Because time in treatment may reduce time at risk for committing misconduct, as well as the potential beneficial effects of treatment in curbing misbehavior, this study controlled for total time in treatment or treatment exposure. Treatment exposure was calculated by subtracting the date of admission to the treatment

program from the date of discharge. Treatment exposure for inmates who were still actively participating in treatment at the time of the data run was created by subtracting the date of admission to the program from the\date of the data run. The total time in treatment per inmate was summed and converted to days. Because of strong empirical support regarding the importance of retention or time spent in treatment to affect post-treatment outcomes, treatment exposure was represented as a categorical variable reflecting time spent in treatment (0 = no time in treatment; 1 = 1 to 90 days; 2 = 91 to 180 days; and 3 = 181 days or more). Subjects spent an average of 131 days in treatment; 25.6% of the sample did not participate in any treatment programs.

Evaluation studies examining the time needed to affect post-treatment outcomes argue that until a minimum temporal threshold has been met, clients will not begin to show favorable outcomes (Bale, VanStone, Kuldau, Engelsing, Elashoff, & Zarcone, 1980; De Leon, Wexler, & Jainchill, 1982). For example, findings from the Drug Abuse Treatment Outcome Study (DATOS), a longitudinal prospective study of adults entering drug treatment programs, reported in a one year follow-up of clients in multiple treatment modalities that reductions in daily and weekly cocaine use were greater for clients who remained in treatment for 3 months or more (Hubbard, Craddock, Flynn, Anderson, & Etheridge, 1997). Similar results were found in the Drug Abuse Reporting Program (DARP), a large scale national evaluation of community based drug abuse treatment programs (Sells & Simpson, 1980). Individuals participating in treatment programs who remained in treatment for greater than 3 months did well, while clients who remained in treatment for less than three months and clients receiving no treatment had the worst overall outcomes (Sells & Simpson, 1980).

Analyses

The primary goal of the analysis was to assess whether the additive and interactive nature of co-occurring disorders exacerbates institutional misbehavior resulting in higher rates of prison misconduct compared to mental health problems or substance use disorders only. Comparisons among inmates with singular disorders and no disorders were also made to further assess the degree of difference between the four disorder groups.

To test the hypotheses proposed in the current study, a series of logistic and multinomial logistic regression models, survival analysis using Cox proportional hazards regression, and negative binomial regression were estimated. Prior to completing the regression models, a series of descriptive, univariate, and bivariate analyses were undertaken. Univariate analyses of each predictor were conducted to examine their distributional properties and to assess the extent of missing values in the data. Continuous variables were also examined for the possibility of extreme outliers that might bias the results.

Missing data must be considered analytically different from cases where values are present (Tabachnick & Fidell, 2006). Decisions on how to respond to missing cases, particularly using archival data, are discretionary and are usually based on the percentage of cases missing for each variable. According to Tabachnick and Fidell (2006), the seriousness of missing values depend on the pattern of the missing data, the extent of missing data, and why the data are missing (Tabachnick & Fidell, 2006, p. 59). When there are a small number of missing cases (for example, < 5% in larger samples and the pattern is random), it is generally considered not serious and it is common to drop those

cases from the analysis (Tabachnick & Fidell, 2006). However, as Tabachnick and Fidell (2006) further suggest, the pattern of missing data is more important than the amount of missing data.

In the current study, no single variable accounted for a large proportion of missing cases. One variable accounted for .2% missing values; one other variable accounted for 8% missing values. For only three variables did each have missing values exceeding 10% (11.8% missing per variable). Comparisons of the total eligible sample (maximum N = 1766) with the final sample using listwise deletion (N = 1470) were undertaken using one-sample t-tests (Table 1). Mean differences were very small, although 4 of 17 mean comparisons were statistically significant. Due to the large sample size and the number of comparisons, some differences were expected (Tabachnick and Fidell, 2006).

An additional strategy considered was mean substitution (i.e., inserting mean values for variables with missing cases). Mean substitution offers a way to estimate missing values with means calculated based on available data (Tabachnick & Fidell, 2006). Although this is often considered a reasonable method because the mean of the distribution as a whole does not change, the variance of a variable is reduced because the mean is closer to itself than to the missing value it replaces; and the correlation the variable has with other variables is reduced because of the reduction in variance (Tabachnick & Fidell, 2006). Thus, mean replacement can distort results and is generally considered a less optimal option than listwise deletion (Pallant, 2006). Because the analysis suggested that the missing values did not follow a systematic pattern, this study used the most conservative approach to missing data, listwise deletion.

Table 1. Descriptive Statistics for Total Sample and Final Sample Using Listwise Deletion

Variable (Min, Max)	Total Sample			Final Sample			Sig.
	Mean	SD	N	Mean	SD	N	
Incarceration Length (4-33)	14.48	7.35	1,766	15.97	6.92	1,470	***
Location (0-2)	.48	.58	1,766	.54	.597	1,470	***
Age (18-79)	36.81	9.87	1,766	36.87	9.71	1,470	
Race (0-3)	.49	.69	1,766	.48	.68	1,470	
Marital Status (0-1)	.15	.35	1,762	.14	.35	1,470	
Current Offense Type (0-1)	.25	.44	1,766	.25	.44	1,470	
IQ Score (60-153)	94.39	14.24	1,552	94.90	14.20	1,470	
Final Grade (4-18)	11.26	1.73	1,554	11.29	1.71	1,470	
WRAT Score (0-135)	83.94	33.58	1,549	84.68	33.37	1,470	
Criminal Subscale (1-10)	4.87	1.97	1,619	4.88	1.97	1,470	
Disorder Group (0-3)	1.34	.94	1,766	1.33	.91	1,470	
Any Misconduct (0-1)	.31	.46	1,766	.34	.47	1,470	*
Seriousness of Charge (0-2)	1.55	.72	1,766	1.52	.74	1,470	
Treatment Exposure (0-3)	1.49	1.27	1,766	1.73	1.21	1,470	***
Misconduct Count (0-144)	3.52	10.34	1,766	3.80	10.67	1,470	
Sanction Type (0-2)	.57	.87	1,766	.61	.89	1,470	
Axis Codes (0-2)	.83	.66	1,766	.84	.65	1,470	

*$p < .05$, ***$p < .001$

Note: Additional descriptive statistics are provided in Table 2 for the categorical variables.

Descriptive Statistics

The descriptive statistics provided in Tables 1 and 2 show that on average female prisoners were 36.8 years old. Over half (61.4%) were White and non-Hispanic; 30.3% were African-American and non-Hispanic; 7.2% were Hispanic; and 1.1% were reported as other races/ethnicities. Fourteen percent were married at the time of incarceration. The average grade level completed by the women was eleventh.

Table 2. Breakdown of Categorical Variables (N=1470)

	Percentage	Frequency
Demographic Variables		
Race		
White	61.4	902
African-American	30.3	446
Hispanic	7.2	106
Other	1.1	16
Married	14.3	210
Risk Scores		
Control Variables		
% Discharged	23.5	345
Treatment Exposure (Days)		
None	25.6	377
1 to 90	14.3	210
91 to 180	21.5	316
181 +	38.6	567
Current Offense		
Violent	25.4	373
Non-violent	74.6	1097
Institutions		
SCI Muncy	51.1	751
SCI Cambridge	43.5	640
Quehanna Boot Camp	5.4	79
Independent Variables		
No Disorders	10.8	159
Substance Use Disorders	19.1	281
Mental Health Disorders	5.8	85
Co-occurring Disorders	64.3	945
Mental Health Axis Codes*		
Axis I	79.5	819
Axis II	20.5	211
Dependent Variables		
No Misconduct	69.9	1028
Minor	12.7	187
Serious	17.3	255
Level of Sanctions		
Minor	16.1	71
Serious	83.9	371

* Axis code variables reflect only those inmates with DSM-IV mental health diagnoses (N = 1030)

The mean intelligence quotient score was 94.9, which would place most of the inmates in the average intelligence category. WRAT scores showed the average reading level to be eighth grade. At the time the data were collected for this study, 23.5% of the women had been discharged with an average length of incarceration for the sample being 15.9 months. Twenty-five percent of the sample had at least one violent offense conviction for which they were currently serving time. As expected, most of the women were primarily housed at SCI Muncy and SCI Cambridge (51.1% and 43.5% respectively) with only 5.4% housed at Quehanna Boot Camp. The average score for the criminal history subscale of the LSI-R was 4.8.

The majority of the women who received some form of treatment during the current incarceration received 180 days or more (38.6%). Approximately 14%of the women received between 1 and 90 days of treatment and 21.5% had between 91 and 180 days of programming. At the time of data collection, 25.6% of the sample was reported as having received no treatment.

The majority of the sample had not been charged with any misconduct (69.9%), 12.7% were charged with a minor misconduct, and 17.3% with a serious infraction. For inmates found guilty of their misconduct charges, 16.1% received a minor level sanction(s) and 83.9% were given at least one serious level sanction.

Tables 1 and 2 further shows that more than half of the female inmates in the sample had a co-occurring mental health and substance use disorder (64.3%). Women with substance use disorders only comprised 19.1% of the sample; 5.8% were diagnosed with a mental illness, but no substance use disorder, and 10.8% did not meet the criteria for either a mental health or substance use disorder.

Descriptive statistics were then examined for the predictors and dependent variables by disorder subgroups (Table 3). These statistics are presented for descriptive purposes only, in order to examine whether the four disorder groups initially differed on any of the predictors, prior to testing the hypotheses with multivariate analyses.

Table 3. Descriptive Statistics by Diagnostic Classification Subgroups (N=1470)

	Co-occurring Disorder	**Mental Health Disorder**	**Substance Use Disorder**	**No Disorder**	
	(N=945)	**(N=85)**	**(N=281)**	**(N=159)**	**Sig**
Demographics					
Race (%)					***
White	65.8	57.6	56.9	44.7	
African-American	26.8	27.1	35.9	43.4	
Hispanic	6.6	11.8	6.0	10.7	
Other	0.8	3.5	1.1	1.3	
Age (M)	37.2	37.4	35.8	36.3	
Education (M)	11.1	11.7	11.3	11.8	***
IQ Level (M)	93.8	94.1	98.0	96.2	***
WRAT Scores (M)	84.3	85.4	86.2	83.4	
Married (%)	13.0	21.2	12.8	20.8	*
Risk Scores					
TCU Score (M)	5.6	.1	5.4	.1	***
Control Variables					
Incarceration Length (M)	15.9	18.1	15.6	15.8	*
Criminal Subscale Score (M)	5.2	4.0	4.7	3.8	***
Current Offense					***
Violent (%)	23.2	45.9	25.3	27.7	
Non-violent (%)	76.8	54.1	74.7	72.3	
Location (%)					
Muncy	52.0	60.0	48.0	46.5	
Cambridge Springs	42.0	37.6	47.3	49.1	
Quehanna Boot Camp	6.0	2.4	4.6	4.4	
Treatment					***
Total Exposure (Days)(M)					
None	22.3	31.8	27.8	38.4	
1 – 90 days	13.1	20.0	13.9	18.9	
91 – 180 days	20.3	23.5	25.3	20.8	
181 + days	44.2	24.7	33.1	22.0	

*p <.05, **p < .01, ***p < .001

The majority of inmates with co-occurring disorders, mental health disorders, and substance use disorders were White and non-Hispanic (65.8%, 57.6% and 56.9% respectively). African-American non-Hispanic inmates comprised the second most frequent category of inmates among these 3 subgroups (26.8%, 27.1%, and 35.9% respectively). Hispanics comprised 6.6% of the co-occurring disorder subgroup, 11.8% of inmates with mental illness, 6.0% of the substance use disorder group and 10.7% of those inmates with no disorders.

The average age was approximately 36 to 37 years for all groups. Grade level completed and reading levels were very similar among all four subgroups. IQ scores ranged between 94 and 98 among the four groups, which would indicate that most of the women in each group are considered to be of average intelligence. All subgroups had an average eighth grade reading level.

Mentally ill inmates had slightly longer average lengths of incarceration. Women with mental health disorders and no disorders had mean scores of approximately 4 on their LSI-R criminal history subscale; women with co-occurring disorders and substance use disorders had average criminal history subscale scores of about 5. Less than one quarter of the women with co-occurring disorders (23.2%) were serving time for at least one violent offense. Twenty-five percent of females with substance use disorders and approximately 28% with no disorders had at least one violent conviction. Almost half (45.9) of the women with mental illness were convicted of at least one violent crime.

A majority of the women regardless of subgroup were housed at SCI Muncy; 52.0% with co-occurring disorders, 60.0% with mental health disorders, 48.0% with substance use disorders, and 46.5% with no disorders. In terms of treatment exposure,

women with co-occurring disorders were most likely to receive 180 days or more of treatment (44.2%); compared to 24.7% of women with mental illness, 33.1% of substance use disorder inmates, and 22.0% of inmates with no disorders. received 181 plus days of treatment.

Hypothesis testing was accomplished using different analytic strategies. Initial bivariate analyses were examined to assess the relationship between disorder type and institutional misconduct (any misconduct, minor misconduct, serious misconduct). For inmates found guilty of prison misconduct, a second bivariate analysis was conducted comparing the seriousness of disciplinary response to inmate misconduct by each of the disorder types.

Following bivariate analyses, a series of logistic, multinomial logistic, Cox regression, and negative binomial regression models were conducted to determine whether differences in the probability of prison misconduct among female inmates with mental illness, co-occurring disorders, and/or substance use disorders persisted net of statistical controls. The first series of logistic regression models testing for hypotheses 1 and 3 examined the probability of engaging in "any" misconduct. As discussed in Chapter 2, it was hypothesized that inmates with substance use disorders, mental illness, or co-occurring disorders would be more likely to engage in prison misconduct than inmates with no disorders. It was further hypothesized that inmates with mental illness only or co-occurring disorders were more likely to be charged with misconduct than inmates with no disorders.

Still examining the probability of "any" misconduct involvement, the next set of logistic regression models controlled for the interaction between treatment exposure and

disorder groups. The interaction of treatment exposure and disorder group was conducted to determine if the impact of specific disorder types on prison misconduct was moderated by exposure to treatment.

The next set of logistic regression models tested the fourth hypothesis proposed in this study which posited that that type of mental health diagnosis will influence the likelihood of an inmate engaging in disruptive behaviors. To accomplish this, the logistic regression model controlled for DSM-IV Axis I and Axis II mental health diagnoses.

To examine the fifth hypothesis, a series of multinomial regression equations were conducted for a three-category dependent variable predicting the probability of varying levels of misconduct (no misconduct, serious misconduct, or minor misconduct). It was hypothesized that an inmate with mental illness or COD would be involved in more serious misconduct compared to inmates with no disorders. There were two parts to this analysis. First, the probability of minor misconduct (versus no misconduct) was assessed. Second, the predictors of serious misconduct (versus no misconduct) were examined.

After examining the probability of varying levels of misconduct for each of the disorder subgroups, a logistic regression model was conducted to test hypotheses 6 and 7. These models examined the seriousness of disciplinary sanctions for each of the disorder subgroups controlling for the seriousness of the misconduct

Although logistic and multinomial regression allows examination of whether any of the specific disorder groups were at an increased risk for misconduct, it does not address the question of whether differences between the groups were a function of the amount of time they were incarcerated prior to their first misconduct charge. Therefore,

survival analysis with Cox regression was conducted to assess if there were differential rates between the groups from their initial incarceration commitment date to the time of their first misconduct charge allowing for a further test of hypotheses 1 and 3.

Survival analysis allows for the examination of whether there are group differences in survival rates (i.e. first misconduct charge) after controlling for other variables (Tabachnick & Fidell, 2006). Prediction of survival time from covariates is similar to logistic regression, but controls for censored observations over time which cannot be appropriately handled in traditional OLS (Tabachnick & Fidell, 2006). Observations are *censored* when the dependent variable of interest represents the time to a terminal event, and the duration of the study is limited in time (Breslow, 1974; Schneider, 1986). For example, researchers may study the "survival" of marriages, high school dropout rates (time to drop out), or turnover in organizations. In each case, by the end of the study period, some subjects will still be married, will not have dropped out, or will still be working at the same company. These subjects represent censored observations.

The forced entry strategy was the analytic method employed, forcing all of the covariates to enter the regression at the same time (Tabachnick & Fidell, 2006). Using the forced entry method allows each covariate to be evaluated to see what it adds to the prediction of survival above and beyond the other covariates in the model. Survival analysis also allows both categorical and continuous independent variables to be entered. Time until first misconduct was calculated as the number of days that had elapsed between the commitment date to the Pennsylvania Department of Corrections and the date that an individual had their first charge of misconduct.

The final analysis was a negative binomial regression model to examine the frequency of misconduct (i.e., total number of misconducts) with respect to each of the four disorder subgroups. As part of the negative binomial regression, pairwise comparisons of the estimated means for misconduct count was conducted for each of the disorder groups to allow for comparison between groups. Thus, this analytic method was employed to examine the second hypothesis proposed in this study which proposed that the additive nature of COD will exacerbate engagement in prison misconduct beyond singular disorders. Prior to conducting count modeling, dispersion of the data (e.g. normal, quasi-normal, or severely skewed) was evaluated to determine the most appropriate method of analysis (Gravetter & Wallnau, 2004; McCullagh & Nelder, 1989; Tabachnick & Fidell, 2006). Negative binomial regression was considered the best analytic method because the dependent variable, misconduct count, was highly skewed (skewness statistics = 6.128; there were 1,211 zero values out of a sample of 1,470) and showed evidence of overdispersion (variance = 106.845, substantially larger than the mean of 3.5). Overdispersion suggests that there is more variability around the model's fitted values (Berk & MacDonald, 2008). The negative binomial variant of the Poisson-based regression is a standard method of addressing overdispersion (Berk & MacDonald, 2008; MacDonald & Lattimore, 2010; Osgood, 2000). Observed counts that have an average low count of incidents and a skewed outcome distribution presents challenges for normal OLS estimations (MacDonald & Lattimore, 2010).

Logistic regression was considered the most appropriate form of analysis for the dichotomous dependent variables because it allows for the prediction of a discrete outcome from variables that may be continuous, discrete, dichotomous, or a combination

thereof (Tabachnick & Fidell, 2006). Because logistic regression makes no assumptions about the distribution of the predictor variables; the variables do not need to be normally distributed, linearly related, or of equal variance within each group (Tabachnick & Fidell, 2006). Logistic regression can be used to determine the percent of variance in the dependent variable explained by the independent variables, to rank the importance of the independents, to examine interaction effects, and to assess the impact of covariate control variables (Tabachnick & Fidell, 2006). To estimate the odds of a certain event occurring, logistic regression transforms the dependent variable into a logit variable (the natural log of the odds of the dependent occurring or not) and is considered a better approach for modeling binary dependent variables (0 and 1) because the logistic function is bounded by 0 and 1 and therefore comes closer to "hugging" the y=0 and y=1 points on the axis (Tabachnick & Fidell, 2006).

By using logistic regression, one can also test for the adequacy of the model by assessing Hosmer and Lemeshow's goodness of fit (Myers, Gamst, & Guarino, 2006; Tabachnick & Fidell, 2006). The Hosmer and Lemeshow test is an absolute measure assessing whether the predicted probabilities match the observed probabilities (Myers et al., 2006, p.239). Therefore, ideally the goodness of fit test would yield a non-significant *p* value since the goal of the research is to gain a set of independent variables that will predict the actual probabilities (Myers, et al., 2006, pp.239-240). Multinomial regression modeling was used to examine seriousness of misconduct since the outcome variable was a three category dependent variable. All of the regression models were conducted in a two stage process, except those controlling for diagnostic Axis codes. The first models included all the covariates with the exception of the disorder subgroups. The second

models included the three independent variable subgroups (omitting the reference group). By analyzing these models in two stages, it allowed for assessment of any additional variance explained by the three dummy variables beyond the covariates, which have been empirically demonstrated to influence institutional misconduct in prior studies.

The models predicting the probability of any misconduct and varying levels of misconduct (e.g. serious or minor) that controlled for mental health Axis code diagnoses were also analyzed using a two stage process. However, due to issues of multicollinearity between the specific ICD-9 mental health diagnosis and specific disorder subgroups, the first models controlled for the three independent variable disorder subgroups (minus the reference group = no disorder) omitting the Axis code diagnoses. The second model controlled for Axis code diagnoses omitting the disorder subgroups.

An additional regression model was conducted examining the interaction between treatment exposure and disorder groups. These models were conducted in a three stage process. Model 1 included all of the covariates including the categorical variables disorder group and treatment exposure. Model 2 included all of the same predictors as Model 1 with the addition of the interaction variable. The final model in the process, Model 3, included all of the covariates found in Models 1 and 2 with the exception of the independent categorical variables disorder subgroup and treatment exposure, while still controlling for the interaction.

Prior to constructing the full models, potential multicollinearity between the predictors was inspected by examining variance inflation factors (VIF) and tolerance scores (Table 2). VIFs above 10 are considered problematic (Pallant, 2005) and tolerance

scores below .10 are also problematic (Pallant, 2005). Examination of VIF and tolerance revealed all scores to be within acceptable limits.

Table 4. Collinearity Statistics

	Tolerance	**VIF**
Length of Incarceration	.826	1.211
Location	.900	1.111
Age	.874	1.145
Marital Status	.967	1.034
Race	.853	1.172
Current Offense Type	.895	1.118
Intelligence Quotient Score	.597	1.675
Grade Completed	.769	1.301
WRAT Score	.565	1.771
Criminal History Score	.866	1.154
Treatment Exposure	.839	1.192
Mental Health Disorder	.913	1.096
Substance Use Disorder	.913	1.096
No Disorder	.864	1.158

The statistical software used for this study was SPSS version 17. The default procedure available in SPSS for entering variables using logistic regression is the forced entry method in which all predictors enter the equation simultaneously to assess their predictive ability while controlling for the effects of other predictors in the model (Pallant, 2006; Tabachnick & Fidell, 2006). Forced entry is the method of choice assuming that there are no hypotheses about the order or importance of the predictors (Tabachnick & Fidell, 2006). Thus, it allows for evaluation of the contribution of each predictor over and above the other predictors as if each predictor was entered into the equation last (Tabachnick & Fidell, 2006, p. 533). Other techniques of entering predictive variables, including forward and backward techniques, can be heavily

influenced by random variation in the data, although they may be appropriate for more exploratory purposes (see Tabachnick & Fidell, 2006, p. 535 for discussion).

Chapter 4 will present the results of the analyses, followed by a discussion of the results, policy implications, limitations of the current study, and directions for future research in Chapter 5.

CHAPTER 4

RESULTS

This chapter presents the results of the analysis beginning with bivariate correlations, followed by a series of logistic and multinomial regression models that specifically tested the proposed hypotheses. Survival analysis using Cox regression is then presented to examine time elapsed between admission and first misconduct. The final analysis presented is a negative binomial regression model to assess frequency or counts of misconduct among the four disorder subgroups.

Bivariate Results

Table 5 shows that a majority of the women were not charged with prison misconduct. Comparison of disorder groups showed 83% of women with no disorders and 73.3% of women with substance use disorders only had no charges of prison rule violations. The majority of women with co-occurring disorders and mental health disorders only had no charges of misconduct (67.1% and 65.9% respectively). Female inmates with either mental health problems only or with co-occurring disorders were more than two times more likely to be charged with a serious misconduct compared to those with no disorders (21.27% and 18.7% compared with 8.8% respectively, $p \leq .01$). Approximately 16% of women with substance use disorders only were charged with a serious misconduct. Women with co-occurring disorders and mental health problems only were also more likely to be charged with a minor misconduct compared to those with either no disorders or substance use disorders only (14.2% and 12.9% compared with 8.2% and 10.3% respectively). Overall, female inmates with co-occurring disorders and mental illness were more likely to be charged with both minor and serious

misconduct compared to those with substance use disorders only and women with no disorders not controlling for any other predictors of institutional misconduct.

Table 5. Seriousness of Misconduct by Disorder Type

	Disorder Subgroups			
	No Disorder	**Co-occurring Disorder**	**Mental Health Disorder**	**Substance Use Disorder**
	%	**%**	**%**	**%**
No Misconduct	83.0	67.1	65.9	73.3
Minor Misconduct	8.2	14.2	12.9	10.3
Serious Misconduct	8.8	18.7	21.2	16.4

χ^2 (6 d.f., N = 1470) = 19.686 $p < .01$

Following the bivariate analysis examining the rate of misconduct charges and level of seriousness of misconduct by disorder group, a follow-up bivariate analysis assessed the seriousness of sanctions by inmate subgroup. These bivariate results are reported in Table 6.

Table 6 shows that females with co-occurring disorders were more likely to receive a harsher disciplinary sanction than those with no disorders, mental health problems or substance use disorders (86.2% compared with 70.4%, 79.3% and 81.3% respectively). Women with no disorders were the least likely among the four subgroups to receive a serious sanction, which is not surprising since they were also the least likely to be charged with a serious misconduct. In contrast, females with no disorders were more likely to receive minor sanctions for their misconduct relative to those with co-occurring disorders, mental health problems or substance use disorders (29.6% compared with 13.8%, 20.7%, and 18.7% respectively). Overall, females with co-occurring

disorders were the most likely to have a serious disciplinary response to their misconduct. There was little difference in the percentage of minor and serious sanctions for women with substance use disorders and those with mental health problems.

Table 6. Seriousness of Sanction by Disorder Type

	Disorder Subgroups			
	No Disorder	**Co-occurring Disorder**	**Mental Health Disorder**	**Substance Use Disorder**
	%	**%**	**%**	**%**
Minor Sanction	29.6	13.8	20.7	18.7
Serious Sanction	70.4	86.2	79.3	81.3

χ^2 (3 d.f., N = 442)= 5.677

Multivariate Results

To examine hypotheses 1 and 3, the first set of logistic regression models were conducted to determine whether any of the four disorder groups in the study (mental illness only, substance use disorder only, co-occurring disorder, no disorders) differed on the probability of being involved in prison misconduct controlling for other known predictors of institutional misconduct (see Table 7).

> *H_1 Mental illness, substance abuse/dependence, and co-occurring mental illness and substance use disorders will be positively and significantly associated with inmate misconduct, net the effects of other known or possible correlates of institutional misconduct and socio-demographic characteristics.*
>
> *H_3 Inmates with mental health disorders or co-occurring mental health and substance use disorders will have higher rates of misconduct compared to inmates with no disorders, net the effects of other known or possible correlates of institutional misconduct and socio-demographic characteristics.*

Model 1 controlled for all of the predictors minus the disorder groups. Model 2 included the predictors in Model 1 and the three independent variable disorder subgroups (minus

the reference category = no disorder) to assess if there was any additional variance explained by the disorder groups beyond the covariates. Comparisons between Models 1 and 2 revealed a small increase in the variance explained in Model 2 (Nagelkerke R^2 = .274 and .286 respectively) and a slight improvement in the model fit. All of the predictors that were significant in Model 1 remained significant in Model 2 with the direction of the beta value staying the same. Therefore results will be interpreted for Model 2, which controlled for the inmate disorder groups.

Table 7 indicates that the likelihood of having any form of prison misconduct among female inmates with co-occurring disorders or mental health problems persisted net of statistical controls. Table 7 further shows that relative to women with no disorders, the odds of any prison misconduct were 2.2 times greater for inmates with mental health problems and 2.4 times higher for inmates with co-occurring disorders compared to the referent category (i.e. no disorder) Relative to those with no disorders, women with substance use disorders only were not significantly more or less likely to engage in prison misconduct. With regard to the effects of other variables in the analysis, Table 7 shows that for every additional month an inmate remained incarcerated, their likelihood of being involved in misconduct increased by 11%. Relative to inmates housed at SCI Muncy, women housed at either SCI Cambridge Springs or Quehanna Boot Camp were significantly less likely to be charged with any misconduct (51% and 58% respectively).

Findings further showed that for every year older, an inmate was 5% less likely to be involved in misconduct. Regarding other socio-demographic variables, being married at the time of incarceration was not found to be significantly related to an inmate's likelihood of being charged with a prison rule violation, nor was their IQ or reading level.

Level of educational achievement was, however, significantly related to prison misconduct; the more education a woman received the less likely they were to be charged with misconduct. Race was also significantly related to misconduct, with African-American women being 1.9 times more likely to be charged with an infraction compared to White non-Hispanic females. Findings further revealed that women convicted of a violent offense were neither more nor less likely to be charged with a misconduct compared to women convicted of non-violent offenses. Relative to their criminal history, however, the model shows that with each increase in an inmate's criminal history score, the odds were 1.2 times greater of being charged with misconduct. Treatment exposure at 1 to 90 days or 91 to 180 days was not found to influence an inmate's likelihood of being charged with a prison rule violation, whereas women who were exposed to a minimum of 181 days were 34% less likely of being involved in a prison infraction.

Table 7. Logistic Regression of Prison Misconduct on Control and Predictor Variables

	Model 1		Model 2	
	B (SE)	**Exp(B)**	**B (SE)**	**Exp(B)**
Control Variables				
Incarceration Length	**.104*** (.010)**	1.109	**.104*** (.010)**	1.110
Location (SCI Muncy = Ref)				
SCI Cambridge Springs	**-.669*** (.135)**	.497	**-.710*** (.144)**	.492
Quehanna Boot Camp	**-.849* (.331)**	.428	**-.864* (.344)**	.422
Age	**-.047*** (.007)**	.954	**-.051*** (.008)**	.950
Married at Admission	-.347 (.203)	.707	-.312 (.205)	.732
Race/Ethnicity (White = Ref)				
African-American	**.536*** (.150)**	1.709	**.661*** (.150)**	1.937
Hispanic	.016 (.267)	1.016	.085 (.270)	1.088
Other Race Ethnicities	1.058 (.568)	2.880	**1.140* (.571)**	3.126
Violent Current Offense	.198 (.153)	1.219	.195 (.155)	1.216
Intelligence Quotient Score	-.007 (.006)	.993	-.004 (.006)	.996
Grade level Completed	**-.100* (.043)**	.905	**-.085* (.043)**	.919
WRAT Score	-.002 (.003)	.998	-.002 (.003)	.998
Criminal History Subscale Score	**.224*** (.036)**	1.251	**.202*** (.036)**	1.223
Treatment Exposure (No Treatment = Ref)				
1 – 90 days	-.366 (.230)	.694	-.399 (.233)	.671
91 – 180 days	-.073 (.194)	.930	-.094 (.196)	.910
181 plus days	**-.351* (.179)**	.704	**-.420* (.182)**	.657
Predictor Variables				

Disorder Type (No Disorder = Ref.)				
Co-occurring Disorder	-------	------	**.879*** (.253)**	2.408
Mental Health Disorder	-------	------	**.790* (.353)**	2.204
Substance Use Disorder	-------	------	.507 (.277)	1.661
Constant	.224 (.709)	1.251	-.601 (.752)	.548
Model Fit Statistics				
Model fit chi-square	316.041*** (16 df)		331.389*** (19 df)	
-2 Log likelihood ratio	1481.591		1466.243	
Nagelkerke R Square	.274		.286	
Hosmer & Lemeshow	.678		.742	
Number of cases	1470		1470	

Note: The coefficients for the independent variables that exerted a statistically significant effect on the dependent variable are given in boldface.
*p <.05, **p < .01, ***p < .001

To further explore the effects of treatment exposure on misconduct, an additional series of logistic regression models were run controlling for the interaction between treatment exposure and disorder group. The findings are presented in Table 8. Prior to running these models, tests for multicollinearity were performed between the components and the interaction terms. Initial diagnostics found VIF and Tolerance levels to be within acceptable limits, though Tolerances among the component and interaction terms were somewhat low (e.g. ranging from .205 to .368) and VIFs were somewhat high (e.g. ranging between 2.7 and 4.8) suggesting some caution. Although the VIF and tolerance levels were within acceptable limits, Pallant (2006) points out the commonly used cut off points of .10 for the Tolerance and 10 for the VIF still allow for quite high correlations between independent variables (above .9) (p. 150). Therefore, Pearson's correlation coefficients between the components and the interaction term were examined.

Inspections revealed an acceptable correlation between the disorder group and the interaction term (r = .49), but the correlation coefficient between the treatment variable and the interaction term revealed a correlation of .71. According to Tabachnick and Fidell (2006, p. 84), a researcher should strongly consider omitting two variables with a bivariate correlation of .7 or greater in the same analysis. Therefore, the decision was made to exclude any model including both the interaction term and the treatment exposure variable.

The first model, Model 1 controlled for all of the predictor variables in the prior model (see Table 7) including the disorder groups (e.g. mental illness only, substance use disorder only and co-occurring disorder minus the reference category, no disorder). The second model (Model 2) in the series added the interaction variable controlling for the interaction of treatment exposure by disorder group. The goal was to determine if the impact of specific disorder types on prison misconduct was moderated by exposure to treatment. The interaction term was a two-way product term (treatment exposure * disorder group). In the third regression model (Model 3), the categorical variables, disorder groups and treatment exposure were removed and the interaction term remained. The purpose of examining all three models was to assess for changes in model fit and variance explained.

Comparison of the three models in terms of model fit and variance explained found no discernable differences. The majority of the predictors across all three models were very similar. However, when the interaction term (treatment exposure * disorder group) was controlled for in the regression model that included the disorder subgroups (Model 2), all three independent subgroups reached a level of significance not found in

Model 1. Inmates with co-occurring disorders and those with mental illness only had a slight increase in their probability of being involved in prison misconduct compared to Model 1 (OR = 2.4 & 2.2 versus OR = 2.7 and 2.9 respectively). Inmates with substance use disorders only reached a level of significance in Model 2, and were 2.6 times more likely to commit any misconduct compared to inmates with no disorders. The interaction term itself was also significant (OR = .91).

Following up on these findings, a crosstabulation of treatment exposure x disorder group x misconduct involvement was completed to examine the direction of the interaction effect (see Appendix H for crosstabulation). Crosstabulations suggested that inmates with mental health disorders only or substance use disorders only who received no treatment were more likely to engage in misconduct. Both of these disorder groups were the least likely to be involved in misconduct at treatment exposures of 1 to 90 days, at which point there was a steady increase in their misconduct involvement from 91 days onward. However, at 181 days or more of treatment exposure, both the mental health and substance use disorder groups were less likely to engage in misconduct than they were with no treatment exposure. The more surprising result was among inmates with co-occurring disorders. Similar to the other 2 disorder subgroups, there was a decrease in misconduct at treatment exposures of between 1 and 90 days. However, the COD group's participation in misconduct continued to increase with increased treatment exposure, and was more than doubled at 180 or more days of treatment when compared to receiving no treatment. Potential explanations for these findings will be discussed in the next chapter.

Table 8. Logistic Regression of Prison Misconduct on Control and Predictor Variables Controlling for Interaction Treatment Exposure * Disorder Group

Control Variables	Model 1		Model 2		Model 3	
	B (SE)	**Exp (B)**	**B (SE)**	**Exp (B)**	**B (SE)**	**Exp (B)**
Incarceration Length	**.104*** ** (.010)	1.110	**.103*** ** (.010)	1.108	**.102*** ** (.010)	1.107
Location (SCI Muncy=Ref)						
SCI Cambridge Springs	**-.710*** ** (.144)	.492	**-.719*** ** (.143)	.487	**-.701*** ** (.141)	.496
Quehanna Boot Camp	**-.864*** (.344)	.422	**-.845*** (.343)	.430	**-.841*** (.343)	.431
Age	**-.051*** ** (.008)	.950	**-.051*** ** (.008)	.951	**-.047*** ** (.007)	.954
Married at Admission	-.312 (.205)	.732	-.301 (.204)	.740	-.341 (.203)	.711
Race/Ethnicity (White=Ref)						
African-American	**.661*** ** (.1550)	1.937	**.659*** ** (.155)	1.934	**.551*** ** (.149)	1.735
Hispanic	.085 (.270)	1.088	.074 (.270)	1.077	.015 (.266)	1.015
Other Race/Ethnicities	**1.140*** (.571)	3.126	1.106 (.573)	3.021	1.033 (.570)	2.810
Violent Current Offense	.195 (.155)	1.216	.134 (.153)	1.143	.143 (.151)	1.154
Intelligence Quotient Score	-.004 (.006)	.996	-.005 (.006)	.995	-.006 (.006)	.994
Grade Level Completed	**-.085*** (.043)	.919	**-.085*** (.043)	.918	**-.101*** (.042)	.904
WRAT Score	-.002 (.003)	.998	-.002 (.003)	.998	-.002 (.003)	.998

Criminal History Score	**.202*** ** (.036)	1.223	**.196*** ** (.036)	1.217	**.217*** ** (.035)	1.242
Treatment Exposure (No Treatment=Ref)						
1 – 90 Days	-.399 (.233)	.671	_____	_____	_____	_____
91 – 180 Days	-.094 (.196)	.910	_____	_____	_____	_____
181 plus Days	**-.420*** (.182)	.657	_____	_____	_____	_____
Predictor Variables Disorder Groups (No Disorder = Ref)					_____	_____
Co-occurring Disorder	**.879*** ** (.253)	2.408	**1.008*** ** (.263)	2.739	_____	_____
Mental Health Disorder	**.790*** (.353)	2.204	**1.093**** (.368)	2.983	_____	_____
Substance Use Disorders	.507 (.277)	1.661	**.957**** (.325)	2.605	_____	_____
Interaction Variable						
Treatment Exposure * Disorder Group	____	_____	**-.091**** (.035)	.913	-.054 (.028)	.948
Constant	-.601 (.752)	.548	-.720 (.747)	.487	.171 (.702)	1.187
Model Fit Statistics						
Model fit chi-square (df)	331.389*** (19df)		330.972*** (17df)		314.268*** (14df)	
-2 Log likelihood ratio	1466.243		1466.660		1483.364	
Nagelkerke R Square	.286		.286		.273	
Hosmer & Lemeshow	.742		.315		.451	
N of cases	1470		1470		1470	

*p <.05, **p < .01, ***p < .001

As discussed in the literature review, Toch and Adams (1986) found that severity of mental health pathology appeared to be associated with increased rates of infraction and types of infractions (e.g. violent). Toch and Adams (1986) were somewhat limited in how they were able to measure severity of mental health disorder, using an ordinal scale of problem severity defined by the type of treatment received (e.g. outpatient services versus hospitalizations). To examine the relationship between mental health diagnoses and prison misconduct, the current study conducted an exploratory analysis to assess whether type of mental health disorder (Axis I and Axis II disorder) influenced the likelihood of engaging in institutional misconduct. Axis code diagnoses were coded as a dichotomous variable (0 = Axis I, 1 = Axis II). Findings are presented in Table 9.

Related to the fourth hypothesis in the study, regression models were conducted controlling for Axis code diagnosis. Two separate models were run to compare the variance explained and goodness of fit, as well as compare the predictors in the model controlling for specific disorder groups versus specific mental health diagnoses. Model 1 controlled for the disorder subgroups without controlling for the Axis code diagnosis and Model 2 controlled for Axis code diagnoses absent the disorder groups. Because Axis code diagnosis was not a control variable in other models, tests for multicollinearity were conducted and not surprisingly revealed the disorder group variable and Axis code variable to be highly correlated. Therefore, no regression models were run that included disorder group and Axis code.

> *H_4 More serious mental health disorders will increase the likelihood of misconduct involvement.*

Overall differences in model fit and variance explained by the models was minimal. The sample size was, however, reduced in Model 2 by 440 cases or 30%. Many of the same predictors that were significant in Model 1 were also significant in Model 2 including incarceration length, location, age, race, and criminal history score. However, when controlling for Axis code diagnoses, two variables that were significant in Model 1 no longer reached an acceptable level of statistical significance, including treatment exposure exceeding 180 days, suggesting perhaps that at least one of the disorder subgroups benefits from extended treatment exposure. This would correspond to the findings in Table 8, Model 2, controlling for both the interaction term (treatment exposure * disorder group) and the individual component, disorder group. As indicated in the results for Table 8, it does appear that treatment exposure moderated the effect of disorder group on misconduct (see full discussion above).

The fact that treatment exposure did not reach a level of significance regardless of the time exposed when controlling for Axis code diagnoses may also suggest that certain types of mental illness may exude a greater effect on an inmates' proclivity toward prison misconduct than treatment exposure. In addition, the previously significant finding of level of education achievement was also washed out in Model 2, suggesting that specific mental health disorders may play a greater role than educational achievement in whether an inmate engages in prison misconduct. Also significant in Model 2 was Axis code diagnoses, showing that women with Axis II mental health diagnoses were 1.7 times more likely to be charged with a prison infraction compared to those with an Axis I diagnoses. This finding is not surprising, in that Axis II classifications are often used for individuals with prominent maladaptive personality features and defense mechanisms.

Axis II disorders includes paranoid personality disorders, schizoid personality disorders, antisocial personality disorders and borderline personality disorders (see full list of Axis II diagnoses in Appendix F).

Testing hypothesis 5, the next set of models estimated the probability of varying levels of misconduct involvement among the disorder groups relative to inmates with no disorders using a multinomial regression equation for a three category dependent variable (no misconduct, minor misconduct, serious misconduct). There were two parts to this analysis. The first part assessed the probability of serious misconduct (versus no misconduct) and the second examined the predictors of minor misconduct (versus no misconduct). The findings are presented in two tables (Tables 10 and 11) due to the size of the output.

> *H_5 Inmates with mental illness or co-occurring mental illness and substance use disorders will be involved in more serious misconduct per the Pennsylvania Department of Correction's guidelines compared to inmates with substance use disorders only or those with no disorders*

Three models were examined. The first model included all of the predictors excluding the three independent disorder subgroups. Model 2 included all of the predictors presented in Model 1, with the addition of the three independent subgroups. The final model (Model 3) controlled for all of the predictors in Model 2 and added the interaction term (treatment exposure * disorder group) to assess if the impact of disorder types on the type of misconduct involvement was moderated by exposure to treatment. Comparison of the models found little difference in model fit or variance explained. Results for the predictors were similar for all three models, and therefore results for the predictors will be interpreted based on Model 2 (except when indicated) since this was

Table 9. Logistic Regression of Prison Misconduct on Control and Predictor Variables controlling for Axis Code Variable

Control Variables	Model 1		Model 2	
	B (SE)	**Exp (B)**	**B (SE)**	**Exp (B)**
Incarceration Length	**.104*** (.010)	1.110	**.110*** (.012)	1.116
Location (SCI Muncy=Ref)				
SCI Cambridge Springs	**-.710*** (.144)	.492	**-.701*** (.168)	.496
Quehanna Boot Camp	**-.864*** (.344)	.422	**-.931*** (.415)	.394
Age	**-.051*** (.008)	.950	**-.048*** (.009)	.954
Married at Admission	-.312 (.205)	.732	-.346 (.240)	.707
Race/Ethnicity (White=Ref)				
African-American	**.661*** (.1550)	1.937	**.608*** (.185)	1.837
Hispanic	.085 (.270)	1.088	-.142 (.318)	.857
Other Race/Ethnicities	**1.140*** (.571)	3.126	1.227 (.725)	3.411
Violent Current Offense	.195 (.155)	1.216	.086 (.186)	1.090
Intelligence Quotient Score	-.004 (.006)	.996	-.008 (.007)	.992
Grade Level Completed	**-.085*** (.043)	.919	-.087 (.050)	.917
WRAT Score	-.002 (.003)	.998	-.003 (.003)	.997
Criminal History Subscale Score	**.202*** (.036)	1.223	**.198*** (.043)	1.218
Treatment Exposure (No Treatment=Ref)				
1 – 90 Days of Tx	-.399 (.233)	.671	-.041 (.280)	.960
91 – 180 Days of Tx	-.094 (.196)	.910	.128 (.242)	1.136
181 Plus Days of Tx	**-.420*** (.182)	.657	-.149 (.217)	.861
Predictor Variables Disorder Groups (No Disorder = Ref)				

Co-occurring Disorder	**.879*** **	2.408	_____	_____
	(.253)			
Mental Health Disorder	**.790***	2.204	_____	_____
	(.353)			
Substance Use Disorders	.507	1.661	_____	_____
	(.277)			
Axis Code Variable				
Axis II Diagnosis	_____	_____	**.532****	1.703
			(.185)	
Constant	-.601	.548	.156	1.168
	(.752)		(.846)	
Model Fit Statistics				
Model fit chi-square	331.389***		256.698***	
(df)	(19df)		(17df)	
-2 log likelihood ratio	1466.243		1049.852	
Nagelkerke R Square	.286		.307	
Hosmer & Lemeshow	.742		.645	
Number of cases	1470		1030	

Note. The coefficients for the independent variables that exerted a statistically significant effect on the dependent variable are given in boldface.
*p <.05, **p < .01, ***p < .001

the most parsimonious model and included the disorder subgroups that were the major focus of the study hypotheses.

Most predictors in the model were not significantly related to the severity of misconduct charges. However, African-American inmates were 1.8 times more likely to be involved in a minor misconduct (versus no misconduct, the reference group in these analyses) and 1.9 times more likely to be charged with a serious misconduct compared to White non-Hispanic females. Hispanic inmates were neither more nor less likely to be charged with a serious or minor misconduct (relative to no misconduct) compared to White non-Hispanic inmates. Age was again a significant predictor, with older inmates being charged less often with serious or minor misconduct (versus no misconduct) compared with younger inmates (OR = .926 and .975 respectively). Other socio-demographic variables including marital status, IQ, and WRAT score were non-

significant. Level of grade completion was significant only in Model 1, showing that for each additional year of schooling, an inmate was 11% less likely to be charged with a minor misconduct. Longer periods of incarceration increased a female inmate's probability of being charged with a minor or a serious misconduct. Having been convicted of at least one violent offense for the current incarceration compared to those with no violent offense convictions was not found to increase or decrease the likelihood of any level of misconduct relative to no misconduct. However, the criminal history score was significant. For each additional increase in an inmate's score, they were 1.1 times more likely to be charged with a minor misconduct and 1.2 times more likely to charged with a serious misconduct (versus no misconduct).

Table 10 further shows that women who were housed in Quehanna were 89% less likely to be charged with a serious misconduct (versus no misconduct) compared to women housed at SCI Muncy. Women housed at SCI Cambridge were also significantly less likely to be charged with a serious misconduct (versus no misconduct) compared to women primarily residing at SCI Muncy (OR = .269). In terms of treatment exposure, findings indicate that inmates who were exposed to between 1 and 90 days of treatment were 47% less likely to be charged with a serious misconduct, and inmates who were in treatment programs for 181 days or more were 41% less likely to be involved in serious misconduct (versus no misconduct).

A comparison of Model 2 (where disorder subgroups were controlled for) with Model 3 (where the interaction term was added) revealed that the substance use disorder group reached significance in Model 3. Women with mental health disorders only were found to have an increased probability of engaging in minor misconduct compared to

women with no disorders and an increased likelihood of 3.3 times of serious misconduct involvement (versus no misconduct). Inmates with substance use disorders were 3.4 times more likely to engage in serious misconduct (versus no misconduct) compared to those with no disorders. In Model 2, the COD group was 2.2 times more likely to engage in minor misconduct and 2.5 times more likely to engage in serious misconduct involvement compared to women with no disorders when not controlling for the interaction term. In Model 3, the likelihood of women with COD participating in either minor or serious misconduct versus no misconduct increased from Model 2 (OR = 2.4 and 2.9 respectively). The interaction term was significant only in predicting the probability of serious misconduct versus no misconduct (OR = .90).

A crosstabulation was conducted once again to examine the direction of the interaction effect. The percentage of COD inmates being charged with minor and serious misconduct was relatively stable when comparing no treatment up to 180 days of treatment. However, COD inmates with 6 months or more of treatment exposure were more likely to be involved in both minor and serious misconduct compared to no treatment or lesser treatment exposures. Inmates with substance use disorders showed little change in serious misconduct involvement with treatment exposure regardless of length or compared with no treatment. It does appear that substance use disorder inmates had lower involvement in minor infractions with treatment exposure. However, there were slight increases in their minor misconduct involvement with treatment exposures of greater than 91 days. Inmates with mental health disorders only were most likely to engage in minor or serious misconduct if they received no treatment. For the mentally ill,

exposure to treatment appears to have a beneficial effect in reducing their likelihood of engaging in serious or minor misconduct (See Appendix I for crosstabulation).

The next set of multinomial regression models also estimated differences in the severity of misconduct, but controlled for Axis code mental health diagnoses (see Table 12 for results). As outlined above, multicollinearity diagnostics revealed high correlations between disorder group and Axis code diagnoses and therefore disorder groups were omitted from these models. The multinomial regression analysis was again conducted in a two stage process. The first set of models assessed the probability of serious misconduct (versus no misconduct). The second part examined the predictors of minor misconduct (versus no misconduct).

Model 1, predicting the probability of being involved in a minor misconduct (versus no misconduct), found that African-American women had a 1.6 times greater likelihood of being charged with a minor misconduct compared to White non-Hispanic females. Hispanic females were again no more or less likely to be charged with a minor misconduct compared to White female inmates. Other socio-demographic factors including age, marital status, IQ, WRAT score, or grade completion did not reach a level of significance. Once again, we see that the longer an inmate is incarcerated and the higher their Criminal History score the greater the likelihood of being involved in a minor misconduct. Location was not a significant predictor of minor misconduct relative to no misconduct nor was treatment exposure regardless of time spent in treatment. Axis code diagnosis did not reach a level of significance for predicting the probability of involvement in minor misconduct.

Table 10. Multinomial Regression Model of Seriousness of Misconduct on Control and Predictor Variables

	Model 1				**Model 2**			
	Minor Misconduct (vs. No Misconduct		**Serious Misconduct (vs. No Misconduct)**		**Minor Misconduct (vs. No Misconduct)**		**Serious Misconduct (vs. No Misconduct)**	
Control Variable	**B (SE)**	**Exp(B)**	**B (SE)**	**Exp(B)**	**B (SE)**	**Exp (B)**	**B (SE)**	**Exp(B)**
Intercept	-1.551 (.901)		.607 (.913)		-2.314 (.957)		-.267 (.969)	
Race/Ethnicity (White = Ref)								
Other	.497 (.830)	1.644	**1.362* (.630)**	3.903	.560 (.833)	1.750	**1.466* (.637)**	4.333
African-American	**.475* (.192)**	1.608	**.567** (.189)**	1.763	**.597** (.196)**	1.817	**.686*** (.195)**	1.987
Hispanic	-.003 (.350)	.997	-.008 (.342)	.992	.058 (.352)	1.060	.060 (.346)	1.062
Age	**-.022* (.009)**	.979	**-.073*** (.010)**	.929	**-.025** (.009)**	.975	**-.077*** (.010)**	.926
Marital Status	-.534 (.276)	.586	-.162 (.264)	.851	-.502 (.277)	.605	-.120 (.265)	.887
IQ	.001 (.008)	1.001	-.014 (.008)	.986	.003 (.008)	1.003	-.012 (.008)	.988
WRAT Score	.001 (.003)	1.001	-.004 (.003)	.996	.000 (.003)	1.000	-.004 (.003)	.996
Grade Completion	**-.118* (.054)**	.888	-.087 (.054)	.996	-.103 (.054)	.902	-.071 (.055)	.932
Length of Incarceration	**.069*** (.013)**	1.071	**.136*** (.013)**	1.146	**.070*** (.013)**	1.072	**.136*** (.013)**	1.146
Violent Current Offense	.219 (.195)	1.245	.227 (.123)	.190	1.131 (.197)	1.241	.129 (.193)	1.137
Criminal Score	**.160*** (.045)**	1.174	**.279*** (.046)**	1.322	**.138** (.046)**	1.148	**.257*** (.046)**	1.294

Location (SCI Muncy = Ref)								
Quehanna	-.043	.958	**-2.195****	.111	-.082	.921	**-2.190****	.112
	(.373)		**(.742)**		(.374)		**(.742)**	
Cambridge Springs	-.071	.932	**-1.310*****	.270	-.087	.917	**-1.313*****	.269
	(.179)		**(.194)**		(.180)		**(.195)**	
Treatment Exposure (No Treatment = Ref)								
1 - 90 Days	-.101	.904	**-.607***	.545	-.146	.864	**-.633***	.531
	(.279)		**(.307)**		(.281)		**(.310)**	
91 - 180 Days	.037	1.038	-.185	.831	.008	1.008	-.200	.819
	(.244)		(.256)		(.245)		(.258)	
181 plus Days	-.266	.766	-.478	.620	-.360	.698	**-.524***	.592
	(.229)		(.232)		(.233)		**(.236)**	
Predictor Variables Disorder Type (No Disorders = Ref)								
Substance Use	--------	--------	--------	--------	.285	1.330	.709	2.032
					(.394)		(.367)	
Co-occurring	--------	--------	--------	--------	**.798***	2.220	**.930****	2.535
					(.326)		**(.340)**	
Mental Health	--------	--------	--------	--------	.688	1.989	**.**829	2.290
					(.457)		(.453)	
Model Fit Statistics								
Model fit chi-square	400.987***				416.918***			
(df)	32				38			
-2 log likelihood ratio	1.999				1.983			
Nagelkerke R square	.297				.307			
Number of cases	1470				1470			

Table 11. Multinomial Regression Model of Seriousness of Misconduct Controlling for the Interaction of Treatment Exposure * Disorder Group

	Minor Misconduct (vs. No Misconduct)		**Serious Misconduct (vs. No Misconduct**	
Control Variables	**B (SE)**	**Exp (B)**	**B (SE)**	**Exp(B)**
Intercept	-2.349 (.953)		-.470 (.958)	
Race/Ethnicity (White = Ref)				
Other	.582 (.831)	1.789	**1.384* (.638)**	3.991
African-American	**.603** (.196)**	1.827	**.677** (.195)**	1.342
Hispanic	.050 (.352)	1.051	.053 (.345)	1.054
Age	**-.025** (.009)**	.975	**-.076*** (.010)**	.927
Marital Status	-.480 (.277)	.619	-.117 (.264)	.890
IQ	.003 (.008)	1.003	-.013 (.008)	.987
WRAT Score	.000 (.003)	1.000	-.004 (.003)	.996
Grade Completion	-.106 (.054)	.900	-.071 (.055)	.932
Length of Incarceration	**.070*** (.013)**	1.072	**.133*** (.013)**	1.143
Violent Current Offense	.178 (.194)	1.194	.051 (.191)	1.052
Criminal Score	**.133** (.046)**	1.142	**.252*** (.046)**	1.286
Location (SCI Muncy = Ref)				
Quehanna	-.077 (.374)	.926	**-2.139** (.740)**	.118
Cambridge Springs	-.082 (.180)	.921	**-1.327*** (.193)**	.265
Treatment Exposure (No Treatment = Ref)				
1 - 90 Days	_____	_____	_____	_____
91 - 180 Days	_____	_____	_____	_____
181 plus Days	_____	_____	_____	_____
Interaction Variable				
Treatment Exposure * Disorder Group	-.088 (.046)	.916	**-.101* (.044)**	.904
Predictor Variables				
Disorder Type (No Disorder = Ref)				
Substance Use	.688 (.418)	1.990	**1.232** (.429)**	3.428

Co-occurring	**.903**** (.336)	2.467	**1.092**** (.353)	2.981
Mental Health	**.947*** (.472)	2.578	**1.200*** (.473)	3.320
Model Fit Statistics				
Model fit chi-square	415.072***			
(df)	34			
-2 log likelihood ratio	1.985			
Nagelkerke R square	. 306			
Number of cases	1470			

Note. The coefficients for the independent variables that exerted a statistically significant effect on the dependent variables are given in boldface
*p < .05, **p <. 01, ***p < .001

Model 2, predicting the probability of being charged with a serious prison infraction relative to no misconduct, showed African-American inmates to be 1.2 times more likely of being involved in serious misconduct compared with White non-Hispanic inmates. Contrary to the findings in Model 1, age was a significant predictor of serious misconduct (versus no misconduct), with younger inmates charged with more serious infractions compared with older inmates (OR=.92). An inmate's IQ score was significant for the first time in any of the models, indicating that an inmate's IQ score decreased her likelihood of being charged with a serious misconduct by 2%. Location was significant in predicting the probability of serious prison infractions, with women housed in Quehanna or SCI Cambridge Springs being less likely to be charged with a serious misconduct (versus no misconduct) compared to women housed in SCI Muncy. Unlike Model 1, women diagnosed with Axis II mental health diagnoses were found to have a 2.4 times greater probability of being charged with a serious misconduct (versus no misconduct) relative to female inmates with Axis I diagnoses.

Table 12. Multinomial Regression Model of Seriousness of Misconduct Controlling for Axis Code Variable

	Model 1		**Model 2**	
	Minor Misconduct (vs. No Misconduct)		**Serious Misconduct (vs. No Misconduct)**	
Control Variable	**B (SE)**	**Exp (B)**	**B (SE)**	**Exp (B)**
Intercept	-1.658 (1.046)		.598 (1.120)	
Race/Ethnicity (White = Ref.)				
Other Race/Ethnicity	.171 (1.148)	1.187	**1.714*** **(.809)**	5.549
African-American	**.514*** **(.227)**	1.671	**.660**** **(.238)**	1.212
Hispanic	-.394 (.372)	.674	.052 (.403)	1.054
Age	-.021 (.011)	.979	**-.075***** **(.012)**	.928
Marital Status	-.384 (.302)	.681	-.296 (.329)	.743
IQ	.003 (.009)	1.003	**-.020*** **(.010)**	.980
WRAT Score	.000 (.004)	.999	-.004 (.004)	.996
Grade Completion	-.118 (.060)	.889	-.060 (.066)	.941
Length of Incarceration	**.067***** **(.015)**	1.069	**.153***** **(.016)**	1.165
Violent Current Offense	.179 (.229)	1.186	-.099 (.243)	.906
Criminal History Score	**.128*** **(.053)**	1.137	**.264***** **(.057)**	1.303
Location (SCI Muncy=Ref)				
Quehanna	-.208 (.442)	.812	**-2.422*** **(1.036)**	.089
SCI Cambridge Springs	-.005 (.205)	.995	**-1.423***** **(.235)**	.241
Treatment Exposure (No Treatment = Ref.)				
1 - 90 Days	.313 (.336)	1.368	-.397 (.380)	.672
91 - 180 Days	.384 (.300)	1.468	-.194 (.328)	.824

181 plus Days	.007	1.007	-.362	.696
	(.280)		(.286)	
Axis Code Variable				
Axis II Diagnosis	.072	1.075	**.901*** **	2.462
	(.248)		**(.232)**	

Model Fit Statistics	
Model fit chi-square	354.675***
(df)	34
-2 log likelihood ratio	1.416
Nagelkerke R square	.355
Number of cases	1030

Note: The coefficients for the independent variables that exerted a statistically significant effect on the dependent variable are given in boldface
*$p < .05$, **$p < .01$, ***$p < .001$

Following analysis for different probabilities of misconduct involvement and seriousness of misconduct, the next set of models examined Hypotheses 6 and 7.

> *H_6 Inmates with mental illness or co-occurring mental illness and substance use disorders will receive harsher sanctions compared to inmates with no disorders or substance dependence disorders only controlling for all misconduct charges.*
>
> *H_7 Inmates with co-occurring mental illness and substance use disorders will receive harsher sanctions controlling for all misconduct compared to all other categories of inmates.*

These models were intended to estimate the type of disciplinary action taken for inmates who engaged in varying levels of prison misconduct (Table 13). In these estimated models, the level of prison misconduct (minor or serious) was also controlled for in predicting the type of disciplinary action taken. Two models were conducted: Model 1 included all the same predictors found in prior models, excluding the disorder groups. Model 2 included all of the predictors in Model 1 plus the three disorder subgroups (minus the reference category = no disorder) to again assess if there was any additional variance explained by the disorder groups beyond the covariates.

Comparison of the models demonstrated very slight improvement in model fit and variance explained in Model 2. Regardless of the model, however, very few predictors

reached a level of significance. Both models found that the longer an inmate remained incarcerated, the more likely they were to be given at least one serious disciplinary sanction (versus minor sanction). Being married at the time of incarceration was found to reduce the probability of having a serious sanction imposed relative to a minor sanction in both Models 1 and 2 (OR=.25 and OR=.23 respectively). Age was only significant in Model 2, with older inmates 4% less likely to receive a serious sanction versus a minor disciplinary action. Other predictors were all non-significant in both models, with the exception of the other race/ethnicity group, which was less likely to receive a serious disciplinary response to their misconduct. Not surprisingly, in both models, the seriousness of the charge was significantly related to the odds of being given a serious disciplinary response relative to a minor sanction. Model 1 shows that when an inmate had at least one serious misconduct charge, the odds were 38 times greater of receiving a serious sanction. Controlling for disorder subgroups, women with a minimum of one serious charge were 44 times more likely of being given a serious disciplinary sanction. Relative to the disorder subgroups, Table 14 shows that women with co-occurring disorders were over 4 times more likely to receive a serious disciplinary sanction, which is not surprising since they were at the greatest risk of committing both serious and minor prison infractions (see Table 10 Model 2).

Table 13. Logistic Regression of Disciplinary Sanction on Control and Predictor Variables

	Model 1			Model 2		
Control Variables	**B**	**SE**	**Exp(B)**	**B**	**SE**	**Exp(B)**
Incarceration Length	**.068***	.028	1.070	**.077****	.029	1.080
Location (SCI Muncy = Ref)						
SCI Cambridge Springs	.084	.352	1.087	-.062	.363	.940
SCI Quehanna Boot Camp	-.151	.754	.860	-.244	.757	.783
Age	-.025	.017	.975	**-.037***	.018	.964
Married at Admission	**-1.377****	.499	.252	**-1.444****	.497	.236
Race/Ethnicity (White = Ref.)						
African American	-.531	.363	.588	-.291	.375	.747
Hispanic	-.306	.665	.737	.040	.684	1.041
Other Race Ethnicities	**-2.996****	1.004	.050	**-2.716***	1.095	.066
Violent Current Offense	-.481	.389	.618	-.075	.349	.927
Intelligence Quotient Score	-.009	.015	.991	-.008	.015	.992
Grade level Completed	-.012	.104	.968	.028	.107	1.028
WRAT Score	.002	.006	1.002	.003	.006	.997
Criminal History Subscale Score	.033	.086	1.034	-.007	.090	.993
Treatment Exposure (No Treatment = Ref.)						
1 – 90 Days	.131	.560	1.140	-.264	.589	.768
91 – 180 Days	.259	.491	1.296	-.004	.511	.996
181 plus Days	-.572	.441	.564	-.999	.481	.368
Seriousness of Charge	**3.639*****	.563	38.052	**3.786*****	.578	44.070
Predictor Variables						
Disorder Group (No Disorder = Ref.)						
Co-occurring Disorders	_____	_____		**1.493***	.608	4.449
Mental Health Disorders	_____	_____		.625	.818	1.868
Substance Use Disorders	_____	_____		.638	.653	1.892
Constant	1.975	1.454	7.209	.978	1.545	2.658
Model Fit Statistics						
Model fit chi-square	125.593***			133.489***		
(df)	17			20		
-2 log likelihood ratio	263.593			255.756		
Nagelkerke R square	.423			.445		
Hosmer & Lemeshow	.464			.248		
Number of cases	442			442		

Note. The coefficients for the independent variables that exerted a statistically significant effect on the dependent variables are given in boldface

*$p < .05$, ** $p <.. 01$, ***$p < .001$

Survival Analysis

Also examining hypotheses 1 and 2 proposed in this dissertation, survival analysis with Cox Regression was conducted on the dependent variable, any misconduct, to examine if differential rates between the disorder groups existed from the time of their initial incarceration commitment date to the time of their first misconduct charge. This analytic strategy also allows for a more sensitive examination of the effect of predictors on the dependent variable by controlling for censored data over time. Table 14 shows the results of the between group differences in the time to first misconduct charge, controlling for all of the predictors in the study. The results indicated that relative to inmates with no disorders, there were significant differences in misconduct rates for the mental health and co-occurring disorder subgroups. Relative to inmates with no disorders, the odds of committing misconduct were increased by 92% for inmates with mental illness and 67% for inmates with COD (see Figure 3 for the survival curves from the Cox Regression analysis). Inmates with a substance use disorder only were no more (or less) likely to be charged with misconduct. These findings are similar to those of the logistic regression model predicting any misconduct (Table 7, Model 2).

For women with treatment exposures of between 1 and 90 days and greater than 180 days, the probability of misconduct decreased by approximately 35 to 36%. For every additional month of incarceration, the odds of an inmate being charged with a misconduct increased by approximately 4.6%. Having a violent offense conviction did not reach a level of significance in predicting misconduct using logistic regression analysis, but was found to be a significant predictor of misconduct in the survival analysis. Findings indicated that women with a current violent offense conviction were

27% more likely to commit a prison infraction compared to women with no violent offenses.

The Criminal History Score of the LSI-R was once again a positive, significant predictor of misconduct involvement. Women housed at SCI Cambridge Springs were 42% less likely to be charged with misconduct compared to women at SCI Muncy. Similar findings were noted for residents of the Quehanna Boot Camp. Results for other socio-demographic variables show that for every year increase in age, the likelihood that an inmate will engage in misconduct is reduced by approximately 4%. Race was a significant predictor of misconduct with African-American women being 52% more likely to have a charge of misconduct compared to White non-Hispanic women. Grade completed was a significant predictor of reducing an inmate's likelihood of engaging in misconduct by about 7%.

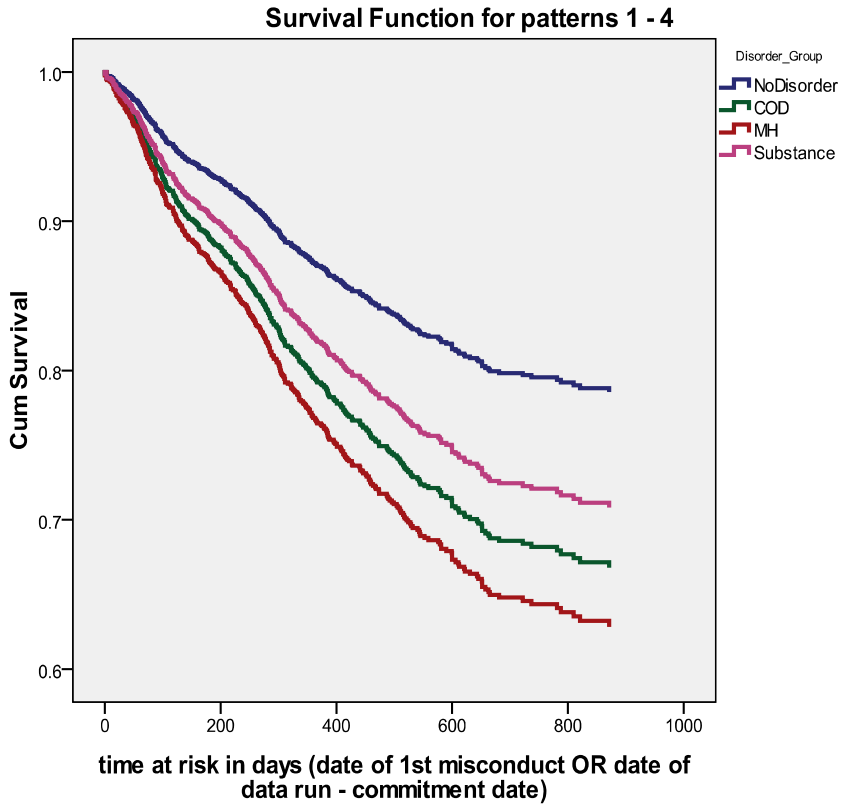
Table 14. Cox Regression of Time to First Misconduct on Control and Predictor Variables

Control Variables	**B (SE)**	**Exp(B)**
Length of Incarceration	**.045*** (.007)**	1.046
Location (SCI Muncy = Ref)		
Cambridge Springs	**-.536*** (.109)**	.585
Quehanna	**-.737* (.300)**	.479
Age	**-.038*** (.006)**	.963
Marital Status	-.257 (.167)	.774
Race (White = Ref.)		
African-American	**.491*** (.114)**	1.521
Hispanic	.132 (.205)	1.142
Other	**.863* (.345)**	2.370
Violent Current Offense	**.240* (.111)**	1.271
IQ	-.005 (.005)	.995
Grade Completed	**-.070* (.032)**	.933
WRAT Score	-.001 (.002)	.999
Criminal Score	**.163*** (.026)**	1.177
Treatment Exposure (No Treatment = Ref)		
1 - 90 days	**-.428* (.174)**	.652
91 -180 days	-.231 (.151)	.794
181 plus days	**-.442** (.137)**	.643
Predictor Variables		
Disorder Groups (No Disorder = Ref)		
Co-occurring Disorder	**.515* (.208)**	1.673

Mental Health Disorder	**.656*** **(.272)**	1.926
Substance Use Disorder	.358 (.228)	1.431
Model Fit Statistics		
Model fit chi-square	286.748****	
(df)	(19df)	
-2 log likelihood ratio	5859.430	
Number of cases	1469	

Note. The coefficients for the independent variables that exerted a statistically significant effect on the dependent variables are given in boldface
*p <.05, ** p < .01, ***p <.001

Figure 3. Survival Curves from the Cox Regression



Negative Binomial Regression

The final analysis tested the second hypothesis in the study suggesting that the additive and interactive nature of COD would exacerbate misconduct involvement beyond singular disorders by assessing total misconduct count. Negative binomial regression models were conducted to test for differences by disorder group for total misconduct count controlling for the predictors in the model (Table 15). The results of the negative binomial regression model found all three disorder subgroups significantly predicted the number of misconducts. Also significant in the model were location and treatment exposure at the 1 to 90 day exposure and 181 plus days. Sociodemographic factors reaching a level of significance included age and marital status. Race was significant for African-Americans and those ethnicities in the "other" group. Length of incarceration, criminal history score, and conviction of a violent offense were also significant in this model.

Regression analysis was followed-up with pairwise comparisons (see Appendix K for the estimated marginal means table for the disorder group). Pairwise comparisons of estimated marginal means found mean differences in total misconduct for the substance use disorder group (m = 1.0133) compared to the mental health only and co-occurring disorder groups (m = 2.1162 and m = 1.8579 respectively) at the .05 level. Estimated means were also significantly different at the .05 level between the no disorder group (m = .4720) and all three disorder categories. There was no significant mean difference at the .05 level between the mental health only group and inmates with co-occurring disorders. Similar to findings of the logistic regression models and survival analysis with

Cox regression, inmates with mental health disorders and co-occurring disorders were charged with a disproportionate amount of the institutional infractions.

Summary

Table 16 summarizes the key results for each of the seven hypotheses. Overall, three hypotheses were fully supported and four were partially supported. The next chapter will discuss these findings and their implications in more detail.

Table 15. Negative Binomial Regression of Misconduct Count on Control and Predictor Variables

Control Variables	**B (SE)**	**Exp(B)**
Intercept	**-1.004*** (.4081)**	.366
Location (SCI Muncy = Ref)		
SCI Cambridge Springs	**-.645*** (.0761)**	.525
Quehanna	**-.1.340*** (.2047)**	.262
Marital Status	**.659*** (.1126)**	.518
Race / Ethnicity (White = Ref)		
African-American	**.623*** (.0783)**	1.864
Hispanic	.172 (.1396)	1.188
Other	**.854** (.3058)**	2.349
Violent Current Offense	**.339*** (.0839)**	1.403
Age	**-.018*** (.0037)**	.962
IQ	-.003 (.0032)	.997
Length of Incarceration	**.074*** (.0054)**	1.077
WRAT Score	-.002 (.0013)	.998
Final Grade	-.043 (.0225)	.958
Criminal History Score	**.288*** (.0195)**	1.334
Treatment Exposure (No Treatment = Ref)		
1 - 90 Days	**-.579*** (.1207)**	.560
91 - 180 Days	.040 (.1043)	1.041
181 plus Days	**-.327** (.0950)**	.721
Predictor Variables		
Disorder Group		

(No Disorder = Ref)			
Co-occurring Disorders		**1.210*** (.1431)**	3.353
Mental Health Disorders		**1.340*** (.1888)**	3.820
Substance Use Disorders		**.578*** (.1571)**	1.782
Model Fit Statistics			
Model fit chi-square	7072.998		
(df)	1456		
-2 log likelihood ratio	-3127.078		
Number of Cases	1470		

Note. The coefficients for the independent variables that exerted a statistically significant effect on the dependent variables are given in boldface
*$p <$ .05, ** $p <$.. 01, ***$p <$ .001

Table 16. Summary of Results

Hypothesis	Analytic Strategy Employed	Results
H_1 Mental illness, substance abuse/dependence, and co-occurring mental illness and substance use disorders will be positively and significantly associated with inmate misconduct, net the effects of other known or possible correlates of institutional misconduct and socio-demographic characteristics.	Logistic and Cox regression analyses were employed for the first hypothesis. The dependent variable was "any misconduct."	• Inmates with mental illness were more likely to engage in prison misconduct compared to inmates with no disorders. • Inmates with COD were more likely to engage in prison misconduct compared to inmates with no disorders. • Inmates with substance use disorders were not more (or less) likely to engage in prison misconduct compared to inmates with no disorders. • Findings partially supported the first hypothesis.
H_2 The additive and interactive nature of co-occurring disorders will exacerbate inmate misconduct beyond singular disorders (e.g. mental illness or substance abuse/dependence), net the effects of other known or possible correlates of institutional misconduct and socio-demographic characteristics.	Negative binomial regression analysis was the analytic strategy employed for the second hypothesis. The dependent variable was total misconduct count. Pairwise comparisons were used to test differences in misconduct for the four disorder groups.	• Mean comparisons of inmates with COD to those with singular disorders revealed COD inmates to be significantly different from those with substance abuse disorders only. Mean misconduct counts for inmates with COD were not significantly different from those with mental illness. Odds ratios (Table 7, Model 2) showed a slightly higher

		likelihood for COD inmates to engage in misconduct compared to inmates with mental illness only, but differences were not statistically significant. • Hypothesis 2 was partially supported.
H_3 Inmates with mental health disorders *or* co-occurring mental health and substance use disorders will have higher rates of misconduct compared to inmates with no disorders, net the effects of other known or possible correlates of institutional misconduct and socio-demographic characteristics.	Logistic and Cox regression analyses were employed for the third hypothesis. The dependent variable was "any misconduct."	• Inmates with COD were more likely to engage in misconduct compared to those with no disorders. • Inmates with mental illness only were more likely to engage in misconduct compared to inmates with no disorders. • Hypothesis 3 was supported.
H_4 More serious mental health disorders will increase the likelihood of misconduct involvement.	Logistic regression controlling for Axis I and Axis II mental health diagnoses was the analytic strategy employed. The dependent variable was "any misconduct."	• Inmates with Axis II mental health diagnoses were 1.7 times more likely to engage in prison misconduct compared to inmates with Axis I diagnoses. • Hypothesis 4 was supported.
H_5 Inmates with mental illness or co-occurring mental illness and substance use disorders will be involved in more serious misconduct per the Pennsylvania Department of Correction's guidelines compared to inmates with substance use disorders only or those with no	Multinomial regression analysis predicting minor misconduct (versus no misconduct) and serious misconduct (versus no misconduct) was the analytic strategy employed.	• Inmates with COD were 2.2 times more likely to be involved in minor misconduct compared to inmates with no disorders and 2.5 times more likely to engage in serious misconduct. • Inmates with mental illness only were

disorders		neither more (nor less) likely to be engaged in minor or serious misconduct compared to inmates with no disorders. • Inmates with substance use disorders were neither more (nor less likely to be engaged in minor or serious misconduct compared to inmates with no disorders. • Hypothesis 5 was partially supported.
H_6 Inmates with mental illness or co-occurring mental illness and substance use disorders will receive harsher sanctions compared to inmates with no disorders or substance dependence disorders only controlling for all misconduct charges.	Logistic regression was the analytic strategy employed. The dependent variable was "sanction seriousness."	• Inmates with COD were 4.4 times more likely to receive a serious sanction compared to inmates with no disorders. • Inmates with mental illness only were not more (or less) likely to receive a serious sanction. • Hypothesis 6 was partially supported.
H_7 Inmates with co-occurring mental illness and substance use disorders will receive harsher sanctions controlling for all misconduct compared to all other categories of inmates.	Logistic regression was the analytic strategy employed. The dependent variable was "sanction seriousness."	• Hypothesis 7 was supported.

CHAPTER 5

DISCUSSION

Several research questions and hypotheses were proposed at the commencement of this study. This chapter will address the hypotheses in relation to the findings. The primary question that this research sought to address was whether the interactive and additive nature of a mental illness coupled with a substance use disorder would negatively impede the assimilation of an inmate into the correctional setting resulting in higher rates of institutional misconduct. From a clinical perspective, existence of multiple disorders has been shown to exacerbate the symptoms of each disorder (Volkow, 2007). It was hypothesized that this potential exaggerated symptom complex of inmates with COD would result in increased problems of adherence to prison rules and regulations resulting in higher rates of institutional misconduct (H_2). Thus, inmates with COD would have the highest rate of misconduct compared to inmates with no disorders or singular disorders. It was, however, also hypothesized that singular disorders (i.e. mental illness or substance use disorders) would have increased rates of misconduct compared to inmates with no disorders (H_1).

Results of the logistic regression analysis (Table 7, Model 2) predicting institutional misconduct indicated that inmates with co-occurring disorders or mental health disorders were significantly more likely than those with no disorders to be charged with institutional infractions, after controlling for other predictors of prison misconduct. Inmates with substance use disorders only were neither more nor less likely to be charged with a prison infraction than those with no disorders. These finding partially supported the first hypothesis and fully supported the third hypothesis proposing that inmates with

mental illness or COD would have higher rates of misconduct compared to those with no disorders. Results from the survival analysis with Cox regression indicated similar findings with both the mental illness and COD groups significant for increased rates of prison misconduct compared to inmates with no disorders. Moreover, the effect appeared stronger among those with CODs than for inmates with a singular diagnosis of mental illness based on the log odds of the logistic regression model, but the differences were not statistically significant. This suggests support for the second hypothesis that proposed COD inmates would be involved in higher rates of misconduct compared to those with singular disorders. However, findings of pairwise comparisons of the estimated means conducted to compare misconduct rates between the groups as part of the negative binomial regression model found no statistically significant difference at the .05 level between inmates with mental illness as a singular disorder and COD inmates (m = 2.1162 and m = 1.8579 respectively). Thus, the findings of this study could not conclude that inmates with COD were more likely to engage in misconduct compared to inmates with mental health disorders only.

With the belief that it is the mental health disorder that is the principal factor disrupting an inmate's ability to effectively conform to the stressors of the prison environment, the fourth hypothesis in this dissertation proposed that individuals with prominent maladaptive personality features and defense mechanisms (Axis II mental health diagnoses) would be engaged in higher rates of prison misconduct. Type of mental health pathology was addressed as Axis I and Axis II diagnoses (see Appendix F Axis I and II diagnoses). Results supported the hypothesis (Table 9, Model 2), finding that women with Axis II diagnosis (e.g. paranoid personality disorders, schizoid

personality disorders, antisocial personality disorders and borderline personality disorders.) were almost 2 times more likely to engage in misconduct compared to women with Axis I diagnoses. Follow-up analysis to examine whether type of mental health pathology was associated with an increased likelihood of engaging in minor or serious misconduct (Table 12) showed that women with Axis II diagnoses were more than 2 times more likely of being charged with a serious misconduct (versus no misconduct) compared to women with Axis I diagnoses.

Hypothesis 5 proposed that mental illness as a singular disorder and the co-occurrence of a mental illness with a substance use disorder would increase the likelihood of an inmate engaging in more serious misconduct. Results of the multinomial regression model of seriousness of misconduct found only partial support for hypothesis 5. Co-occurring disorder inmates were 2.2 times more likely to be involved in minor misconduct and 2.5 times more likely to be charged with a serious misconduct compared to inmates with no disorders. However, those inmates with mental illness as a singular disorder were not significantly more (or less) likely to be involved in minor or serious misconduct when compared with inmates with no disorders.

The finding that COD inmates would be charged with more serious misconduct versus minor was a somewhat surprising result since it would be expected that inmates would be more likely to engage in minor level infractions. One possible explanation for such a finding is that some minor level charges may be referred by the Shift Commander for informal resolution rather than approving the complaint. The process by which complaints can be referred for informal resolution was a policy implemented by the

PADOC to reduce the number of complaints entering the system creating administrative backlog and inmate referrals to the Residential Housing Units (RHU).

The final hypotheses proposed in the current study addressed disciplinary responses by correctional staff. Hypothesis 6 stated that inmates with mental illness only and co-occurring disorder inmates would receive harsher sanctions controlling for misconduct charges than the substance use disorder only group or those with no disorders. Hypothesis 7 posited that inmates with COD would receive the harshest sanctions compared to all the other disorder subgroups. Results of the logistic regression model predicting seriousness of sanction (Table 13) showed women with co-occurring disorders were over 4 times more likely to receive a serious disciplinary sanction compared to women with no disorders. This finding is not completely unexpected since women with COD were also more likely to be charged with serious misconduct.

What was surprising was the rather high odds ratio of 4.4. For some of these women, their higher engagement in prison misconduct may suggest greater surveillance by correctional staff resulting in more charges for offenses that would otherwise not have been detected and subsequently additional sanctioning. Further, for many of these women, their clinical conditions may serve to further stigmatize their behaviors, as well as reduce their ability to advocate for themselves. In addition, if women with COD are being placed in segregation at higher rates than other inmates, this may suggest that their access to treatment and mental health professionals may be reduced causing both the segregation and reduced treatment to further exacerbate negative behaviors related to their disorders. Female inmates with mental illness as a singular disorder were not found

to have an increased likelihood of receiving a more serious sanction. Thus, the results partially supported hypothesis 6 and fully supported hypothesis 7.

Results from the first 3 hypotheses tested indicating higher rates of institutional misconduct among the mentally ill and COD groups suggest that mental illness may be the principal factor that reduces an inmate's ability to successfully integrate into the prison environment. This finding supports prior studies that have found a positive relationship between mental illness and higher rates of misconduct (see, Adams, 1983, 1986; Hildebrand et al., 2004; McCorkle, 1995; O'Keefe & Schnell, 2007; Toch & Adams, 1986; Toch, et. al., 1989). This is further supported by the findings testing the fourth hypothesis which found that type of mental health pathology does increase the odds of engaging in institutional misconduct. In the current study, results indicated that inmates with Axis II mental health diagnoses were more likely to be involved in prison infractions compared to Axis I diagnoses.

Although substance use disorders alone were not found to increase the odds of engaging in misconduct, it would appear that substance use as an additive disorder to mental illness serves to exaggerate the negative consequences of the mental health component. This is suggested by the significant association between the COD group and more serious misconduct involvement. Thus, the interactive and additive effect of substance use with a mental health disorder does appear to augment the effects of mental health on institutional misbehaviors. Having said that, even if mental illness is the underlying factor increasing the likelihood of institutional misbehavior, practitioners and treatment providers must be cautious to not treat the singular disorder of mental illness using the same treatment designs as they would to treat co-occurring disorders.

Extended periods of exposure to treatment of six months or more was found to reduce the odds of engaging in misconduct by 35% compared to inmates receiving no treatment services. Controlling for the interaction of treatment exposure by disorder subgroup increased the odds of misconduct involvement for inmates with mental illness only and co-occurring disorders. Women with substance use disorders only reached a level of significance when the interaction term was added to the model. Crosstabulations examining the direction of the interaction effect showed that women with COD had an initial reduction in misconduct involvement when exposed to between 1 and 90 days of treatment compared to no treatment. However, as treatment exposure continued for these women, their rate of misconduct involvement began to increase and was more than doubled at 181 plus days of treatment compared to receiving no treatment.

One potential explanation for this increased rate of misconduct with extended periods of treatment exposure for COD inmates may be that they are in treatment programs not properly designed to address the needs of individuals with dual diagnoses. As reviewed in chapter 2, the integrated treatment model is the most widely accepted modality for effectively treating co-occurring disorders (Lehman, et al., 2000; Whitten, 2004). However, correctional institutions often lack the ability to offer integrated treatment programs and as the Substance Abuse and Mental Health Services Administration (2006) points out, failure to address both disorders is essentially offering no treatment. Therefore, inmates with co-occurring disorders may be receiving treatment services, but these services may not be addressing their needs and risk and may actually be having iatrogenic effects. Caution in drawing conclusions regarding iatrogenic effects

must be made since this was a cross sectional sample and treatment modality was not controlled for in the study,

In a review of the literature on the potential iatrogenic effects of psychosocial intervention, Moos (2005) indicates that there are several factors that appear to increase the risk for clinical deterioration following treatment, including more severe substance use and psychiatric problems. Moos (2005) continues by relating a prognostic index of 12 related risk factors including current symptoms and diagnostic characteristics, as well as certain demographic characteristics showing that 19% of individuals with up to 2 risk factors experienced deterioration and 40% of individuals with 7 or more risk factors experienced deterioration. Moos (2005) argues that to help avoid deterioration, individuals who are vulnerable to iatrogenic effects must be identified and placed in programs that meet their needs.

An additional explanation may be related to treatment modalities. Because treatment modalities differ in their exposure and intensity, some inmates may be under greater scrutiny and surveillance, suggesting that rule violating behaviors may be more apparent to correctional and treatment staff. The increased intensity of some of the programs may also cause frustration and anger in some inmates causing them to respond through rule violating behaviors.

Therefore, increasing rates of misconduct with extended treatment exposures by inmates with COD may be the byproduct of at least four factors: (1) failure to place the inmate in an integrated treatment program that addresses both of their disorders simultaneously, (2) the potential for many COD inmates to be misdiagnosed. As reviewed in chapter 2, current screening instruments in correctional settings are not

designed to assess the presence of more than one diagnosis (Sacks & Melnick, 2007), (3) increased surveillance by staff on inmates participating in intensive treatment programs, and (4) higher rates of frustration and anger among inmates in intensive treatment programs causing increased levels of misbehavior.

Results from the multinomial regression models predicting seriousness of misconduct testing hypothesis 5 found COD inmates were more likely to be charged with minor and serious misconduct. Mental illness as a singular disorder did not, however, reach a level of significance in predicting seriousness of misconduct, which contradicted the expected result of hypothesis 5. A potential explanation of these results is that the mentally ill have been found to be cited for behaviors that may be more reflective of their mental health disorders (e.g. refusing to come out of their cells, setting fire to their cells, self injurious behavior, and lack of hygiene, destroying state property) (Adams, 1986) which may be considered overall less serious offenses and more self injurious. Conversely, individuals with dual disorders have greater difficulties in social functioning, escalated emotional and social problems (Peters et al., 2008) and have been shown to engage in more violent behaviors (Steadman et al., 1998). Thus, the exaggerated and enhanced symptom complex of inmates with COD suggests that they may be more likely to display externalizing behaviors such as aggression toward others, which would result in more serious misconduct charges.

After controlling for the interaction of treatment exposure * disorder subgroup, the effects of mental illness or substance use disorders only were now significant in the model. The odds of women with COD committing a serious misconduct also increased after controlling for the interaction term in the model. Crosstabulations examining the

direction of the interaction effect showed that COD inmates had lesser involvement in both minor and serious misconduct when exposed to treatment of between 1 and 90 days. However, there was an increase in both their minor and serious misconduct involvement as their exposure to treatment was extended. Involvement in minor and serious misconduct for COD inmates more than doubled when receiving treatment of 6 months or greater compared to receiving no treatment. Again, this may represent an iatrogenic effect due to treatment programs that do not adequately meet their risks and needs. I would argue that this conclusion is further supported by the fact that we saw an incremental increase in not only their rate of misconduct, but also the seriousness of the misconduct charges over time. Thus, if treatment was having a deleterious effect for COD inmates, the clinical deterioration may have contributed to worsening symptomatic behaviors along with prolonged exposure to the stressors of the prison environment.

Inmates with mental health disorders only were the only disorder subgroup that saw a decline in minor and serious misconduct charges with increased exposure to treatment suggesting that treatment for the mentally ill inmates may have had a beneficial effect. Although available data does not allow examination of the prevalence of psychotropic drug use on the mentally ill female offenders, it may beg the question of whether there was a decline in minor and serious misconduct among the mentally ill offenders due to the treatment programs or whether this finding reflected a potential pharmacologic effect.

Results of the regression models predicting seriousness of sanctions testing hypotheses 6 and 7 showed that inmates with COD were over 4 times more likely to receive a serious disciplinary response to their misconduct. These results are consistent

with the fact that COD inmates were more likely to be involved in minor and serious infractions. This finding suggests that correctional staff response is not influenced by an inmate's disorder type, but is driven more by institutional policy directives. However, it may also suggest that inmates with COD whose behavior may be a symptomatic response to their disorder are treated in a similarly punitive manner to inmates with no disorders.

Theoretical implications. The current study found that inmates with mental health disorders and the co-occurrence of mental illness with a substance use disorder were more likely to be charged with an institutional misconduct compared to inmates with no disorders. According to Adams (1986), mentally ill inmates have been shown to be overrepresented in certain types of prison infractions (e.g. setting fire to one's cell, self injurious behaviors, refusing to leave their cell) that are symptomatically reflective of their disorders. For many of the mentally ill offenders, the rigid structure and stressors of a correctional setting may exacerbate symptoms of their disorders, causing them to retreat to self confined isolation (Adams, 1986) or respond through rule violating behaviors (see, Adams, 1983; 1986; Hildebrand et al., 2004; James & Glaze, 2006; McCorkle, 1995; Toch & Adams, 1986; Toch et al., 1989).

It would appear based on the findings of this study, as well as others that have found a significant relationship between mental illness and increased rates of prison misconduct, that the structure of the prison setting has an influence on the behavior of inmates with mental health or co-occurring disorders. There are likely many factors of the correctional environment that affect the assimilation process of a mentally ill or COD inmate. These factors may differ depending on the specific mental health disorder type. For example, exposure to trauma has been linked to both substance use and mental health

issues (Bloom et al., 2003; National Institute on Drug Abuse, 2008) as well as PTSD (Bloom et al., 2003). Inmates with PTSD may experience flashbacks, bad dreams, frightening thoughts, and hyperarousal that will make them easily startled, tense, unable to sleep, and angry (Bloom et al., 2003; National Institute of Mental Health, 2007). Standard operating procedures in correctional institutions including strip searches, restraints and isolation could serve as a "trigger to retraumatize women who have PTSD" (Covington & Bloom, 2003, 8) causing significant adjustment issues for these women (Bloom et al., 2003).

COD inmates who have been shown to have greater difficulty in social functioning may find they are treated as outsiders by other inmates leading to increased levels of self confinement and isolation further exacerbating symptoms of their disorders. Adams (1983) suggests that for some mentally ill, the stigma of their disorders may result in differential reactions from inmates and guards to behaviors that would otherwise be considered insignificant and dismissed. Toch (1977) suggested that perceptions of guards and inmates may influence the way in which they respond to one another, which may be more pronounced for inmates with the stigma of a mental health disorder (Adams, 1983).

Although we know little about how specific mental health disorders and CODs interact with the prison environment influencing higher rates of institutional misbehavior, findings of this study and others do suggest that there is an interactive effect. These findings lend support for an integrated theoretical model approach in which both the mental health disorder and the characteristics of the institution interact to hinder successful assimilation of the inmate to the prison. Inmate adjustment studies must take a

more comprehensive examination of the interactive effect of mental health and COD disorders and prison environments to better understand the potential environmental "triggers" of institutional misbehavior for these inmates. A more comprehensive understanding of why mentally ill and COD inmates are predisposed to higher rates of prison misconduct may be useful in making decisions regarding how to approach them proactively through policy decisions and reactively in terms of punitive versus treatment oriented responses to misconduct.

Implications for practice. National survey estimates reported that only 34% of state prison inmates with a mental health disorder had received mental health treatment since their admission (both male and female (James & Glaze, 2006). In addition, the average length of incarceration for the mentally ill inmate is 5 months longer than those with no mental illness (James & Glaze, 2006). Thus, the mentally ill in our State prisons will likely re-enter society having had minimal to no treatment and a protracted period of incarceration. Treatment for the co-occurring disorder inmate is likely no better, and perhaps worse due to the limited number of integrated treatment programs available in correctional institutions.

Findings from the current study suggest that female inmates with co-occurring disorders and mental health disorders are at an increased risk of engaging in prison misconduct. Co-occurring disorder inmates are more than 2 times more likely of committing a minor or serious misconduct compared to inmates with no disorders and almost four and half times more likely of receiving a serious sanction. Therefore, inmates with COD are at the greatest risk of receiving sanctions that will either isolate them or extend their incarceration period or both. For many of these inmates, forced

isolation will further deteriorate their clinical condition which will arguably intensify the symptomatic nature of their disorder causing more problematic behaviors for correctional staff. Thus, for some inmates, response by correctional staff to symptomatic manifestations of clinical disorders (i.e., misconduct) creates a vicious cycle that may harm both the offender and the community upon their release. Findings argue for the importance of proper assessment for dual diagnoses, access to integrated treatment services, and non-punitive responses for behaviors that are disorder related.

Improvement of treatment services for COD inmates. Although most practitioners and treatment providers have come to acknowledge the effectiveness of substance abuse treatment for offenders, understanding and acceptance of the special treatment needs for inmates with co-occurring disorders is still very much in the early stages (Wexler, 2003). As Wexler (2003) points out, treatment in the criminal justice system is by nature fragmented. Treatment providers and criminal justice practitioners are uncomfortable about addressing issues outside of their area of expertise, resulting perhaps in either mental health treatment or substance use treatment, but rarely both and even more rarely in an integrated format.

The most widely accepted treatment modality for co-occurring disorders is the integrated treatment model (Dennison, 2005; Drake, Rosenberg, & Mueser, 1996; Henry, 2004; Peters & Hill, 1997), which considers both disorders primary and is generally provided within the same setting by cross trained staff (Lehman, et al., 2000; Whitten, 2004). Clearly a fragmented approach to treatment services in which funding venues are differentiated by type of treatment service (e.g. mental health or substance use), different theoretical orientations and mission statements, as well as the lack of information sharing

between providers will not work effectively for the growing COD population (Wexler, 2003).

Results suggest the importance of improving treatment services for the mentally ill and COD inmates. Although the integrated treatment approach is a more expensive modality in an environment where state budgets are being cut and correctional resources are already strained, there is a greater long term cost associated with placing these inmates in programs that are likely to be ineffective or even iatrogenic. Failing to address the needs of inmates with COD opens the door for continued involvement in the criminal justice system, extended periods of incarceration, and increased risks to public safety upon release from prison. We must appropriately assess inmate needs and risks and place them in programs that are designed to effectively treat their disorders in order to maximize the opportunity for successful interventions while also getting the best use of dollars spent. Placing inmates in programs that are likely to be ineffective is wasting the resources of that program. Space is often limited, which is demonstrated by the high number of inmates needing treatment services compared to the percentage of inmates receiving them, and therefore programs should only be treating those inmates most likely to receive benefits. If inmates with COD and mental illness are at significantly increased risk of prison misconduct as this study suggests, the costs incurred both directly and indirectly from prison infractions can be offset by the better use of appropriate treatment designs, cross trained staff, and appropriate responses to inmate misbehavior.

Correctional Staff training. Correctional institutions play an almost dual role in terms of their function. Their primary goal is to maintain safety within the institution while also being the largest provider of mental health treatment in the country (American

Psychiatric Association, 2004; Gelman, 2007; Human Rights Watch, 2003; Torrey, 1995). Some may argue the irony of the fact that to help maintain the primary goal of institutional and public safety, the secondary purpose of providing treatment is integral. This raises many points for practitioners not limited to accurate assessment and screening at intake. Sacks and Melnick (2007) emphasize the need for valid screening instruments in correctional settings that are designed to assess more than one disorder.

I would further suggest that while we need to have cross trained treatment providers for COD inmates, we must also train correctional staff in understanding how to identify and differentiate inmate misbehavior from possible symptomatic manifestations of disorders. Since inmates with COD are at an increased risk of both minor and serious misconduct, these inmates are more likely to come into contact with correctional staff on a regular basis. In an environment that is highly stressful with officers performing dual, perhaps contradictory roles of maintaining order and effectively addressing inmate's needs, it is important that staff be trained in understanding and identifying behaviors that may be disorder related. Further, administration must stress the importance to line officers of the need to assess inmates who appear to be a constant source of misbehavior and review their history for a potential pattern to their misconduct. For many mentally ill offenders, patterns of rule breaking behaviors may be discernibly different from other inmates (e.g. refusing to come out of their cells, setting fire to their cells, self injurious behavior, and lack of hygiene, destroying state property) (Adams, 1986). If correctional officers are able to identify inmates with a pattern of misbehavior that may be suggestive of disorder related symptoms, they could suggest an evaluation of the inmate before responding in a punitive fashion.

Failure to identify inmates at intake or during the incarceration period who may pose the greatest risk of misconduct, such as this study has found, and most in need of specialized treatment may arguably place them in an environment where the symptomatic manifestations of their disorders are treated as intentional misbehavior and subsequently sanctioned in a punitive manner.

Reintegration into the community. Re-entry into the community is a difficult adjustment with many obstacles for most offenders, particularly those with substance use or mental health disorders. However, as Wexler (2003) points out, the fragmented systems that exist in most correctional institutions are carried through to the community setting, making the transition for offenders with COD particularly difficult. The substantial benefit of community aftercare programs following prison based TC treatment for substance abusing or dependent offenders to post release success is widely accepted as an important factor in the treatment continuum (Hiller, Knight & Simpson., 1999; Knight, Simpson & Hiller, 1999; Martin, Butzin, Saum & Inciardi, 1999; Simpson, Wexler & Inciardi, 1999; Wexler, Melnick, Lowe & Peters, 1999). The principal aim of community aftercare in the continuum-of-care model is to serve as a maintenance phase following treatment. Higher rates of misconduct among inmates with COD, including serious misconduct, suggest that these individuals may have adjustment difficulties, which will likely create problems of reintegration into the community. Thus, there is a need to establish more expansive access to community aftercare programs that are designed to treat released offenders with dual disorders to help facilitate the transition from the prison to the community.

Limitations

There are several limitations in this study that should be noted. This was a cross-sectional sample of female inmates limited to one geographic location, Pennsylvania. Therefore caution should be exercised in generalizing these findings on a national scale to be reflective of all female State prison inmates and all inmates with mental health, substance use or co-occurring disorders. On the other hand, there are several benefits to conducting a study in a single state. All inmates included in this research were sentenced under the same State law; they were all assessed using the same procedures, and they were all confined in facilities operated by the same state Department of Corrections.

A second limitation of note is the use of the Texas Christian University Drug Screen II as the single instrument for screening alcohol and /or drug abuse or dependence. Although this screening instrument distinguishes questions by alcohol and drug usage, the current study only had the final TCU Drug Screen II score and therefore was not able to distinguish between drug use disorders and alcohol use disorders or whether an inmate was considered to have problems with both. In addition, because the TCU Drug Screen II is designed only as a screening instrument, results of the screening should serve to establish the need for further assessment of substance abuse or dependence. Therefore, this study was not able to assess if specific substance use disorders were more problematic than others or interacted differently for inmates with COD. Although the TCU Drug Screen II has been extensively validated with inmate populations (Broome, Knight, Joe, & Simpson, 1996; Knight, Simpson, Morey, 2002; Peters, Greenbaum, & Edens, 1998; Shearer & Carter, 1999; Simpson, Knight, & Broome, 1997; Zajac, 2007), it is still a self reported screening instrument. As such,

some concerns include inmate recollection that could reduce accuracy and the potential of either under-reporting or over-reporting on the part of the respondent.

A third limitation is the lack of access to specific medical information for inmates including medication usage, type and dosage. According to Bloom et al. (2003), studies have shown that women receive two-thirds of all prescriptions of psychotropic drugs and that these drugs can be prescribed without proper dosaging information or their unique side effects in women (p. 44). Culliver (1993) reported the use of psychotropic drugs to be 10 times higher in women's facilities compared to male facilities (p. 404). However, due to restrictions regarding dissemination of confidential personal information under the Health Insurance Portability and Accountability Act of 1996 (HIPAA), medication usage was not available.

Although the current study controlled for the primary institution in which the inmate was housed, other contextual factors related to the institution that may be related to misconduct by inmates were not examined in the current study. Although few studies have examined more than one of these in any single study, other relevant contextual factors may include prison crowding (Gaes, 1994; Gaes & McGuire, 1985; MacDonald, 1999; Nacci, Teitelbaum, & Prather, 1977; Ruback & Carr, 1984), management style (Patrick, 1998), oppositional attitudes toward staff, acceptance of violence, adoption of inmate code (Paterline & Petersen, 1999), inmate interaction (Wheeler, 1961), and feelings of powerlessness or alienation (Hyman, 1977; Thomas & Zingraff, 1976).

An additional limitation, particularly notable due to the fact that this study used an all female sample, was the inability to control for pre-incarceration or current incarceration acts of sexual or physical abuse. Ideally, one would want to be able to

control for prior physical and sexual victimization histories to examine if they significantly impact an inmate's misbehavior, or if they interact with specific disorder types to increase rates or seriousness of misconduct. It must be noted, however, that access to personal information such as victimization histories are understandably difficult to obtain for research purposes under the Health Insurance Portability and Accountability Act (HIPPA).

An additional limitation of note is the threat to the validity and reliability of officially gathered misconduct data. Light (1990) provides a detailed description of these threats based on a critical review of literature examining individual level prison rule violations including: "correctional officer discretion, definition of events, participant status characteristics, jurisdictional effects, temporality, and environmental/contextual influences" (p. 1).

The line officer is arguably the primary agent of control within a prison and maintains the greatest amount of discretion in charging inmates with misconduct (Daggett & Camp, 2009; Flanagan, 1980). Daggett and Camp (2009) suggest that correctional officer discretion is more likely to occur when the offense is less serious or nonviolent similar to findings regarding the use of discretion in other areas of the criminal justice system. Thus, the line officer retains the discretion to generate a misconduct charge and assess the level of seriousness to be placed on the behavior. The level of seriousness that an officer attributes to the conduct will also determine whether the disposition hearings will be formal or informal influencing the type of possible sanctions to be imposed (Light, 1990). Inmates, like correctional officers, also maintain a degree of discretion in whether behavior is reported as a rule violation (Dagget & Camp,

2009). Fear of being labeled a snitch may result in inmates not reporting assaultive or violating behaviors to staff (Irwin, 2005), as well as the informal social controls exercised through inmate cultures to handle misbehavior at the inmate level (Dagget & Camp, 2009) (see Light, 1990 for findings of selective enforcement rationales offered in studies examining prisoner misconduct).

An additional threat to the reliability and validity of misconduct data is the issue of behavior corresponding to policy. Light's (1990) review of several studies found that despite rule violations being defined within administrative policy guidelines, correctional officers have found rules to apply to incidents in order to discipline prisoners rather than behavior being a clear rule violation (see Lombardo, 1980). In addition, incidents involving more than one inmate may result in misconduct charges being levied against each inmate for one incident or multiple officers submitting the same incident report, both of which can result in over-inflation of the frequency of violation incidents (Hewitt, Poole, & Regoli, 1984).

Much like selective enforcement or discretion of the line officer, the amount of misconduct not detected and therefore not part of the official data is unknown (Light, 1990). Thus, the amount of undetected and unreported misconduct may be considerable. Light (1990) further points out that changes in policy, administration, or particular events within an institution, may impact on the types of behavior considered rule breaking and/or reporting procedures. Lastly is the issue of jurisdictional differences which may negatively affect data reliability (Light, 1990). As Light (1990) points out, jurisdictional variations are less problematic when the facilities are within the same jurisdiction and therefore presumed to be subject to the same system-wide policies and oversight.

However, differences in institutional cultures, climate, traditions, and staff do provide challenges even within the same jurisdiction for complete standardization (Light, 1990).

The current study used the PADOC Mental Health and Mental Retardation Roster as the criteria for a diagnosis of a mental health disorder. However, it was not possible to distinguish if an inmate was placed on the roster for a mental health diagnosis or mental retardation. Mental retardation is a condition diagnosed during childhood (prior to age 18) that includes below average intellectual functioning and the lack of skills necessary for daily living (Council for Exceptional Children, 2010). Individuals with IQ scores ranging between 50 and 70 suggests mild mental retardation, 35 to 50 moderate mental retardation, and below 35 indicates severe mental retardation (Council for Exceptional Children, 2010).

Although the current study was not able to differentiate inmates diagnosed with a mental health disorder from inmates with possible mental retardation, examination of the sample revealed the lowest IQ score to be 60 with only 1.7% of the sample having IQ scores below 70 suggesting possible mild mental retardation. In addition, each inmate in the study who was on the MH/MR roster had a corresponding DSM-IV mental health diagnosis. Therefore, even if an inmate was deemed to have mild mental retardation they were also considered to have a mental health disorder.

An additional limitation of the current study that should be noted was missing data. Although it is not unusual in cross sectional or longitudinal studies to have missing data, it raises concerns about the randomness of the missing data and any bias it may introduce into the study. Therefore, careful examination of the missing data and consideration of how to accommodate the missing cases must be made. As discussed in

chapter 3, no single variable in the current study accounted for a large proportion of missing cases. Comparison of the total eligible sample with the final sample using listwise deletion of the missing data showed the mean differences were very small, although 4 of 17 mean comparisons were statistically significant. Due to the large sample size and the number of comparisons, some differences were expected (Tabachnick and Fidell, 2006). In studies where participants are at equal probability of dropping out, missing data presents only the problem of reduced statistical power due to a reduced sample size. Although the missing data in the current study appeared random in nature, missing data bias cannot be entirely discounted as a possible threat to the findings of this study.

One additional limitation regarding missing data must be made related to the 18.4% of the sample that was filtered out of the study sample prior to any analysis. As noted in Chapter 3, 398 cases or 18.4% of the women incarcerated between January 1, 2007 and July 30, 2009 were missing scores for the TCU Drug Screen II, which was a criterion variable for the substance use disorder and co-occurring disorder groups. Because these inmates were filtered out of the sample, findings of this study may not be able to be generalized to all incarcerated women in the State of Pennsylvania.

The final limitation of note is the current study did not control for the treatment modality. Treatment exposure as controlled for in the current study included all treatment programs available (e.g. Narcotics Anonymous and Alcoholics Anonymous) to the inmates, thereby limiting the conclusions that can be drawn regarding the effects of treatment, since different types of programs may vary greatly in their focus, methods, and intensity.

Future Research

Research on prison misconduct is valuable to correctional administrators, policy-makers, and treatment providers. The benefit to correctional administrators is the ability to have information that allows for more proactive management of the incarcerated population, particularly those at greatest risk for institutional misbehavior. It further identifies inmates that may benefit by proactively introducing treatment designed for their needs and risks at the time of initial incarceration rather than responding in a punitive manner to symptomatic manifestations of disorders.

The prevalence of co-occurring disorders among the offender population and the unique challenges that it raises for correctional institutions has been clearly demonstrated. However, as Wexler (2003) points out, we are only just beginning to examine and empirically demonstrate the effects of COD for both the inmate and the prison setting. Therefore, continued research on the impact of co-occurring disorders in terms of inmate adjustment, misconduct, treatment services and reintegration are needed. It took over a quarter of a century to demonstrate the importance and effectiveness of substance use treatment in the correctional setting. The current study supported findings of prior research on the influence of mental illness on prison misconduct, but expanded this to examine co-occurring disorders. What this study demonstrated was that the additive and interactive nature of co-occurring disorders does appear to aggravate the rates of institutional misbehavior, suggesting the need for continued research in this area.

Future research should focus on distinguishing whether specific types of mental health disorders are more problematic than others in relation to disciplinary problems. As reported in this study, inmates with Axis II mental health disorders were more likely to

engage in misconduct, including serious misconduct, compared with Axis I diagnoses. Future research should also (ideally) distinguish the type of substance use disorder (e.g. drug or alcohol) to assess if there are differences both independently and in interaction with mental illness in relation to behavioral problems. This would allow greater precision in identifying inmates most at risk for prison misconduct and identifying appropriate treatment options.

The current study found an effect of treatment exposure on misconduct, particularly in interaction with disorder type. Continued research in this area should control for both treatment modality and intensity. In this same vein, the use of medications including type and dosage should be controlled for to assess their influence on misconduct. The type of medication is an important consideration in terms of its pharmacologic properties, and dosaging is critical in assessing whether it may be used as an agent of control rather than for its clinical benefits. In addition to controlling for specific treatment modalities administered post incarceration, prior treatment in the community setting should also be factored into research studies to examine whether there are differences between inmates who received community and prison treatment versus prison-based treatment only.

Conclusion

This study examined whether the interactive and additive nature of co-occurring disorders were associated with increased rates of prisoner misconduct and severity of misconduct compared to singular and no disorders. Findings indicated that inmates with co-occurring disorders and mental health disorders were significantly more likely than those with no disorders to be charged with institutional infractions, after controlling for

other predictors of prison misconduct. COD inmates were also more likely to be charged with both minor and serious misconduct compared to inmates with no disorders. Consistent with engaging in more serious infractions, COD inmates were also found to be given more serious disciplinary sanctions.

The results of this study suggest the need for further research on understanding how the interactive and additive nature of co-occurring disorders influence an inmate's ability to assimilate into the prison environment. Review of the interaction of treatment exposure with disorder group also suggests the need for in-prison treatment modalities that best serve the needs of inmates with dual disorders. Proactive measures to accurately assess, treat, and respond to inmates with COD may serve to reduce prison misconduct, thereby increasing safety and reducing costs within the institutions.

Research that addresses the complexities of co-occurring disorders and the resultant consequences to correctional institutions is sorely needed. With prisons assuming a dual role of incarceration and treatment provider, the need for more integrated treatment designs is critical, along with improved dual disorder screening instruments and staff training on the complexities of COD. We cannot take another quarter of a century to demonstrate the importance of effectively treating and managing offenders with COD.

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APPENDIX A

SUBSTANCE USE DISORDER CLASSES AND DEFINITIONS

Classes of Substance Use Disorders

- Alcohol
- Amphetamine or similarly acting sympathomimetics
- Caffeine
- Cannabis
- Cocaine
- Hallucinogens
- Inhalants
- Nicotine
- Opiods
- Phencyclidine (PCP) or similarly acting arylcyclohexylamines
- Sedatives, hypnotics, or anxiolytic

(American Psychiatric Association [APA], 2000, p. 191)

Abuse and Dependence Definitions

Substance abuse: "A maladaptive pattern of substance use manifested by recurrent and significant adverse consequences related to the repeated use of substances. (American Psychiatric Association (APA, 2000, p. 198)

Substance dependence: "A cluster of cognitive, behavioral, and physiological symptoms indicating that the individual continues use of the substance despite significant substance-related problems.

Source: American Psychiatric Association, (2000, p. 192).

APPENDIX B

MAJOR RELEVANT CATEGORIES OF MENTAL DISORDERS FOR CO-OCCURRING DISORDERS

- Schizophrenia and other psychotic disorders
- Mood disorders
- Anxiety disorders
- Somatoform disorders
- Factitious disorders
- Dissociative disorders
- Sexual and gender identity disorders
- Eating disorders
- Sleep disorders
- Impulse-control disorders
- Adjustment disorders
- Personality disorders
- Disorders usually first diagnosed in infancy, childhood, or adolescence

Source: American Psychiatric Association (2000)

APPENDIX C

PADOC INMATE SENTENCE STATUS

Sentence Status	**Percent**	**Frequency**
Actively Serving (In Custody)	68.2	1204
Paroled	15.3	270
Diagnostic Classification (In Custody)	13.1	231
Sentence Completed	1.2	22
Waiting (In Custody)	1.6	28
Received in Error	0.1	2
Mental Health (In Custody)	0.2	4
Transfer to County	0.1	1
Deceased (Natural)	0.1	1
Escape	0.1	1
In Custody Elsewhere	0.1	2

N = 1766

Source (K. Bucklen, personal communication, September 2, 2010)

APPENDIX D

PADOC MISCONDUCT CHARGES

CLASS I CHARGES (FORMAL RESOLUTION ONLY)

Assault	Any criminal violation of the Pennsylvania Crimes Code not set forth above (must be specified
Murder	Tattooing or other forms of self mutilation
Rape	Indecent exposure
Arson	Engaging in, or encouraging unauthorized group activity
Riot	Breaking restriction, quarantine or informal resolution sanction
Escape	Gambling or conducting a gambling operation or possession of gambling paraphernalia
Robbery	Possession or circulation of a petition, which is a document signed by two or more persons requesting or demanding that something happen or not happen without the authorization of the facility manager
Burglary	Using abusive, obscene, or inappropriate language to or about an employee
Kidnapping	Violating a condition of a pre-release program
Unlawful Restraint	
Aggravated Assault	
Voluntary Manslaughter	
Extortion by threat of violence	
Involuntary Deviate Sexual Intercourse	
Threatening an employee or his/her family with bodily harm	
Fighting	
Threatening another person	
Threatening, harassing, or interfering with a Department K-9 or mounted patrol horse	
Engaging is sexual acts with others or sodomy	
Wearing a disguise or mask	
Failure to report an arrest or any violation of the Pennsylvania Crimes Code (Community Corrections Centers only)	
Possession or use of a Dangerous or	

controlled substance	
Possession or use of intoxicating Beverages	
Extortion or blackmail	
Sexual harassment	

CLASS I CHARGES (ELIGIBLE FOR INFORMAL RESOLUTION)

Refusing to obey an order
Possession of contraband including money, implements of escape, non-prescribed drugs (or drugs which are prescribed, or but which the inmate is not authorized to possess), drug paraphernalia, poisons, intoxicants, materials used for fermentation, property of another, weapons, or other items which in the hands of an inmate present a threat to the inmate, others or to the security of the facility.
Violations of visiting regulations
Destroying, altering, tampering with or damaging property
Refusing to work, attend school, or attend mandatory programs or encouraging other to do the same
Unauthorized use of the mail or telephone
Failure to stand count or interference with count
Lying to an employee
Presence in an unauthorized area
Loaning or borrowing property
Failure to report the presence of contraband
Theft of services (i.e. cable, or other facility services

*f you are charged under Section B. with possession of an item of contraband which is a weapon or an item which in your hands presents a threat to others or to the security of the facility, and the item also has a legitimate use in the area discovered, credible evidence that the item has been used only for the legitimate purpose may reduce the rule violation to a Class II.

*Possession of drugs (as determined by laboratory analysis), alcohol, poisons, and/or weapons are not eligible for informal resolution.

CLASS II CHARGES (ELIGIBLE FOR INFORMAL RESOLUTION)

Body punching or horseplay
Taking unauthorized food from the dining room or kitchen
Failure to report or unexcused absence from work, school, or mandatory programs
Smoking where prohibited
Possession of any items not authorized for retention or receipt by the inmate note specifically enumerated as Class 1 contraband
Any violation of a rule or regulation in the Inmate Handbook not specified as a Class 1 misconduct charge

Source: Pennsylvania Department of Corrections (2008)

APPENDIX E

PENNSYLVANIA DEPARTMENT OF CORRECTIONS DISCIPLINARY SANCTIONS

- An inmate found guilty of a Class I misconduct (charges #1 through and including #34)[5] may be, and most likely shall be, removed from his/her job assignment.

- An inmate who is found guilty of a misconduct for #39 (refusing to work, attend school or attend mandatory programs or encouraging others to do the same) for a second time, including an informal resolution, shall, in addition to any other penalty imposed, not be permitted the privilege of telephone or television until he/she returns to work, school, or the mandatory program. After a period of 90 days, upon application by the inmate, the Program Review Committee (PRC)[6] may terminate this restriction if the inmate's failure to return to the assignment is no fault of his/her own.

- In addition to the likely removal from his/her job assignment, one or more of the following sanctions may also be imposed for a Class I misconduct:
  - assignment to disciplinary custody status for a period not to exceed 90 days per misconduct charge;
  - cell restriction for a period not to exceed 30 days per misconduct charge. Cell restriction is total confinement to general population cell, dorm area or cubicle, except for meals, showers, one formal religious service per week, commissary, law library and one one-hour specified daily exercise period. Participation in programs, school and work are suspended;
  - loss of privileges for a prescribed period. Privileges lost shall be specifically identified and shall, where possible, be related to the misconduct violation. Privileges include television, radio, telephone, and commissary for up to 180 days, visiting suspension or restriction for up to 60 days,9 yard and blockout;
  - assessment of costs as a result of the inmate's behavior
  - reprimand, warning, counseling;
  - final disposition of confiscated contraband;
  - revocation of pre-release status and/or outside program codes; and/or

[5] See Appendix 2 for complete list of misconduct charges

[6] Program Review Committee (PRC) - A committee consisting of three staff members that conduct Administrative Custody Hearings, periodic reviews, make decisions regarding continued confinement in the Restricted Housing Unit (RHU) and/or Special Management Unit (SMU) and hear all first level appeals of misconducts. Whenever a PRC is convened, at least one member of the committee shall be a staff member who is not directly involved in the administration of the RHU/SMU in which the inmate is currently housed.

- limitation of commissary privileges excluding TV, radio, and phone cards, to ten dollars a week for up to one year following a finding of guilt for a misconduct involving gambling.

- The Hearing Examiner may reduce the classification of any Class I misconduct (except Class I charges #1 through #15)[7] to a Class II misconduct.
- Inmates found guilty of Class II misconduct charges are subject to one or more of the above sanctions except placement in disciplinary status and loss of pre-release status.
- Time given for misconduct charges #1 through #14 shall be served in its entirety. An exception may be permitted for an inmate on the Mental Health Roster if the facility's mental health staff recommends that the sanction be reduced. For other misconducts, the PRC may consider a release to general population upon completion of half of the sanction imposed. The Facility Manager or PRC may change an inmate from disciplinary custody (DC) to administrative custody (AC)[8] status only upon expiration of the DC sanction and only if the proper notice and hearing procedures are provided as outlined in Department policy DC-ADM 802, "Administrative Custody Procedures."
- At any time, the Facility Manager/designee may reduce the disciplinary sanction imposed on any inmate other than those with misconduct charges #1 through #14, except for inmates on the mental health roster if the mental health staff recommends the sanction be reduced based on the security needs of the facility.

Source: Pennsylvania Department of Corrections (2008)

[7] See Appendix 2 for complete list of misconduct charges

[8] Administrative Custody – A status of confinement for non-disciplinary reasons, which provides closer supervision, control, and protection than is provided in general population.
Disciplinary Custody – The maximum restrictive status of confinement to which an inmate guilty of a Class I misconduct may be committed. An inmate may be placed in disciplinary custody status for a period no longer than 90 days per misconduct charge.

APPENDIX F

DSM-IV AXIS DIAGNOSIS

Axis I: Clinical Disorders; Other Conditions That May Be a Focus of Clinical Attention

Axis I is for reporting all the various disorders or conditions in the Classification except for the Personality Disorders and Mental Retardation (which are reported on Axis II). The major groups of disorders to be reported on Axis I are listed below. Also reported on Axis I are other conditions that may be a focus of clinical attention.

Axis I diagnoses:

Delirium, Dementia, and Amnestic and Other Cognitive Disorders

Mental Disorders Due to a General Medical Condition

Substance-Related Disorders

Schizophrenia and Other Psychotic Disorders

Mood Disorders

Anxiety Disorders

Somatoform Disorders

Factitious Disorders

Dissociative Disorders

Sexual and Gender Identity Disorders

Eating Disorders

Sleep Disorders

Impulse-Control Disorders Not Elsewhere Classified

Adjustment Disorders

Other Conditions That May Be a Focus of Clinical Attention

Axis II diagnoses: Personality Disorders; Mental Retardation

Axis II is for reporting personality disorders and mental retardation. It may also be used for noting prominent maladaptive personality features and defense mechanisms. The listing of personality disorders and mental retardation on a separate axis ensures that consideration will be given to the possible presence of personality disorders and mental retardation that might otherwise be overlooked when attention is directed to the usually more florid Axis I disorders. The coding of personality disorders on Axis II should not be taken to imply that their pathogenesis or range of appropriate treatment is fundamentally different from that for the disorders coded on Axis I. The disorders to be reported on Axis II are listed below.

Paranoid Personality Disorder
Schizoid Personality Disorder
Schizotypal Personality Disorder
Antisocial Personality Disorder
Borderline Personality Disorder
Histrionic Personality Disorder
Narcissistic Personality Disorder
Avoidant Personality Disorder
Dependent Personality Disorder
Obsessive-Compulsive Personality Disorder
Personality Disorder Not Otherwise Specified
Mental Retardation

Source: American Psychiatric Association (2000)

APPENDIX G

PADOC PROGRAM CODES

PROGRAM CODE / PROGRAM NAME

- A143 Act 143 Victim Awareness Education
- BOTI Back on Track (Inside)
- CD Character Development
- CDC Child Care Devlopment
- DD/TC Dual Diagnosis/Therapeutic Community
- DDP Dual Diagnosis
- OP Outpatient Drug Treatment
- PCM Charla Maternal Program
- POS Positive Parenting
- POSR Positive Relationships
- PRN Parenting
- PSG Abuse Group
- PSHR Positive Housing Reports
- PTC Parenting Teens
- PVREP Parole Violator Group
- SIP State Intermediate Punishment
- SMTC Short Minimum Sentence Therapeutic Community
- SMTFC Short Minimum Sentence Thinking for a Change
- SMVP Short Minimum Sentence Violence Prevention
- SNUADD Special Needs Unit Addictions Issues
- SOPA Sex Offender Program Aftercare
- SOPE Sex Offender Program Evaluation
- SOPMH Sex Offender Program Moderate – High Intensity
- SS Seeking Safety
- THC Therapeutic Community Treatment
- TFC Thinking for a Change
- VIOP Violence Prevention
- VIOPH Violence Prevention High Intensity
- VIOPL Violence Prevention Low Intensity
- VIOPM Violence Prevention Moderate Intensity

Source (K. Bucklen, personal communication, September 2, 2010)

APPENDIX H

CROSSTABULATION (TREATMENT EXPOSURE * DISORDER GROUP * ANY MISCONDUCT)

		Treatment Exposure by Days				
		No Days	**1 – 90 days**	**91 – 180 days**	**181 + days**	**Total**
Disorder Group	**Any Misconduct**	**%**	**%**	**%**	**%**	**%**
No Disorders	Yes Misconduct	32.3	9.7	29.0	29.0	100.0
Co-Occurring Disorders	Yes Misconduct	20.1	13.7	19.2	47.1	100.0
Mental Health Disorders	Yes Misconduct	44.7	13.2	23.7	18.4	100.0
Substance Use Disorders	Yes Misconduct	34.9	12.0	24.1	28.9	100.0

APPENDIX I

CROSSTABULATION (TREATMENT EXPOSURE * DISORDER GROUP * SERIOUSNESS OF MISCONDUCT)

	Disorder Groups			
	No Disorder	**Co-occurring Disorder**	**Mental Health Disorder**	**Substance Use Disorder**
Minor Misconduct	**%**	**%**	**%**	**%**
No days in Treatment	50.0	20.4	42.9	47.1
1 – 90 days	6.3	16.3	14.3	11.8
91 – 180 days	37.5	21.8	28.8	14.7
181 + days	6.3	41.5	14.3	26.5
Total	100.0	100.0	100.0	100.0
Serious Misconduct				
No days in Treatment	13.3	19.8	45.8	26.5
1 – 90 days	13.3	12.2	12.5	12.2
91 – 180 days	20.0	17.3	20.8	30.8
181 + days	53.3	50.8	20.8	30.6
Total	100.0	100.0	100.0	100.0

APPENDIX J

MEASUREMENT MATRIX: INDEPENDENT VARIABLES

Measurement Domain	**Variables**	**Instrument or Data Source**	**Mode of Administration**	**Timing of Data Collection**
Offender Variables	Age	DOC Databases *	Inmate Records System (computerized)	Upon Admission
	Race	DOC Databases *	Inmate Records System (computerized)	Upon Admission
	Education	DOC Databases *	Inmate Records System (computerized)	Upon Admission
	Marital Status	DOC Databases *	Inmate Records System (computerized)	Upon Admission
	Pre-incarceration Employment Status	DOC Databases *	Inmate Records System (computerized)	Upon Admission
	Admission / Release Date/ Minimum Release Date	DOC Databases *	Inmate Records System (computerized)	Upon Admission and Release
	Prior and Current Offense Severity	DOC Databases *	Inmate Records System (computerized)	Upon Admission

	Level of Need for Substance Use Treatment	TCU Drug Screen II *	Inmate Self Report and Interview	Upon Admission
	Level of Need for Mental Health Treatment	Psychology Assessment Inventory & Inmate Interview	Inmate Record and Interview	Upon Admission
Inmate Custody Level	Level of Control	PA Additive Classification Tool (PACT) *	Staff Survey	Upon Admission
Treatment	Admission and Discharge Dates	DOC Databases *	Computerized Records	Collected Weekly
Treatment	Length of Time in Treatment	Treatment Program Records *	Paper Records	End of Treatment Stay and (possibly end of aftercare stay)
Treatment	Successful or Unsuccessful Inmate Completion of Treatment	Treatment Program Records *	Paper Records	End of Treatment Stay and (possibly end of aftercare stay)
Dependent Variables				
Misconduct	Institutional Behavior: Rule Infractions &	DOC Databases *	Computerized Records	Collected Weekly
Sanction	Disciplinary	DOC Databases	Computerized	Collected

	Actions	*	Records	Weekly

APPENDIX K

ESTIMATED MARGINAL MEANS FROM NEGATIVE BINOMIAL REGRESSION: DISORDER GROUP

Disorder Group	Mean	SE
No Disorder [a]	.5540	.09157
Co-occurring Disorder [c]	1.8579	.21820
Mental Health Disorder [c]	2.1162	.35078
Substance Use Disorder [b]	.9871	.13681

a. The mean difference is significant at the .05 level
b. The mean difference is significant at the .05 level
c. The mean difference is significant at the .05 level