ABSTRACT

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This study added to the literature on pathways to prison by examining a sample of federal inmates to assess whether the pathways identified predicted future antisocial behavior, i.e., prison misconduct and post-release criminal activity. Previous research has generally focused on only one point in the criminal justice system, either identifying pathways to prison, analyzing behavior while incarcerated, or focusing on post-release offending. This research examined all of these points. The research presented here identified both unique and overlapping pathways to prison for men and women, as well as similarities and differences in the risk factors that predicted prison misconduct and recidivism for women and men.

While the latent class models, which identified the pathways to prison, relied heavily upon indicators highlighted in the gender-responsive literature, the final misconduct and recidivism models included those factors along with traditional, gender-

neutral items. The methods in this research moved beyond previous studies that relied primarily on bivariate analyses of female inmates.

Four pathways emerged for both men and women each. Three of the pathways overlapped for both groups: drug, street, and the situational offender pathways. Males and females each had one unique pathway which represented opposite ends of the criminal experiences spectrum. A first time offender pathway emerged for women; a more chronic, serious offender pathway emerged for men. When the pathways to prison were the only predictors in the misconduct and recidivism models, the pathways consistently and significantly predicted antisocial behavior. Once the socio-demographic and criminal history factors were added to the models, however, the vast majority of the pathway effects on antisocial behavior were no longer statistically significant.

Because the current literature presents mixed results as to whether the same factors predict offending for men and women, this study analyzed gendered aspects of prison misconduct and recidivism. There were more differences than similarities in the factors that significantly impacted these antisocial behaviors.

PATHWAYS TO PRISON AND SUBSEQUENT EFFECTS ON MISCONDUCT AND RECIDIVISM: GENDERED REALITY?

By

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Chapter 1: Introduction

Research Questions

This study will build on previous studies by exploring the pathways that lead people to prison and will determine if these pathways predict future antisocial behavior, such as prison misconduct and post-release criminal activity. Previous research has generally focused on only one of these time points in the criminal justice system (i.e., pathways to prison, behavior while incarcerated, or post-release offending). Some research has identified both unique and overlapping pathways to prison for men and women (see, Daly, 1994). Similarly, the prison misconduct literature has highlighted similarities and differences in predictors of misconduct for women and men (Bonta et al., 2011; Craddock, 1996; Gover, Pérez, & Jennings, 2008; Harer & Langan, 2001). Mental illness, for example, has been cited as a key problem for female offenders, both in terms of imprisonment risk and successful adjustment (Ditton, 1999; James & Glaze, 2006), but it is less clear that mental health problems play a similar role for males. In addition, criminological theories, risk assessment instruments, and factors that have been shown to predict recidivism have largely been tested with male samples. Because the literature remains mixed as to whether the results from these male studies accurately depict female offending (Daly, 1994; Deschenes, Owen, & Crow, 2007), this study will explore whether there are gendered aspects to the pathways to prison, prison misconduct and recidivism. Lastly, all of the prison pathways research and the majority of misconduct and recidivism studies have sampled from state prisons or local jails; this study will contribute to the existing literature by using a federal prison sample.

Summary of Sample and Methodology

The current study uses a sample of inmates admitted to 14 different institutions within the Federal Bureau of Prisons between 2002 and 2003. There were 2,855 inmates admitted during this period, including 2,221 males and 634 females. Because this study examines individuals as they move through the criminal justice system and in post-release, the sample size will naturally be smaller than this number. The original sample included deportable aliens; the current study did not include these individuals because they are deported upon release from the BOP.

My first step provided a descriptive analysis of the risk factors for men and women. Next, these risk factors were bundled into distinct categories to identify pathways to prison. Once the pathways were identified, for both misconduct and recidivism, a series of models were examined to see if the results differed depending on how the pathways were measured. The first model specification only included the four classification variables that were calculated from the latent class pathway models (i.e., pathways only models). The second model specification again included the classification variables and other known risk factors not originally included when the pathways were constructed (i.e., full pathways models). The third set of models included the actual variables that created the pathways to prison classifications, as well as the criminal history and socio-demographic variables added to the previous model (i.e., risk factor models). These three model specifications were important to determine (1) if the pathways alone predicted misconduct; (2) whether there are additional factors above and beyond the pathways that significantly predicted misconduct and changed the effects of

the pathway variables; and (3) if the results differed according to which approach was selected, i.e., the risk factor approach or the latent variable approach.

The analysis used negative binomial regression models to examine the incidence of misconduct. In addition, the prevalence of misconduct was also examined; for simplification the results are located in Appendix B. The last set of models examined the relationship between pathways to prison, prison misconduct, and the timing of post-release arrest (e.g. recidivism). The timing is important in this context because theoretically someone who is arrested within the first month after release may have a different criminal propensity than someone who is arrested a year after release (Allison, 2010). Cox proportional hazard models are used to examine this research question.

Significance of Current Study

This research is important on several fronts. First, it contributes to the extant literature on pathways that lead people to prison and seeks to determine if these pathways differ by gender (see Daly 1994). Second, this study employs data from several points of contact in the justice system (pre-incarceration, incarceration, and post-release), thus distinguishing it from earlier studies that generally focus on only one of these time points. In particular, the incarceration phase is often unexplored in other studies (Visher & Travis, 2003). Ignoring time spent in prison renders these studies problematic as individuals may change - either positively or negatively - during the course of custodial control. Another advantage of the current study is the use of several measures of criminal history information to evaluate both in-prison and post-release adjustment.

This study allows a quantitative examination of the pathways to prison for both men and women, unlike previous studies that often only include women (Richie, 1996;

Simpson et al., 2011; Simpson, Yahner, & Dugan, 2008). Most of the previous research has included offenders supervised in the community or serving short sentences in jails. This study broadens the scope by using a prison sample that includes individuals who have served longer sentences. In fact, the current study is the largest sample to date that examines prison pathways with federal inmates.

Federal prisons exist throughout the country rather than within just one state, one city, or one jail. This national focus is a strength of this study for several reasons. First, a number of states have only one female prison and, often, the women comprise a relatively small group of inmates. This limits the generalizability of the results. Using a sample from the federal prison system is advantageous because the female population is quite large in comparison to the state and county systems. Second, there are only a handful of studies that have examined female offenders in the federal system, and most of these focused on program evaluations for residential drug abuse or residential faith-based prison programs (Camp, Gaes, Langan, & Saylor, 2003; Camp, Klein-Saffran, Kwon, Daggett, & Joseph, 2006; Daggett, Camp, Kwon, Rosenmerkel, & Klein-Saffran, 2008; Pelissier, 2004; Pelissier, Camp, Gaes, Saylor, & Rhodes, 2003; Pelissier & Jones, 2005). This research extends the literature on women in the federal system beyond this limited focus.

Findings from the current study also may have significant policy implications for correctional administrators and for correctional programming in general. More specifically, if predictors of prison adjustment and/or recidivism vary substantially for men and women, then assessment instruments, prison programming, and reentry preparation should be gender specific. In addition, both prison misconduct and recidivism

rates are important aspects of prison performance measures; if there are differing factors that are important for running a safe prison or lowering recidivism, then correctional administrators should adjust their approaches to address these problems.

The organization of the subsequent chapters in this dissertation is as follows. Chapter 1 provides a general overview of the prison population, prison misconduct, and recidivism. Next, I present some important similarities and differences in risk factors for offending by gender. Chapter 2 reviews the literature on pathways to jail and prison and summarizes the prison misconduct and recidivism literature. In chapter 3, I provide a description of the instruments used for this dissertation, the sample characteristics, and a summary of the independent and dependent variables. Chapter 4 contains a review of the statistical methods employed for the different phases of analysis (e.g., latent class analysis, negative binomial regression models, and survival analysis). Chapter 5 explains the results of latent class analysis of the pathways to prison for men and women. Chapter 6 examines the predictors of prison misconduct and chapter 7 examines recidivism. In chapter 8, I discuss the findings and significance of the results, the policy implications for correctional researchers and administrators, the limitations of this study, and recommendations for future research.

Chapter 2: Literature Review

From the 1930s to the mid-1970s, prison incarceration rates in the United States remained relatively stable (Blumstein & Cohen, 1973). In the early 1980s, however, rates began to increase dramatically and continued to do so until 2005. The most important causes of this incarceration boom were changes in sentencing policy and crime initiatives, such as "get tough laws," determinate sentencing, and the "war on drugs" (Blumstein & Beck, 1999; Mauer, 1999; Tonry, 1995). These changes increased the probability of incarceration and lengthened prison sentences. At the federal level, changes in sentencing policies led to a dramatic increase in the federal prison population. With more than 218,000 individuals in custody (BOP, 2011), the Federal Bureau of Prisons (BOP) is the largest prison system in the United States. The BOP population doubled over the last decade (BJS 2003), with almost 60% of the inmates incarcerated for drug offenses (Mauer, 1999). In addition, the number of women that were incarcerated in the BOP (11,637) far surpasses any other correctional system. The BOP actually housed more women than the entire Canadian prison population which at the same time housed 12,561inmates (CSC, 2006).

As the prison population grew, it was also apparent to critics, practitioners, and researchers that the majority of prisoners would eventually return to their communities. With concerns about offender reentry, attention turned once again to prisons as places to rehabilitate offenders. Those in the trenches of correctional programming were attempting to overcome the "nothing works" attitudes of the 1970s (Cullen & Gendreau, 2000; Martinson, 1974), and the "just deserts [*sic*]" philosophy of the 1990s, which

shifted the focus from individuals to assessing risk and managing groups of people (Feeley & Simon, 1992).

In the U.S., a metaphorical pendulum swings between an emphasis on rehabilitation through correctional programming and punishment. With the pendulum moving in recent years towards correctional programing, there has been a focus on demonstrating the effectiveness of these programs. The gold standard for program evaluations is the reduction of recidivism, and for many politicians and correctional administrators, it is the only standard. A practical issue with recidivism studies, though, is the time it takes to complete the evaluations. After program completion, inmates have varying times until release from prison; subsequently, an individual is observed in the community from anywhere between six months and three years. Another issue that researchers face when using recidivism as the only indicator of program effectiveness is the difficulty in drawing appropriate comparison samples. Due to financial and staff constraints in prison systems, more data is collected from inmates who participate in programs than inmates who are in the general population. Nonetheless, there is a growing accumulation of studies identifying "what works" with correctional programs that use recidivism as the outcome measure (Cullen, 2013; Cullen & Gendreau, 2000; Duwe, 2013; Kim & Clark, 2013; MacKenzie & Hickman, 1998).

In addition to recidivism, prison misconduct measures may also have important advantages for assessing program effectiveness. Yet program evaluations rarely examine prison misconduct as the outcome of interest (for an exception see: Camp, Daggett, Kwon, & Klein-Saffran, 2008; French & Gendreau, 2006). Misconduct can be observed before, during, and after program participation, allowing evaluations to be conducted in a

more timely fashion. This makes prison misconduct more of a proximate measure to program completion than recidivism.

A more subtle advantage to using the measure of prison misconduct is that unlike recidivism measures, which differ from jurisdiction to jurisdiction and from state to state, the rules governing prison behavior are the same within a given correctional system.[1] Even so, there is still discretion involved with correctional officers on whether to formally cite an inmate for a rule violation, especially for less serious offenses. Some researchers have raised concerns regarding the reliability of using prison misconduct as an outcome measure. However, this parallels the arguments that arrest data may be biased. While both correctional officers and police officers have discretion as to whether they formally report the incident, this type of information is catalogued into databases and allows researchers to work without relying on the recall of incarcerated individuals who may have served lengthy sentences.

While a logical argument can be made that risk factors that predict criminal activity after release from prison also predict rule violations while in prison (Gottfredson & Adams, 1982), others argue that the factors leading to recidivism are not equivalent to the factors leading to prison misconduct (Morris, 1974).[2] In terms of predicting recidivism, several studies have also found that when included as an independent variable, misconduct significantly predicts recidivism (see Huebner, DeJong, & Cobbina, 2010). In actual practice, however, most prisons base their inmate classification systems upon summarizations of previous criminal history, especially recent and violent criminal

[1] Even within a given correctional system there may still be institutional level effects; in order to parcel out these effects HLM models need a number of units in the cluster (inmates in a prison) and a sufficiently large number of second-level units (prisons).
[2] If the same factors predict both misconduct and recidivism, misconduct will most likely not be significant in a fully specified risk factor model.

behavior. These kinds of classification measures, such as the custody classification score developed by the Federal Bureau of Prisons, are the strongest predictors of prison misconduct and prison violence at the federal level (Harer & Langan, 2001). Ultimately, the equivalency of in-prison and post-release risk factors of rule violations is ultimately an empirical question addressed with the data in this study.

Because correctional studies of risk assessment instruments, program evaluations, and reentry studies have historically used predominately male samples, female inmates pose a unique challenge for reentry preparation (Andrews & Bonta, 2007; Van Voorhis, Wright, Salisbury, & Bauman, 2010). As the field moves forward to incorporate evidence-based knowledge for correctional policies, the examination of issues specific to female inmates assumes greater importance. Consequently, there has been growing attention towards female inmates over the last decade (Kruttschnitt & Gartner, 2003; Loucks & Zamble, 2000; Makarios, Steiner, & Travis, 2010; Morash & Schram, 2002; Simpson et al., 2011; Van Voorhis, Salisbury, Bauman, Wright, & Holsinger, 2008).

Comparison between Male and Female Inmates

It is well known that male offenders generally have longer and more violent criminal histories, higher levels of criminal participation, and younger ages of onset (Block, Blokland, van der Werff, van Os, & Nieuwbeerta, 2010; Eggleston & Laub, 2002; Gomez-Smith & Piquero, 2005; Simpson et al., 2008; Steffensmeier & Allan, 1996). Women offenders, on the other hand, have experienced more physical and sexual abuse (Harlow, 1999). Women also exhibit a higher prevalence of mental health problems, less economic security, and are more likely to be caring for their children at the time of their arrest (Bloom, Owen, & Covington, 2003). These findings highlight the fact

that men and women bring unique histories, different types of risk factors, and different needs to prison.

Compared to community samples, however, both men and women in prison have higher rates of unemployment, lower levels of education, more mental health issues and substance abuse problems (Klerman, 1986; Soderstrom, 2007; Steadman, Osher, Robbins, Case, & Samuels, 2009). In addition, while some studies have found certain risk factors can lead to criminal behavior for both men and women, such as the influence of peers, risk taking, and self-esteem, the intervening processes are sometimes different. For example, risk taking is positively associated with juvenile delinquency for both genders. However, for girls, low self-esteem is associated with higher levels of risk taking, while for males higher levels of self-esteem are associated with more risk taking behavior (Heimer, 1995).

One of the most frequently used data sources to compare U.S. women and men in prison is the Bureau of Justice Statistics Survey of Inmates in State and Federal Correctional Facilities (2002, 2004). These data also reveal some unique risk factors for women. Women tend to be more economically marginalized than men. In state prisons, 40% of women were employed full time when arrested, approximately 37% had monthly incomes of less than $600, and nearly 30% received welfare assistance. Conversely, almost 60% of the men in state prison were employed full time, 28% had a monthly income of less than $600, and only 8% received welfare assistance (Greenfeld & Snell, 1999). Coupled with these financial hardships, more women had minor children who were dependent upon them prior to their incarceration. Among inmates who had minor

children when they were incarcerated, 44% of the men were living with their children, compared with 64% of the women (Greenfeld & Snell, 1999).

The BJS data also reveal that a majority of women in prison have histories of past and current abuse, substance abuse and mental health issues. Almost half of the incarcerated women (but one tenth of the men) reported that they were physically or sexually assaulted (Greenfeld & Snell, 1999; Harlow, 1999; Snell & Morton, 1994). For both males and females the prevalence of physical abuse was considerably higher than sexual abuse (Harlow, 1999). Similarly, women in state prisons had a higher prevalence of drug use than did men, regardless of measurement (lifetime use, frequency, month before arrest, or time during offense). Males, on the other hand, had higher levels of alcohol use (Greenfeld & Snell, 1999). Both men and women inmates with mental health problems consistently had even higher rates of substance abuse (James & Glaze, 2006).[3]

The prevalence of mental illness in the prison system is gendered, nonetheless. Based on self-report data, BJS reported that 73% of women and 55% of men in prison reported having mental health problems (James & Glaze, 2006). Two other recent studies conducted in county jails and federal prisons found significantly lower rates of mental health problems than the BJS study, although the proportional differences between men and women were strikingly similar (Magaletta, Diamond, Faust, Daggett, & Camp, 2009; Steadman et al., 2009).[4] Studies have consistently demonstrated higher rates of mental illness for women than men.

[3] This is in reference to inmates incarcerated in state prison, federal prison, or local jails.
[4] One reason that the prevalence rates were lower could be attributed to the operationalization of mental health problems. While the BJS study relied on self-report symptoms, the Steadman et al. study used the Structured Clinical Interview for the DSM-IV, which is used to diagnose serious mental illness and is therefore much more stringent (Steadman et al., 2009).

The BJS inmate surveys have been instrumental in highlighting the potential differences between men and women in prison by reporting the proportional differences in socio-economic status, employment, substance abuse, and mental health issues in a bivariate fashion. However, there has been only limited research employing multivariate models or studies using the data for secondary analysis (Blumstein & Beck, 1999; Deschenes et al., 2007; Mauer, 1999). Therefore, it remains unknown whether pathways to federal prison are gendered once other factors are controlled for or if gendered risk factors bundled together in unique ways predict behavior while incarcerated and beyond.[5] These questions provide the content for the current study.

Pathways to Jail and Prison

One of the most frequently cited publications on gendered pathways to crime is Kathleen Daly's (1994) work in which she recorded all arrests from July of 1981 through July of 1986 that led offenders to felony court in New Haven, CT. Of this group, 186 women and 1,854 men were convicted. To create a more balanced sample between men and women for research purposes, the study selected every ninth man to compose a sample of 208 men. Daly then created what she called a "deep sample" by pairing women and men based on their charges and convictions. She then matched individuals by prior criminal record, age, race and ethnicity, and pre-trial release status. After the deep sample of 40 women and 40 men was constructed, she used court transcripts from the day of sentencing and the pre-sentence reports (PSI) to create biographies for each person. These biographies became the foundation for identifying pathways to felony court.

[5] Because the sample for the current study is prison inmates, we do not know whether these factors predict incarceration.

Typically, criminological research and theory has focused on explaining offending with male samples, assuming that female offending follows the same pattern. Daly was the first to use women as a starting point to create pathways to court and then categorize the men into the same pathways. While a number of the pathways for the men aligned with the women, Daly needed to create new pathways to fully explain the behavior of the men.

Daly derived five pathways from the women's biographie: street women; drug connected women; battered women; harmed and harming women; and other women. About a fourth of the women in the sample were categorized as street women, whose histories of sexual and physical abuse in the home as youth led them to the streets (N=10). Most of their criminal activity consisted of petty crimes for survival, such as prostitution or theft. Within this pathway was another subset of women who did not necessarily flee from abuse in the home but were nonetheless attracted to the street life. Their crimes typically involved hustling or crimes that led to quick money. Street women had more contacts with the criminal justice system than the other groups. Drug connected women (N=6) were involved in either drug use or drug dealing, usually in connection with a partner or family member. Harmed and harming women (N=15) had chaotic childhoods, histories of physical or sexual abuse, and were themselves considered violent (Daly, 1998b). These women also had histories of psychological problems and substance abuse. Although approximately a third of the women in the sample were involved in violent relationships, only five of the women were considered battered women. The battered women would not have otherwise been in court if it were not for their problems with their partner. The last group that Daly identified were women who did not fit into

any of the other groups (N=4). For the most part, this was their first arrest; they did not have a history of alcohol or substance abuse, and although the offenses were economically motivated they were not a result of drugs or life on the streets (Daly, 1994).

There were three overlapping pathways to the criminal justice system for both the men and women: street, drug connected, and harmed and harming. In addition, Daly identified three other pathways for men only: bad luck, explosively violent, and masculine gaming. The most prevalent pathway for the men was the street (N=15). Within in this pathway, Daly identified eleven men as belonging to the standard street path, similar to the women's street path, while four of the men she called hardened street men. Like the women, most of the standard street men had a number of previous convictions, were addicted to drugs or alcohol, and committed crimes to support their habits. The men's commitment to the streets varied within this group depending upon their employment status. Some of the men that held legitimate employment supplemented their legal income with illegal income, while others completely withdrew from the street life upon obtaining legal employment. The hardened street men had serious alcohol or drug addictions and became "hardened" because they spent most of their lives in prison or in the street life. Moreover, the men's path to the street life differed from the women: whereas the women often fled abusive homes, the men either dropped out of school due to performance issues or because they obtained employment. While the street pathway was the most prevalent pathway, only a small portion of the men were categorized as drug connected (N=3). Similar to the drug connected women, these men sold drugs to support their habits but their drug use appeared to be recreational rather than a serious

addiction. The women in the drug connected group were involved with partners or spouses in selling or using the drugs, whereas the men were not.

The second most prevalent pathway for the men was harmed or harming (N=8). Similar to the women, these men grew up in dysfunctional households with their parents abusing alcohol or drugs, and were abused or neglected as children. While other family members described the women in this group as “out of control” with violent tendencies associated with alcohol use, the men were less violent. The three additional pathways that Daly created for the men were categorized under the rubric of costs and excesses of masculinity (N=14). One of these groups was called the bad luck men, who did not abuse substances but were simply in the wrong place at the wrong time, or were defending themselves, or were used by others (N=5). The second pathway identified was masculine gaming (N=2). These men committed crimes where there was little economic gain; they seemed to have fun frightening their victims and viewed criminal activity as recreational. The third pathway was labeled explosively violent (N=7). These men shared some similarities with the harmed women who abused substances, but there was no evidence in the PSI that these men suffered abuse as children. Additionally, the violence perpetrated by these men was so excessive that alcohol alone could not explain it.

To summarize, Daly’s study revealed both similarities and differences between the men and women in their pathways to felony court and their family circumstances. Both men and women grew up in financially unstable families and had significant problems with alcohol and drugs. The women, however, were more likely to suffer abuse or neglect by their parental figures, had more siblings involved in crime, and had parents who were more likely to be addicted to alcohol or drugs. Fewer of the women than the

men knew their biological fathers. While there were overlapping pathways for the men and the women, there were also three new pathways needed to describe the behaviors of men. In addition, although the street pathway was similar for both men and women, they came to the streets in distinctly different ways. While the women mostly fled from abusive households, the men either dropped out of school or quit their jobs. This study has been an important building block for other researchers who have examined the circumstances that lead offenders into the criminal justice system.

Since Daly's original study, other scholars have adopted a pathways approach to court or prison, but only a few have attempted to replicate the pathways she identified. Richie (1996), for instance, primarily focused on a specific pathway similar to Daly's "battered women's" group. Richie's main interest was to examine battered African-American women incarcerated at Rikers Island. She wanted to explore how the hierarchy of social institutions affected African American communities and the degree to which the criminal justice system has built-in biases of gender, race, and ethnicity. Richie (1996) coined the term gender entrapment, linking the legal idea of entrapment with feminist analysis,

> The model illustrates how gender, race/ethnicity, and violence can intersect to create a subtle, yet profoundly effective system of organizing women's behavior into patterns that leave women vulnerable to private and public subordination, to violence in their intimate relationships and, in turn, to participation in illegal activities. As such, the gender-entrapment theory helps to explain how some women who participate in illegal activities do so in response to violence, the threat of violence, or coercion by their male partners (Richie, 1996, p.4).

Richie compared battered African American women (N=26) with African American women not involved in abusive relationships (N=5), as well as with white women who had been battered (N=6).

Richie described the battered African-American women as having an intact family during childhood. Richie argued that this provided a safe environment to develop a positive self-image and therefore expected that their intimate relationships in adulthood would be healthy. When their relationships turned out to be abusive in adulthood, however, these women tried to keep their families together at any cost. Conversely, the African-American women who did not have a significant male influence while growing up tended not to stay in abusive relationships. Richie theorizes that these women were able to escape gender entrapment because they did not grow up with the expectation that they would have to depend on a man in adulthood. Richie further speculates that the white women who were in battered relationships were less likely to question their male counterparts because they grew up in patriarchal households. On the other hand, these white women were more apt than were African-American women to ask for help once their relationships became abusive.

Richie identified six pathways to criminal behavior. She categorized battered African American women into one of the six pathways. The first path was women held hostage. This group consisted of African American women whose husbands not only assaulted them but also ultimately killed their children. These women were convicted either as co-defendants, conspirators, or murderers. The second path, projection and association, consisted of African-American women abused in past relationships but were subsequently arrested for violence against a new partner. The third path, sexual

exploitation, described African American and white battered women arrested for sex work. The fourth path, fighting back, was African American and white battered women primarily arrested for arson or property crimes that occurred while fighting back against their batterer. The fifth path, labeled poverty, consisted of unemployed African American women without any legitimate source of income. Their arrests were primarily property crimes or other crimes that were economically motivated. The sixth path, addiction, contained both battered and non-battered women. Their primary charges were drug related offenses or using illicit substances. Within this group, Richie (1996) found that the motivations for using drugs differed between those who had been battered and those who had not. For the women who were not battered, peers were an important factor in their drug use, and they sold drugs to support their habit. Among the battered women, abuse preceded drug use and partners instead of peers facilitated drug experimentation and chronic use (Richie, 1996). One important aspect of Richie's study is that it reveals different responses to negative events structured by social class, race, and/or ethnicity.

Another recent study used a much larger sample of incarcerated women (N=351) in an attempt to replicate Daly's original pathways (Simpson et al., 2008). In this study, research focused on women's pathways to jail (instead of felony court). Results from the principal component factor analysis replicated most of Daly's classifications (e.g. street women, other women, harmed and harming women, drug connected women, and battered women), but also found noteworthy differences.[6]

One of the primary differences was that Simpson et al. (2008) discovered two groups within the street women pathway. There was a more extensive criminal history for

[6] Daly's study was a qualitative one in which classifications were thematically created, whereas Simpson and her associates used a quantitative statistical approach to create different paths.

one of the groups, while the other group had a larger number of deviant friends with extensive criminal histories. The researchers identified potential reasons for these differences. First, the two samples were vastly different in respect to race and ethnicity. The Baltimore jail sample was predominantly African American (94%), whereas Daly's sample was diverse by race/ethnicity (56% Black, 30% White, and 11% Latina). The racial/ethnic differences suggest that pathways into crime and the justice system may be racially tempered. Second, Daly's sample had only 40 women, which made some of the pathway categories sparsely populated. The Women's Experience of Violence (WEV) sample was substantially larger (N=351).[7] The larger sample size likely detected additional factors not previously identified. Finally, a larger group may be more heterogeneous by default. However, even with these differences, it is important to note that Daly and Simpson et al. identified similar pathways using very different samples and techniques.

Simpson and her colleagues (2011) updated their original study, adding data from Toronto (N=248) and Minnesota (N=205). Once again, Daly's pathways approach was replicated. Analysis revealed three of Daly's pathways: street women, harmed and harming, and the "other" pathway. The updated study (2011) also defined a new intersectional pathway that included white women who exclusively participated in property crimes with their partners.[8]

More recently, Cobbina (2009) examined women's pathways into and out of crime by interviewing 50 women who had been incarcerated in St. Louis.[9] There were two different

[7] The WEV study was a multi-site funded by NCOVR. The principal investigators included Candace Kruttschnitt, Rosemary Gartner and Julie Horney.
[8] The battered women pathway did not emerge.
[9] Cobbina matched 26 women who recidivated and 24 women who desisted.

pathways into crime: a drug related pathway and an economically motivated pathway. For the women who were involved in illicit drugs, some began using drugs with either their family or with an intimate partner, while others began using drugs as a result of negative life experiences. The second pathway that emerged was women whose criminal behavior was economically motivated. Some of the women committed crimes to support their drug habits, while others were struggling to support themselves or their families or simply desired quick money.

There were several themes that emerged from the women who recidivated and those who remained crime free. Similar to one of the pathways into crime, one of the reasons women recidivated was to support their drug addictions. While other women explained that they returned to crime because they recently experienced traumatic events in their lives, such as a separation from their partners or the death of someone close to them. The third pathway that emerged was women who said it was not easy to remain crime free once they returned to their old neighborhoods and friends. The women who committed economic crimes, cited that the fast money was too hard to give up. The women who desisted from crime cited three different reasons: some did not want to lose their children again; some lost the desire to engage in criminal behavior; some simply did not to ever want to go back to prison (Cobbina, 2009).

Lastly, Brennan argued that there are three major categories of female pathways to prison that emerge out of the qualitative literature (Brennan, Breitenbach, Dieterich, Salisbury, & van Voorhis, 2012). The childhood victimization pathway composed of women who were abused during childhood which resulted in mental health problems (e.g. depression or anxiety) and substance abuse (Covington, 1998; Daly, 1992; Salisbury & Van Voorhis, 2009). While the second pathway overlaps with the first pathway in that

they both have histories of substance abuse and depression or anxiety, the second pathway consists of women who have had relationship problems in adulthood. These women have been involved in dysfunctional relationships which may include domestic violence (Brennan et al., 2012; Covington, 1998; Gilligan, 1982). The third pathway composed of women who have experienced extreme marginalization, which includes bouts of homelessness, poverty, employment difficulties, and lower levels of education (cited in Brennan: Bloom et al., 2003; Gilligan, 1982; Richie, 1996; Richie, 2001).

In addition to the qualitative studies that have examined pathways to prison, Brennan et al. (2012) drew from more general criminological literature and identified five broad pathways to prison. The first pathway is characterized as the *normal or situational offender*. These women appear to have relatively minor criminal histories which started later in life (e.g., property or drug offenses), no histories of abuse, no identified problems in school, and no mental health problems (cited in Brennan: Aalsma & Lapsley, 2001; Brennan, Breitenbach, & Dieterich, 2008; Butler & Adams, 1966; Simpson et al., 2008; Stefurak & Calhoun, 2007). The second pathway is modeled after Moffitt's (1993) *adolescent limited* pathway; these offenders participate in criminal behavior during their adolescence, but desist from crime once they reach adulthood.[10] The third pathway has been identified both in qualitative and quantitative research and is labeled the *victimized, socially withdrawn and depressed pathway*. Childhood abuse leads to internalizing behaviors, such as social isolation, substance abuse and subsequent criminal activity. The fourth pathway contains the *chronic serious offenders*. These offenders are seen as high

[10] Adolescent limited offenders have pro-social relationships and offend because they are stuck in a "maturity gap" where their biological age and their maturity levels have not yet aligned. Once they reach the age of majority they will cease committing petty crimes and become involved in more pro-social activities.

risk individuals, and have a combination of a number of risk factors, such as long histories of criminal offending, childhood behavioral problems with school, histories of sexual or physical abuse, dysfunctional family life, aggressiveness and low levels of self-control. Brennan compares this pathway to Daly's (1992) harmed and harming pathway and to Moffitt's (1993) LCP offenders. The fifth pathway, *socialized offenders and socially marginalized groups,* seems to be an amalgamation of a couple of different theories and frameworks. This pathway has ties to the social learning, subcultural, and a hint of social disorganization theories. Brennan says these offenders are considered high risk, uneducated, and marginalized women who live in communities that are poverty stricken (Brennan et al., 2012).

In all, Brennan's (2012) sample identified 8 pathways, but the pathways fall under 3 broad headings. Brennan gives the first two pathways the heading of *normal functioning-drug dependent.* The individuals for both of these pathways have minimal or no mental health problems, no history of abuse, minor criminal histories, and are less marginalized. The difference between these pathways is that one pathway is made up of younger women who are single parents, while the other pathway contains older women who do not have childcare responsibilities. The third and fourth pathways are collected under the *victimized or battered women* heading. A majority of these women have been abused in childhood as well adulthood; their partners are considered antisocial and are also abusive. In addition to these factors, the third pathway contains younger women who are raising their children alone in stressful situations. They may be depressed and have dysfunctional relationships with their partners, as well as a history of violence against their partners. The fourth pathway is older women who are abusing drugs and have

histories of mental health problems and do not have childcare responsibilities. The last four pathways are grouped under the heading *extremely marginalized, high levels of criminal activity and substance abusers.* All of the women in these four pathways had low educational attainment, had low levels of employment skills, were poor and lived in highly concentrated areas of crime. The fifth and sixth pathways had less mental health issues, lower histories of abuse, and were involved in selling drugs. The difference between the fifth and the sixth pathway was that the fifth one consisted of younger women who were single parents. They also lived in unstable housing and had lower levels of self-efficacy. The sixth pathway was made up of older women who had no children at home. In the seventh and eighth pathways the women were considered antisocial and aggressive. These women were seen as mostly living on the streets and had high instances of homelessness, grew up with a family involved in criminal activity, had abusive partners in adulthood and lower levels of self-efficacy. The difference between these two pathways is that in the seventh pathway the women were not considered psychotic, they did not have a supportive family and their partners were involved in criminal activity. In the eighth pathway, the women were labeled as psychotic, had a history of violence, but had some support from their families (Brennan et al., 2012).

In sum, limited evidence suggests that women have unique pathways to prison. Where seemingly overlapping pathways exist for men and women, the mechanisms that lead to jail may operate differently by gender. Previous research on pathways draws from qualitative approaches and only a limited number utilize quantitative statistical analysis. The qualitative studies have provided a foundation for future research. Furthermore, the extent to which these pathways might affect behavior while in prison and after remains

unexplored. If consistent factors related to misconduct in prison and recidivism exist, correctional programs can address these risk factors to minimize future criminal behavior.

Predictors of Misconduct

One of the main missions of a correctional facility is to run safe and secure prisons for both inmates and staff without placing undue restrictions on the inmates. Misconduct is therefore often used as an indicator for prison performance and custody classification assessments. In other words, security classification systems aim to predict the risk and potential for future violence, escapes and related behaviors.

Previous research of prison misconduct for men has shown that the following factors can increase the probability of engaging in prison misconduct: being younger, being unemployed, being a minority, having a longer criminal history, or being single (Drury & DeLisi, 2010; Gendreau, Goggin, & Law, 1997). Similar to men, women who are younger, serving longer sentences, and who had previous incarcerations increases the probability of engaging in prison misconduct. But in addition to those criminal history variables, others have found that antisocial attitudes, relationship dysfunction, childhood abuse, and a history of mental illness are important predictors of misconduct for women (Craddock, 1996; Salisbury, Van Voorhis, & Spiropoulos, 2009; Van Voorhis et al., 2010; Wright, Salisbury, & Van Voorhis, 2007).

One of the largest samples used to examine the differences in misconduct rates between men and women was a federal prison sample of approximately 200,000 inmates (Harer & Langan, 2001). The study examined seven admission cohorts of misconduct for

six violent charges during the first year of incarceration.[11] The prevalence of violent misconduct was relatively low for women (2.8%) and quite a bit higher for men (18%). Because the purpose of this study was to determine if the BOP's custody classification system predicted prison misconduct, the only variables included in the analysis came from the BOP's custody classification system. The computation of the custody classification score at the time used the following indicators: whether the inmate voluntarily surrendered, the number of months to release, the severity of current offense, criminal history points, any history of violence, any history of escapes, and if there was a pending detainer. All of the independent variables were significant predictors of misconduct, providing evidence that the same classification instrument was predictive for both men and women. Characteristics such as race and ethnicity were not included in the models, nor were any measures related to substance abuse or mental illness. The authors did acknowledge that risk factors such as substance abuse, peer associations, or anti-social attitudes could also impact misconduct and that these may vary by gender (Harer & Langan, 2001).

Unlike the above study, where the same factors predicted misconduct for both men and women, another found several differences by gender (Gover et al., 2008). Security level, self-control, having a job in prison, and a history of previous incarceration were significant for the men. Only two of the factors – previous incarceration and length of stay – were significant for both men and women. Length of stay was in the expected direction for both genders (i.e. positive), but incarceration history had a different impact for men. Prior incarcerations were correlated with higher levels of misconduct for men,

[11] The charges included murder, attempted murder, serious or minor assault, possession of a weapon, fighting, and threatening bodily harm.

whereas prior incarceration had the opposite effect for women. The authors speculate that this unexpected finding was due to women with prior incarcerations being more responsive than are men to the consequences associated with misconduct. Otherwise, women who were younger, minority, and had at least a high school education were more likely to be involved in higher levels of misconduct (Gover et al., 2008). The authors conclude correctional programs need to acknowledge these differences and create more gender specific programming.

Two additional publications examined misconduct with female offenders incarcerated in three prisons (Salisbury et al., 2009; Wright et al., 2007). Because these studies were part of a larger research project, the same data were collected at all three sites. The first study collected data from 272 incarcerated women in a Missouri prison (Wright et al., 2007). Researchers examined both the prevalence and incidence of misconduct at 6 months and then at 12 months to determine if gender-responsive need factors significantly correlated with behavior in prison. The analysis included the following scales: an institutional risk scale, a gender-neutral needs scale, a gender-responsive needs scale, and subsequent combined risk and needs scales. The authors describe the gender-neutral scale as a set of factors that have been incorporated in risk assessments tools (e.g. LSI-R) which have previously been shown to predict antisocial behavior for both men and women. Within the gender-neutral scale the following items were correlated with misconduct: antisocial attitudes, employment, financial difficulties, high family contact, low family support, history of mental illness, and low anger control. The following items within the gender-neutral scale were not correlated with misconduct: antisocial friends, low education, static substance abuse, and dynamic substance abuse.

The gender-responsive scale draws from both the pathways literature and the gender-responsive perspective. The pathways literature has focused on the effects of trauma, substance abuse, dysfunctional relationships, and mental illness. The gender-responsive perspective proposes that parenting, childcare, self-efficacy and self-esteem may significantly impact offending for women. In the gender-responsive scale the following items were correlated with misconduct: childhood abuse, low relationship support, high relationship conflict, parental stress (for 6 months but not 12 month misconduct), current depression, and current psychosis. Low self-esteem, low-self efficacy, adult emotional abuse, adult harassment (for the 12 months), high relationship dysfunction (for the 12 months) were not significant in the gender-responsive scale.

After assessing the individual items in these scales, the authors examined the overall scales (6) with Pearson correlation coefficients and misconduct at 6 months and 12 months (for both the number of misconducts and any misconduct). The combined gender-neutral and gender-responsive scales consistently had the strongest relationship with misconduct, ranging from 0.28 to 0.33, while the institutional risk scale consistently had the weakest relationship ranging from 0.11 to 0.23. For all of the scales, the strongest coefficients were for the frequency of misconduct at 12 months, compared to whether or not someone engaged in misconduct at 6 or 12 months. The correlations for the gender-responsive scales were marginally greater than the gender-neutral scales (0.27 to 0.34 and 0.23 to 0.33, respectively). When all of the scales were combined into a final scale, this scale was slightly more correlated than the individual scales (Wright et al., 2007).

The implications of this study support the notion that gender-responsive items are of some importance when assessing females and prison misconduct. These findings,

however, are conditional because the models did not control for other known factors consistently associated with misconduct, such as age, race, ethnicity, or criminal history. Another important finding from this study was that the typical institutional risk scale had by far the weakest relationship with misconduct. This would suggest that additional items, besides static criminal history items, are important when assessing prison misconduct with women.

The second study collected data from women at a prison in Colorado (N=134) (Salisbury et al., 2009). Although the primary focus of this study was to examine the relationship of a gender responsive scale, the Level of Service Inventory – Revised (LSI-R), and a traditional institutional risk scale with recidivism, researchers also looked at serious misconduct at 6 months. Like the previous study, results support the need for gender sensitive instruments that include more of the dynamic elements. For instance, analysis revealed that the custody risk scale was not significantly correlated with misconduct, but the total LSI-R score was significantly correlated with both the prevalence and incidence of misconduct (0.12 and 0.16, respectively). Only three of the ten subscales of the LSI-R significantly correlated with the prevalence of serious misconduct: education and employment (0.13), alcohol and drug use (0.12), and antisocial companions (0.14). Within the gender-responsive needs scale, only 2 of the 11 factors were related with the prevalence of misconduct (high self-efficacy and low codependency), while 5 of the 11 were related with the incidence of misconduct (high self-efficacy, low codependency, adult emotional abuse, child abuse, and child physical abuse) (Salisbury et al., 2009).

To increase the correlation between the scales and prison misconduct, the authors attempted to build modified composite risk scales. They combined the custody-risk scale, not originally correlated with misconduct, with three "dynamic" factors from the LSI-R: substance abuse, employment and education.[12] This new scale significantly correlated with both the prevalence and incidence of misconduct (0.14 and 0.20). The authors then added gender-responsive predictors (such as needs pertaining to relationships, mental health and child abuse) to both the LSI-R and the modified custody scale. This increased the strength of both scales; the modified custody scale now had Pearson Correlations of 0.26 and 0.29, while the LSI-R correlations increased to 0.18 and 0.21. Next the authors examined the overall score from the adult abuse scale and the total score from the LSI-R, which actually decreased the association with misconduct (0.12 and 0.17). There was also a decrease in the relationship for the optimal-factors scale which included: criminal history, adult abuse, education and employment, financial status, housing, alcohol and drugs, and antisocial companions.[13] This optimal factor model did not perform as well as the modified custody scale, which included gender responsive items (0.18 and 0.14) (Salisbury et al., 2009).

Finally, given that mental health problems have not been widely examined as a predictor in the criminology literature, the way the authors operationalized mental illness in the study discussed above is unclear (Wright et al., 2007). For instance, the history of mental illness variable was included on the gender neutral scale, while a history of depression and psychosis were placed in the gender responsive scale (Wright et al.,

[12] The original custody scale included common static factors used to assess custody classification, such as history of institutional violence, severity of current offense, prior escapes, number and severity of prior convictions, age, detainers, and time to serve. The dynamic risk factors have been defined as needs that can be improved (Andrews, Bonta, & Wormith, 2006).
[13] The authors reported that these are predictive of recidivism.

2007). Although previous research has indicated that women in prison have a higher prevalence of depression than men (Gunter, 2004), to date there has not been any theoretical or empirical evidence presented that psychosis would relate more strongly to prison misconduct for women than men, or vice versa.[14] Therefore, it seems more appropriate for psychosis to be gender-neutral than a gender responsive-factor. In spite of the different rationale, all scales measuring mental health problems—the history of mental illness scale, the depression/anxiety scale and the current psychosis scale— were significantly correlated and positive with misconduct at 6 months and 12 months (Wright et al., 2007). In the Salisbury et al. (2009) study, however, a history of mental illness was included in the gender responsive needs scale but was not correlated with misconduct.

A final study relevant for this literature review is a meta-analysis of prison misconduct conducted by Gendreau, Goggin, & Law (1997). The authors identified 39 misconduct studies that met the study criteria.[15] The strongest predictors of misconduct were criminal history, antisocial attitudes, institutional related factors, the LSI-R overall score, and antisocial peers (Gendreau et al., 1997). However, the authors note the methodological limitations of meta-analysis, especially the lack of details reported in the original studies. Most are missing data on basic information such as race, education, criminal history or previous levels of misconduct. Another limitation is that three authors from the same jurisdiction are responsible for 42% of the effect sizes used in the meta-analysis. Finally, because the institutional factors are aggregated, the effect sizes are

[14] The authors measured psychosis with 2 items: delusions (which was also included in their history of mental illness scale) and thoughts that others are out to harm them.
[15] The authors identified published and unpublished manuscripts from 1940-1995. Their criteria were that misconduct was measured from official records and that there was enough statistical information reported between the independent variables and misconduct to be able to calculate effect sizes.

possibly inflated (Gendreau et al., 1997).[16] Because there is no mention of gender in the article, presumably all of the coded studies rely on male inmate samples.

Literature Limitations

There are several limitations with previous prison misconduct studies. First, there is more than one way to operationalize misconduct, and definitions vary from study to study.[17] Second, improper model specification challenges the veracity of study findings. Two variables consistently related to misconduct are age and security level, but misconduct models often fail to include these robust factors (for an example see: Lee & Edens, 2005). A third limitation occurs mainly in female only samples. These studies have only examined misconduct at the bivariate level, thus any relationship between the variables could be spurious. In the studies that included both males and females, gender is usually represented as a dummy variable and additional interaction terms between gender and other covariates are not included in the model, which might inform us about whether the factors work differently for males and females.

Lastly, some of the few studies that have examined factors that predict misconduct with female inmates only sampled from one institution (Warren et al., 2002; Warren, Hurt, Loper, & Chauhan, 2004), which limits the generalizability of the results. A recent study that did sample from more than one institution used inmate self-report data to measure misconduct (Steiner & Wooldredge, 2009a). One potential limitation of self-report data is that some individuals were serving lengthy sentences; their ability to recall less serious forms of misconduct may thus not be as reliable as formal sanctions recorded by the prison system. Another limitation of this study was that it did not capture

[16] The institutional factors consisted of average population, custody level and density measures.
[17] This is not different than other behavioral measures in the social sciences, especially recidivism.

the seriousness of the event. Because behaviors covered under prison misconduct range from crimes prosecutable by law, to assaults on staff or inmates, to insolent behaviors such as not standing up for count, these nuances were not captured (Steiner & Wooldredge, 2009b).

In summary, although most research shows that females engage in fewer incidents and less serious misconduct than males, this conclusion may be compromised by the methodological and measurement challenges mentioned above (Craddock, 1996; Drury & DeLisi, 2010). The jury is still out on whether the risk factors for misconduct are the same for men and women (Gover et al., 2008; Harer & Langan, 2001). To date, only a limited number of misconduct studies included both males and females; additional research is necessary in order to substantiate conclusions regarding the similarities and differences in the risk factors that predict misconduct.

This review also reveals the exclusion of mental health history from studies of misconduct, as was noted for gender. Consequently, it is not possible to determine if there are distinct differences in misconduct rates for individuals who have had previous mental health problems and those who do not, or if it varies by type of mental illness. Finally, only a limited amount of research has examined the specific pathways to prison to determine if these pathways are associated with future behavior, such as prison misconduct. There has never been a test of the pathway approach with federal inmates before--a population spread across the entire country. In addition, this research moves beyond bivariate analyses typically conducted with female inmates.

The Reentry Process and Recidivism

The prison population has increased almost 500% over the last 30 years and now comprises over 1.4 million inmates (Houser, Belenko, & Brennan, 2011; Sabol & Couture, 2008). While Blumstein and Beck (1999) attributed 12% of the increase in the prison population to crime rates, they argue that the other 88% of the increase was due to changes in sentencing policies, including the shift to determinate sentencing, mandatory minimum sentencing, as well as the more directed enforcement of illegal drugs (Mauer, 1999; Tonry, 1995). Furthermore, today's judges have a diminished capacity to impose alternative sanctions, thereby increasing the likelihood that a convicted defendant will receive a prison sentence (Nagin, 1998). Finally, the length of time people are serving has increased along with the probability of serving time (Tonry, 1996).

Because the majority of people who go to prison will be released, the number of inmates reentering the community each year also has increased dramatically. In 2009, approximately 720,000 individuals returned to their communities (West, Sabol, & Greenman, 2010). Research has also shown that within three years of release, almost 65% will return to prison (Langan & Levin, 2002). Revocations account for almost 35% of all new prison admissions (Petersilia, 2003; West et al., 2010). This revolving door of the criminal justice system has forced many government institutions to address the topic of reentry. There is a clear need for sound correctional programming, evidence based practices, strong collaborations between law enforcement agencies and community based social service agencies to improve fluid re-entry plans.

For individuals who have spent years or decades behind bars, the reentry process can be even more difficult. These inmates have become accustomed to the structured

routine of prison life, do not have a history of stable employment, and have been separated from their families and support systems for years (Travis, 2005). Obtaining housing and employment upon release are critical for successful reentry back to the community (Petersilia, 2003). Finding safe housing is an essential part of establishing a stable daily routine, but other issues such as active substance abuse or mental illness can influence the ability of an individual to secure fundamental needs in the community. Reentry planning while in custody can help offenders by connecting them with community resources, such as mental health services or housing options to aid in the transition to the community.

The two main areas of concern for correctional administrators and researchers assessing recidivism are the evaluation of correctional programs and the creation and validation of risk assessment instruments. While correctional programs can directly impact recidivism, risk assessment instruments more indirectly affect recidivism by assessing the risk level of an inmate and identifying potential needs (Andrews et al., 2006). Historically, Canadian researchers have focused more broadly on factors that impact recidivism with risk assessment instruments, while research in the United States has concentrated more on assessing correctional programs and recidivism. While both of these avenues of research are important to assess future criminal behavior, it is rare that the two streams of research overlap. Even though correctional program evaluations may include some of the same variables or constructs that are incorporated into risk assessment instruments, whether the program changed the level of risk generally is not the focus of the evaluation. In the same vein, while an individual's risk score may impact

whether or not that individual volunteers or completes a correctional program, this information is generally not part of program evaluations.

While the majority of recidivism research has focused on program evaluations or the validation of risk assessment instruments, there are also a number of studies that have examined recidivism more generally. While these studies may include risk factors which overlap with items included in risk assessment research and program evaluations, these studies were not directly validating an instrument nor evaluating a correctional program. Some factors identified by previous research as significant predictors of recidivism for men and women are: race, age, employment stability, education, substance abuse history, number of prior arrests, age of first arrest, and criminal history (Benda, 2005; Bucklen & Zajac, 2009; Deschenes et al., 2007; Huebner & Berg, 2011; Huebner et al., 2010; Makarios et al., 2010; Visher, La Vigne, & Travis, 2004). Although previous studies have reported similar factors that predict recidivism for men and women, there are also a number of instances where the predictors were not gender neutral. For example, Uggen and Kruttschnitt (1998) found that race, illegal drug use and criminal history were much more important for women than men. In contrast, McCoy and Miller (2013) found that substance abuse problems significantly predicted recidivism for the men but not for the women.

Pathways to Recidivism

Only a limited number of studies have attempted to extend the pathways framework to repeated criminal activity. One of the few studies that has examined gendered pathways and recidivism used path models to identify newly convicted

probationers' pathways to prison (Salisbury & Van Voorhis, 2009).[18] Their sample included 313 women probationers in Missouri. The majority of the sample comprised white women (68%), followed by black women (30%); only 1% of the sample was Asian (1%) or Hispanic (1%) women. The majority of the women in the sample had convictions for drug possession, assault or theft; had no prior conviction for a felony; and had no prior incarcerations.

The data collection included an assessment interview and a self-report survey. The assessment interview included several scales related to employment, financial needs, education, family support, substance abuse, mental illness, and victimization. The survey items consisted of the following topics: self-efficacy, relationship dysfunction, and victimization. The definition of recidivism used was subsequent admission to prison. Six out of the 313 women were dropped from the study because they could not be followed; of the remaining 307 women, 52 recidivated. The majority of the re-incarcerations were due to technical violations rather than new criminal activity.

The authors tested three pathways to prison. The first two pathways were based on the feminist literature. More specifically, one pathway was called the childhood victimization model, which is similar to Daly's harmed and harming women (Daly, 1992, 1994). Although this pathway was not directly associated with recidivism, the authors found five indirect pathways through behavioral indicators (e.g., substance abuse) and psychological factors (e.g., depression and anxiety) that were associated with recidivism. A second pathway, called the relational model, consisted of adult relationships that were dysfunctional. Again, although not directly related to recidivism, these dysfunctional

[18] To be eligible for the study the women had to be newly convicted of a felony with at least a 2 year sentence of probation.

relationships lowered individuals' self-efficacy and increased the probability of victimization, substance abuse, and depression or anxiety, all of which later related to recidivism. The third pathway is called the social and human capital, based on the social capital literature focused on women offenders (Giordano, Cernkovich, & Rudolph, 2002; Holtfreter, Reisig, & Morash, 2004; Reisig, Holtfreter, & Morash, 2002). This pathway included risk factors related to education, self-efficacy, and family dysfunction that later impacted employment and financial stability. This pathway was the only one that directly affected recidivism.

The authors concluded that their results generally supported previous qualitative studies that reported a high prevalence of abuse, substance use, relationship problems, and mental health problems among women offenders (Salisbury & Van Voorhis, 2009). This research is one of the few quantitative attempts to link women's pathways to future criminal activity and is an important step towards the understanding of pathways of repeat offending for women.

Another recent examination of pathways to recidivism also used a sample of women under community supervision (Reisig, Holtfreter, & Morash, 2006). The two main goals of this study were to determine if the LSI-R was significantly related to women's recidivism and if the women (N= 402) followed a gendered pathway to recidivism. Detailed biographies were created to categorize the women into five distinct pathways identified by Daly (1994). After the authors categorized individuals into the drug connected, harmed and harming, battered women and street pathways, they collapsed these paths into one group labeled gendered pathways. The other two groups in the analysis were the economically motivated group and the unclassified group. They

measured the outcome variable, recidivism, in four ways: a violation of supervision, a re-arrest, a reconviction, or a revocation of community supervision. The overall recidivism rate for this sample was 46%.

The authors conducted a two-step analysis: cross-tabulation tables and logistic regression models (Reisig et al., 2006). The cross-tabulation analysis tabulated the LSI-R score categories (e.g. low risk, medium, and high) by the pathways of offending (e.g. the full sample, a gendered pathway group, an economically motivated pathway, and an unclassified group). The two pathways with both significant and positive associations with recidivism were the economically motivated group and the unclassified group. This meant that as the risk classification increased, the risk of recidivism also increased for those groups.[19]

They also analyzed the relationships with logistic regression methods; the model controlled for time at risk, age, race, and education. Again, the LSI-R did not predict recidivism for the full sample or the gendered pathways groups. The only variable that was significant was time at risk. These results suggest that once length of time (i.e. exposure time) is accounted for, no other variables add any more information in predicting recidivism.[20] Time at risk was not significant for the economically motivated group, and the effect of the LSI-R was significant and positive, meaning that as risk increases, recidivism also increases.

The authors concluded that the LSI-R predicted recidivism for the economically motivated women, but not the women that followed a gendered pathway (Reisig et al., 2006). Based on these findings, they question whether the LSI-R is generalizable for all

[19] The full sample and the gendered pathways were not significant.
[20] Even though the LSI-R was not significant, the coefficient for gendered pathways was negative, meaning as the risk level increased the probability of recidivism decreased.

types of criminal behavior for women. Although this study has important implications for the pathways framework, this study focused more on the relationship between the LSI-R and recidivism and not the relationship between pathways and recidivism.

Literature Limitations

As with the case for misconduct, recidivism studies that focus on female offenders are problematic. The majority of previous studies have relied on bivariate models (Salisbury et al., 2009), while those that have utilized multivariate models collapsed the pathways into one group (Reisig et al., 2006). While this increased the statistical power of the analysis, there was no apparent theoretical reason for collapsing them. This also made it impossible to draw any conclusions regarding the specific pathways.

Most recidivism studies generally focus on male samples. There is, therefore, limited evidence that factors affecting recidivism are the same for women and men. Additionally, there have been a limited number of recidivism studies of federal inmates (Harer, 1994) and there has never been an in-depth study that has included both males and females with similar measures (Andrews et al., 1990; Harer & Langan, 2001). This dissertation will address a number of these limitations.

Conclusions

The research proposed here focuses on two interrelated factors. First, can a pathways approach that describes how different groups end up in prison also anticipate prison adjustment, and predict post-release success? Typically, researchers study these stages of incarceration, adjustment, and post-release as discrete events in isolation from one another, but the research proposed here focuses on interdependencies among them.

Second, are there gender differences in these pathways? This research will contribute to the criminological literature by expanding and applying the pathways literature in unique ways. It also has implications for correctional programming. If there are consistent factors related to misconduct in prison and recidivism, and these paths vary by gender, correctional programs modifications can improve risk prediction and better meet inmates' needs. Such changes will improve safety both within prisons and communities to which prisoners return.

Though there is a body of literature on pathways to prison, no one has linked these pathways to behavior while in prison or post-release for both males and females. If there are factors that consistently predict pathways to prison, misconduct and recidivism, then properly addressing such factors during incarceration could foster pro-social behavior both in prison and upon release. While the research mostly tested pathways to prison with female-only samples, conversely, the examination of misconduct and recidivism has largely been tested with male samples. This study will fill a gap in the literature on all three accounts.

Lastly, the vast majority of studies have sampled from state prisons or local jails and not federal prisons, which may hold different populations. For example, federal inmates were more likely to have a higher education than state inmates. In 1997, almost 40% of state prison inmates had less than an 8th grade education or only some high school, compared to 27% of federal offenders (USDOJ, 2003). In addition, 20% of state inmates had a high school diploma, 9% had some college and only 2% had graduated from college. In contrast, 26% of federal offenders had a high school diploma, 16% had some college, and 8% had graduated from college (USDOJ, 2003).

State and federal inmates also differed with respect to the offenses which led them to prison. In 2003, the majority of male state prisoners were incarcerated for a violent offense (53%), while 20% were incarcerated for a property offense and 19% for a drug offense, only 7% were incarcerated for a public order offense (*The Sourcebook of Criminal Justice Statistics*, 2003). In contrast, the majority of federal male inmates were incarcerated for drug offenses (54%), while only 23% were incarcerated for a violent offense. Federal inmates were also less likely to be incarcerated for a property offense (9%) compared to state inmates. In addition, 11% of federal inmates were incarcerated for an immigration offense; state prisons do not have a comparable offense. Like their male counterparts, women in state prisons were most likely to be incarcerated for a violent offense (34%), followed by property offenses (30%) and drug offenses (29%). While women in federal prisons were most likely to be incarcerated for a drug offense (64%), followed by property offenses (20%), only 9% were incarcerated for a violent offense and 4% for an immigration offense (*The Sourcebook of Criminal Justice Statistics*, 2003).

The next chapter will provide an overview of the sample for this study, the data sources used, the sample characteristics, and how the pathways will be constructed. This chapter also briefly explains the statistical methods used to examine the pathways to prison, prison misconduct and recidivism.

Chapter 3: Data Sources and Sample Characteristics

Data Sources

In 2002, the Federal Bureau of Prisons conducted a comprehensive psychological testing initiative with a cohort of new admissions. To obtain a representative sample of all new BOP admissions across security levels, the sample included inmates from 14 prisons: four high-security, five medium-security, three low-security and two female institutions.[21] Almost all of the women in the sample were incarcerated in low security institutions (95%).[22] For the men, 25% of the sample was incarcerated in high security level prisons, 45% were incarcerated in medium security prisons and the remaining 30% were incarcerated in low security. The majority of inmates remained in the same security level prison for their incarceration (66%). Approximately 26% moved down a security level during their incarceration and 15% moved up a security level.[23] Each prison had a psychologist as a site coordinator. Data collection occurred from October 2002 to February 2004.[24] This study only included individuals convicted and sentenced to federal prison who were direct court commitments.[25] The current study only used data from the operational data sources and not the psychological testing instruments.[26] These data

[21] Minimum security facilities (i.e. camps), metropolitan detention centers (i.e. jails), and medical referral centers (i.e. hospitals) were not included. In addition, the institutions that were chosen were from 9 different states across the country (ranging from Oregon to Texas to Florida to Connecticut). This was to ensure that the sample was generated from different regions of the country. The Office of Research also compared this sample to a BOP wide admission cohort to account for any bias and did not find significant differences between the two groups on several factors.

[22] The other 5% were incarcerated in a minimum security prison.

[23] The percentages do not add up to 100% because 104 inmates moved both up a security level and down a security level during the same incarceration. In addition, almost half of the sample remained at the same prison for their incarceration.

[24] When the sample was drawn, there were 103 prisons run by the BOP. There were 85 prisons that primarily housed men and 6 prisons that housed women. There were also 13 detention centers (i.e. jails) which housed both men and women.

[25] Transfers from other prisons or supervised release violators were not included.

[26] The second phase of the original study administered multiple psychological assessments.

sources included the BOP's operational data management system (SENTRY), the Psychology Services Intake Questionnaire (PSIQ), the Pre-Sentence Investigation (PSI), and criminal history records maintained by the FBI's National Crime Information Center (NCIC). Each of these data systems are the topic of discussion below.

1. SENTRY. The Federal Bureau of Prisons' operational data system includes socio-demographic information, sentence related information, custody classification measures, prison misconduct data, and prison admission and release dates.[27] The socio-demographic variables included are race, sex, ethnicity, and age. The sentencing district is coded as part of the information recorded for sentencing. This captures if the defendant was convicted in a federal court or if they were convicted in the D.C. court system. In 2001, the Federal Bureau of Prisons was mandated by Congress to absorb all of the D.C. offenders sentenced to prison.[28] Even though D.C. offenders make up a small portion of the overall federal prison system, this subset of inmates is not the typical federal offender. While the court systems and the types of crimes for these two populations are quite different, once D.C. offenders are designated to a BOP facility, for all intents and purposes they are treated exactly the same as federal inmates.

The BOP custody classification system incorporates several measures that are computed into an overall continuous custody classification score which summarizes criminal history. The current study included the majority of the actual items instead of the overall score (Camp et al., 2008). The following variables used to calculate the classification score were included in this study: surrender status (voluntary or not), USSC criminal history points, history of violence, history of escapes, and prior commitments.

[27] The respective data were drawn for the incarceration for the study period.
[28] This was a result of the National Capital Revitalization and Self-Government Improvement Act of 1997.

Surrender status refers to two possibilities: a) the defendant was held pre-trial in a BOP detention center until sentencing and then directly transferred to a BOP prison; b) the defendant was released on bail or bond before trial and once sentenced, surrendered to prison on their own volition. The USSC criminal history points are calculated to reflect the length and frequency of previous sentences served by convicted felons. Most but not all sentences are included in these calculations. Divided into six categories, the criminal history scores are used by federal judges to make sentence decisions. The six categories range from the lowest history of criminal involvement (category I with scores of 0 or 1) to the most serious histories (category VI with scores of 13 or higher).[29] A history of violence is measured by seriousness and recency.[30] Violence is considered serious when the behavior can cause bodily harm or death, such as aggravated assault or crimes involving a weapon. A history of violence is considered recent if it occurred within five years of admission to the BOP.[31] A history of an escape or an attempted escape is measured if there is documentation of a guilty finding for absconding from community supervision or prison. Prior commitments refer to any period of incarceration prior to the current admission.

The only items from the custody classification instrument that were not included in the current study are months to release, severity of current offense, and pending detainers. Because the sample only included individuals released from prison, months to release was not relevant. The type of crime for the current incarceration was of more

[29] Category I score is 0 and 1; category II points are 2 or 3; category III is points 4,5, and 6; category IV is points 7, 8, and 9; category V is 10, 11, and 12; and category VI is 13 or higher.
[30] The violence must be documented by a finding of guilty by the courts, previous prison records, or while on supervised release.
[31] This includes both serious violence and minor violence. Violence is considered minor if it is not likely to inflict serious bodily harm, such as simple assault.

theoretical interest, therefore it was used instead of severity of current offense. In addition, inmates who had detainers were individually researched to account for any time they had to serve in state prison after their release from federal prison.

2. Psychology Services Intake Questionnaire (PSIQ). The PSIQ is a self-report, one page questionnaire that is distributed to every newly admitted inmate as part of the psychology intake screening process. The purpose of the PSIQ is to gather initial information prior to the interview with psychology staff. The majority of the questions have response patterns, such as yes or no. The PSIQ is not an automated system; the information resides only in paper format.[32] The current study used the following measures from this source: marital status upon admission to prison and if the individual had any juvenile children when they were admitted to prison.

3. Pre-Sentence Investigation Report (PSI) provided by the Administrative Offices of the United States Courts (AOUSC). The PSI is a comprehensive report written by a pre-trial service officer for the judge prior to sentencing. The report includes information gathered from a series of interviews with the defendant, record checks for education and medical information, and collateral interviews.[33] While there is some standardization with respect to the types of information gathered for these reports, they generally differ from jurisdiction to jurisdiction, and from author to author.[34] The report covers historical information over the entire life of the offender and covers the same topics that are in stand-alone sections: education, employment history, drug use history,

[32] For the current study, the information for each PSIQ was manually keyed into a database.
[33] Education, mental health, and medical records are requested for verification from the respective institutions. Collateral interviews also corroborate the information obtained from the defendant.
[34] Although, the Administrative Offices of the United States Courts is now automating and standardizing this report, the only information available for the current study was the actual paper report. Therefore, a comprehensive coding manual was created by the BOP to capture the data in a useful way. After the coders were trained, reliability checks were conducted before coding the actual cases. Coder reliability had to be correct 90% of the time (Magaletta et al., 2009).

mental health history, financial information, the offense conduct, offense level computations, a detailed criminal history, and family ties or a description of the individual's childhood. The information used from the PSI for the current study includes age of first arrest, childhood risk factors, a history of drug use, mental health history, and highest degree attained. Childhood risk factors captured placement outside of the home, such as foster care placement, residential placement or juvenile detention. Other factors included parental criminal history, parental substance abuse, and history of abuse as a child.[35] A history of drug use was documented if an individual used a substance for more than one year in their lifetime. The mental health history variables included diagnoses and the type of contact (i.e. in-patient hospitalization, outpatient, or psychotropic medication use).

Although there is not a standardized questionnaire used to elicit the information, the majority of items coded for the current study were typically included in the PSI, but a few of the childhood risk factors were not always mentioned, such as parental substance abuse or parental criminality. Thus, despite the fact that a particular item may not be noted in the report, it is impossible to determine if the information was simply not applicable to the individual or if the question was never asked.

5. FBI Official Rap Sheets from National Crime Information Center (NCIC). In addition to the automated FBI data, the Office of Research (ORE) requested the official rap sheets for each individual in this study. This information comes in either a paper document or a PDF document.[36] ORE created a database to manually code the arrest information. This supplemental information provides us with the most comprehensive

[35] Parental substance abuse was noted if either alcohol or drug abuse mentioned.
[36] There are 18 states that do not electronically submit arrest data to the FBI. For these states, the rap sheets were sent via paper documents. For the other states, the rap sheets are in PDF format.

criminal history data. Due to the intensive resources needed to code arrest information over a lifetime, the only arrests coded for this study were the arrests following release from BOP custody and age of first arrest.

Sample Characteristics

Originally there were 2,855 inmates identified as new court commitments. For the current study, it was necessary to exclude 584 inmates because they were deportable aliens.[37] Another 631 inmates had not been released from custody when the FBI arrest data was obtained, so community follow-up was impossible.[38] After these two exclusions, the sample for the current study contained 1,640 inmates (1266 men and 374 women).[39] In the operational database, race is categorized as white, black, Asian or Native American and ethnicity is captured in a different variable.[40] Approximately half of the sample is white (50% of the men and 54% of the women), and the majority is non-Hispanic (83% of the men and 87% of the women) (see Table 3.1). The mean age when men and women entered the BOP was almost the same (32.5 for men and 33 for women).[41]

The psycho-social history variables revealed that men and women were fairly similar for a number of factors. A large percentage of both males and females reported having children (78% of females and 73% of males); the majority of the children were

[37] Deportable aliens were not included because obtaining recidivism data for these individuals is impossible.
[38] FBI arrest data was downloaded in August 2010. As of August 2013, an additional 259 inmates have been released from BOP custody. Of the 379 inmates still incarcerated, 39 individuals are serving life or death sentences. For the remaining 333 inmates, upon admission, their average expected months of incarceration was 243.
[39] The final models included only cases with complete data (1126 men and 338 women).
[40] There are too few Asian (13) and Native American (13) inmates to analyze separately. Following conventional practice, these inmates were combined with African Americans to create a minority category which was compared with whites. This is not an optimal practice as there are likely important differences that are muted by this coding scheme. This question, albeit important, is beyond the scope of this dissertation.
[41] Ages ranged from 18 to 75.

under the age of 18 when their parents were incarcerated (62% for both men and women).[42] With regard to education, women were more likely to have at least a high school education than men (36% and 29%, respectively).[43] In contrast, men were more likely than women to be employed when they were arrested (46% and 37%, respectively).[44] For both men and women, approximately 22% were married when they were admitted to the BOP. In addition, more women than men had a history of mental health service use (39% versus 22%).[45]

The PSI also provided the information coded for the childhood risk factors: parental substance abuse, parental criminality, a history of childhood abuse, and placement outside of the home. The parental history of drug and alcohol abuse was relatively low for both men and women (23% and 28%, respectively).[46] For parental criminal activity, men and women reported similar levels (21% and 22%, respectively). Another childhood risk factor captured was a history of abuse. Women reported much

[42] The coding manual did not capture if the children were living with their parents prior to incarceration.
[43] Education was measured as having at least a high school diploma or higher post-secondary education. Having a GED was categorized as not having a high school education because being able to attain a GED later in life was seen as different than being able to finish high school as a young adult. A little over half of the self-reported educational attainment responses were verified with administrative records, the accuracy of these records are therefore certified. Administrative records were not, however, available for the entire sample at the time the PSI was written; we therefore had to proceed on the assumption that these defendants accurately reported their education.
[44] An individual was coded as employed if that individual was employed full-time, part-time, or self-employed at time of arrest.
[45] This was measured by either previous psychiatric hospitalization or psychotropic medication use. Although this definition was more conservative, the majority of individuals who had past contacts with the mental health system were still captured. A history of outpatient services and diagnosis were not included due to questionable reliability and validity in the coding of these measures. A vast majority of the cases coded as only having a mental illness were self-report symptoms and not a formal diagnosis by a medical professional (N=71). For the cases documented as having outpatient treatment only, a number of people were evaluated while in custody, but never formally participated in treatment (N=104). Approximately 68% of the applicable cases were verified by medical records.
[46] This risk factor is not a key marker that is regularly collected by probation officers and may explain the low percentages.

higher levels of abuse than the men (33% versus 18%, respectively).[47] The last childhood risk factor identified was out-of-home placements as a juvenile. Overall, 19% of the men and 12% of the women were placed outside of their home during their youth.[48]

Criminal History and Prison Factors

The two primary sources for criminal history information are data from the FBI and the BOP's custody classification system. Overall, men had more serious criminal histories than the women. Upon admission to the BOP, 21% of the men had a history of recent violence, while 10% of the women did. Men also had significantly higher levels of serious violence (48%) than did women (18%). In addition, the vast majority of the men had been previously incarcerated (80%), while a little over half of the women (55%) had a prior commitment. Less than a quarter of both men and women had a history of escapes (19% and 16%, respectively). Men also had higher USSC criminal history points than women; on average men had 6.5 points and women had 4.1.[49] Men and women were incarcerated in the BOP for different offenses. While over half of the women were incarcerated for drugs (52%), approximately 43% of the men had similar convictions. For men, almost 42% were incarcerated for a violent offense, whereas 20% of women were incarcerated for a violent offense.[50] Men were also more likely than the women to be arrested as a juvenile (45% and 23%, respectively). For this period of incarceration, men on average served more time in prison than women (38 months versus 32 months, respectively).

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[47] Four types of abuse were recorded: physical abuse, sexual abuse, emotional abuse, and if the child witnessed violence in the family. For the men, the most prevalent abuse they reported was physical abuse, whereas for the women it was sexual abuse.

[48] Out of home placement included foster care, juvenile detention or residential care. For the men, the most prevalent placement was juvenile detention, whereas for the women it was foster care.

[49] USSC criminal history points ranged from -2 to 39.

[50] Violent offenses included homicide, aggravated assault, robbery, weapons and explosives.

Outcome – Prison Misconduct

The first outcome of interest is prison misconduct. The data reveal that a larger proportion of men were involved in misconduct than women (see Table 3.2). Over half of the men were involved in misconduct while incarcerated, whereas approximately a third of the women were involved. Based on the seriousness of offense, misconduct was categorized into three types: serious, minor or violent misconduct.[51] Almost half of the men (46%) and a third of the women (34%) were involved in minor misconduct. Approximately 29% of the men were involved in serious misconduct, while only 14% of the women were. Lastly, less than a fifth of both men and women were involved in violent misconduct (13% and 8%, respectively).

The percentage of men involved in misconduct was larger than women for all categories, but the number of infractions was more similar. For any misconduct, while men on average had slightly higher counts than the women, they were not significantly different from each other (1.63 and 1.29, respectively). This was also the case for minor misconduct; men on average had been convicted of 1.06 incidents and women 1.05. For serious misconduct, men on average participated in more misconduct than women (.58 and 0.24, respectively). The average counts for violent misconduct were the lowest of the different types of misconduct and were similar for men and women (0.19 and 0.13, respectively).

[51] Serious misconduct is defined as 100 and 200 level offenses. Minor misconduct is defined as 300 and 400 level offenses. See Appendix C for the specific offenses included in these categories.

Outcome – Post Release Recidivism

Measures of recidivism included new arrests, supervised release violations, or new admissions to prison.[52] The average number of months to either an arrest or the end of the follow-up period (i.e., censor date) for men was 28 months and for women it was 37 months.[53] A higher percentage of the men had a post release contact with the criminal justice system. For the men, a little over half had a new contact (55%), while approximately 43% of women had a new contact. The majority of new contacts were for a new arrest; men had more new arrests than women (40% and 30%, respectively). The rates of probation violations were similar between men and women (15% and 12%, respectively).

Collinearity of Covariates

The covariates used in the models described in the following chapters were correlated with one another to determine if there were potential areas of concern regarding collinearity of covariates. The correlation matrix is not presented because of the large number of covariates used in the following analyses and because the correlation matrix is not informative for the results of this study. The only variables that correlated more highly than r=0.60 were the indicators for whether someone was convicted of a violent offense or a drug offense (r=-0.731). Even in this instance, the shared variance (49 percent) is less than the unique variance of the two variables (51 percent). Nonetheless, sensitivity analyses were conducted to determine whether the collinearity of

[52] The FBI rap sheet should record a new arrest or a technical violation before an individual enters prison. There were only a handful of cases in this sample where an individual had a new admission to the BOP without a corresponding record in the FBI data. These omissions reveal that FBI records may not be completely accurate, as the FBI is dependent on local law enforcement entities to report all arrests.
[53] As noted before, this sample was an admission cohort; inmates were released from prison at different times, thus their time at risk also varied.

these covariates created problems of estimation in the model. No problems were detected for the outcomes examined in this study.

Chapter 4: Methods

Two primary phases will guide this analysis. The first step will be to identify the different pathways to prison. Latent class models will be used to identify the different groups or clusters of people with similar risk factors, i.e., the pathways. The second step of the analysis investigates the effect of this group membership, after entering prison, on prison misconduct and the post-release offending. The analyses of prison misconduct used count models to examine whether different covariates associated with the quantity of prison misconduct. Negative binomial models are the choice for this analysis as standard Poisson models do not account for that overdispersion of the variance that is typical with social science data. The analysis of recidivism relies upon survival models (i.e., Cox proportional hazard models).

The broadest definition of recidivism is return to crime after release from prison or accruing other forms of criminal sanctions. In the federal system, individuals typically release with a term of supervision overseen by representatives of the federal court system. In practice, measuring when individuals actually return to criminal activities is next to impossible because many go undetected. In lieu of direct measures, most recidivism studies rely upon indirect measures, such as official contact with the criminal justice system. The contacts most often analyzed are new arrests, violations of the terms of release, convictions, or returns to prison.

The current study had access to new arrest data and returns to prison for violations of the terms of release. There is no clear evidence that the processes that lead to a new arrest are different than supervised release revocations. Therefore, the current study chose

to combine both events to measure recidivism. An analysis of combining these outcomes provided greater statistical power for the detection of the effects of covariates.

Latent Class Analysis

Latent class analysis (LCA) is a statistical technique by which an underlying latent variable can be identified with two or more observed variables (Collins & Lanza, 2010). Although latent class analysis shares similarities with more widely used factor analysis techniques, there are key conceptual difference between these two methods. One important difference between these two methods is the distribution of the latent variables. In factor analysis, the assumption is that the latent variable and the observed indicators are continuous; in latent class analysis, the presumption is that the latent variable and the observed indicators are categorical.

Another conceptual difference between the two approaches is that factor analysis is a variable-oriented approach. Therefore, the primary interest is to examine the factor loadings for each variable to determine if that variable is important for that factor. In other words, in a variable-oriented approach the goal is to identify relationships between variables. In contrast, in latent class analysis the focus is not on the relationship between the variables but on groups of individuals. This represents a person-oriented approach. A person-oriented approach searches for groups of individuals who have similar individual traits. In a variable oriented approach it is assumed that the relationships are the same across all people (Collins & Lanza, 2010). These conceptual and methodological differences between the two approaches make the latent class approach more appropriate for this dissertation.

Because pathways to prison research identified subsets of offenders whose shared risk factors generate discrete routes to prison, the latent class approach is appropriate for this study. The current study examines the effects of criminal history, mental health history, a history of drug use, abuse as a child, parental criminal history, parental substance abuse, and placement outside of the home as a child. This allows us to determine if groups of individuals share the same risk factors for distinct pathways to prison and if these paths vary by gender. In addition, the majority of the observed indicators in this study are categorical, which make latent class analysis more appropriate than factor analysis. LCA is also flexible enough to allow for differences between different groups of individuals, such as gender or race (Collins & Lanza, 2010).[54]

The following discussion provides a brief overview of the equations and mathematics of latent class analysis. Similar to the covariance matrix in factor analysis, the first step for LCA analysis is to create a cross tabulation of all of the variables included in the model. The LCA model contains the estimated prevalence for each latent class and the item-response probabilities. These produce the expected cell proportions for the table mentioned above. In the case of good model fit, the expected and the observed cell proportions are relatively equal. Expressing these concepts more formally, the latent class prevalence can be represented by the Greek letter gamma (γ) and the item-response probabilities as rho (ρ). If the latent variable is represented by L and has the following latent classes: $c = 1,\ldots,C$, then the prevalence of the latent class would be γ_c, which is also the probability of membership in the latent class (c) for the latent variable (L). Each

[54] A limitation with LCA modeling is that it is best suited to exploratory frameworks in which the researcher's judgment determines whether the model identified is consistent with previous analyses. This is in contrast to confirmatory methods, where the researcher employs statistical tests to determine whether previous findings are replicated. LCA in this case may thus be seen as inductive rather than deductive modeling.

individual can be a member of only one latent class; this is denoted in the following equation:

$$\sum_{c=1}^{C} \gamma_c = 1 \quad (1)$$

The observed variables are represented by j =1,…, $J$and the response categories for the observed variable are represented by r_j = 1,…, R_j. Therefore, the probability of a response category r_j for the observed variable j, which is conditional on the membership of the latent class (c) can be shown as: $\rho_{j,r_{j|c}}$. The parameters (ρ) represent the relationship between each observed indicator and each latent class. Based on all of the observed variables taken together, these parameters represent how well individuals fit into a latent class.

The probabilities for individuals choosing the responses to a variable always sum to 1 because the individuals can make only one choice for the response vector of the variable. This is represented in the following equation:

$$\sum_{r_{j=1}}^{R_j} \rho_{j,r_{j|c}} = 1 \quad (2)$$

The probability of choosing a given response is conditional on the latent class. The equation below shows how a response is conditioned on the probability of membership in a latent class.

$$P(Y = y) = \sum_{c=1}^{C} \gamma_c \prod_{j=1}^{J} \prod_{r_j=1}^{R_j} \rho_{j,r_j|c}^{I(y_j=r_j)} \quad (3)$$

Count Models

After identification of the pathways to prison, the utility of the pathways in explaining differential amounts of prison misconduct becomes the topic of analysis.

Regression models for count data are appropriate for this. Count data are not continuously distributed because the distribution is constrained to the subset of all real numbers containing positive integers and 0.[55] Therefore, the analysis must transform the values of the dependent variable to create a continuous distribution of the dependent variable. Fortunately, a simple transformation appropriately transforms the data in such a fashion: the logarithm of the count data. Modeling the log-transformed counts as linear combination of the covariates included in the model is appropriate (see Equation 4). A small value is assigned to any count of 0 in practice since the logarithm of 0 is not defined (Long, 1997; Long & Freese, 2006).

$$log\big(E(Y|x)\big) = a'x + b = \theta' \tag{4}$$

Another assumption when analyzing count data is that the data follow a Poisson distribution. In a Poisson distribution, the variance is a direct function of the mean; therefore the error term is not calculated in the typical fashion for count models. Equation 5 shows that in Poisson regression the variance is a direct function of the mean.

$$\mu = E(Y_i) = Var(Yi \ \ ) \tag{5}$$

A common issue encountered with count data, especially in the social sciences, is overdispersion. Overdispersion occurs when a large number of 0 counts lead to the variance being larger than the mean. In these cases, Poisson regression is not appropriate. To correct for overdispersion, an overdispersion parameter is included in the model to adjust the variance shown in Equation 6.

$$Var(Y_i) = \emptyset\mu \tag{6}$$

[55] Although there may be institutional level effects even within the same correctional system, the current study did not have enough prisons to parcel out these effects with HLM models, especially because men and women were examined separately.

An estimate of the overdispersion parameter (Ø) is generated in negative binomial regression output along with a test of the significance of the overdispersion parameter. Count models also often need to account for different exposure periods for individuals in a study. In this study, inmates were incarcerated for varying amounts of time which affected their counts of misconduct. In cases of varying exposure, rates are a better choice for an outcome than simple counts. In Poisson and negative binomial count models, the issue is handled by entering time as an offset variable. Time enters the analysis on the right-hand side of the equation, but with the parameter estimate of the log of time set to 1.

Survival Analysis

Survival models were appropriate for analyzing recidivism in this study rather than logistic regression because these models explicitly incorporate time into the analysis. While logistic regression models are frequently used to examine recidivism, logistic models do not properly handle censored observations unless the database is explicitly designed for discrete time analysis (Allison, 2010). Logistic models also do not provide information about the timing of events or allow for time-dependent covariates. The timing until the first post-release criminal justice contact is important for this study because previous research has demonstrated that someone who is arrested within the first month after release from prison has a different criminal propensity than someone who is arrested a year after release (Allison, 2010).

Survival analysis includes several statistical approaches that share the commonality of analyzing the time that subjects survive until an event occurs (Cleves, Gutierrez, Gould, & Marchenko, 2010; Patetta, 2009). A survival function, stated in a

more positive fashion, is the probability of surviving beyond a time specified by *x* (see Equation 7).

$$S(x) = \Pr(X > x) \tag{7}$$

Recognizing the role of time in the equation, equation 7 explicitly expresses this relationship.

$$S(x) = \Pr(X > x) = \int_x^{\infty} f(t)dt \tag{8}$$

Equation 8 simply expresses that the probability of surviving until some point of time is a function of the accumulation of events that occurred prior to that point in time.

Analysis of survival rates is the same as analysis of the cumulative hazard rates in the sense that one is a direct and simple re-expression of the other. If 90 percent of a sample survives until some specific time, it is easy to calculate that 10 percent of those at risk experienced the event by that time. Where survival expressions report on the rate of survival, hazard rates focus attention more directly upon the event at hand. In the biological sciences, where death is often the event, survival is more often the emphasis. Social scientists tend to focus upon analysis of the events, as in which factors place people at most risk of the event. On the other hand, the attention usually shifts to the proportion of individuals experiencing recidivism by some time point *t*. The statistical estimation procedures for both survival and hazard rates are the same as the functions are reciprocal functions.

In other words, the dependent variable in survival models is usually referred to with respect to the time of the event, as in failure time, survival time, or event time (Patetta, 2009). The dependent variable is simply the time until the event occurred or censoring. Censored events are those that occur at a point beyond the observation period

of the study at hand. For the current study, post-release behavior (recidivism) was the event of interest.

The current study used Cox proportional hazard models. Cox models have the advantage of being semi-parametric (Schmidt and Witte 1988). This means that parameters do not estimate the underlying distribution function producing the survival curves observed. The survival curves for different groups only need to retain proportionality over time, a condition that needs to be tested. In the social sciences, there is rarely existing research to guide analysts in the choice of the function that generated the observed survival curves. As seen in the partial score function used in Cox modeling, a parameter for the shape of the survival curve is not needed (see Equation 9).

$$l(\beta) = \sum_{i:C_i=1} \left(X_i - \frac{\sum_{j:Y_j \geq Y_i} \theta_j X_j}{\sum_{j:Y_j \geq Y_i} \theta_j} \right) \quad (9)$$

The partial score function is used with the Hessian matrix to maximize the partial likelihood using the Newton-Raphson algorithm in SAS. This provides the estimates of the effects of the various covariates entered into the model.

In this analysis, Cox models estimated time to first event, which was either time from release until first new arrest or censoring.

Censoring of Observations

Survival analysis is the preferred method for dealing with censored data. In the social sciences, data are either censored because the event has not occurred during the observation period or the event will never occur. In the medical sciences where the term survival analysis is used, the outcome of interest is typically death. For example, censored data might be those subjects for whom a death was not recorded at the time that

data collection ended. Censored data is not an insurmountable problem for survival models, as it would be for logistic regression models and similar techniques. In this study, the outcome of interest is an arrest following release from prison.

Data that are censored by the design of a study are rarely a problem for survival models. Data that are censored by processes not under the control of the study, though, are often a special problem for survival techniques, and sometimes the situation is problematic enough that survival techniques produce grossly biased results. In particular, if censoring provides information about the outcome of interest, then the censoring is said to be informative. For example, if individuals are more likely to censor themselves from a study at the time the outcome occurs (such as a successful medical intervention that is not recorded because of a missing follow-up visit with a doctor), then knowing that a person is censored in a given time period provides information about the likelihood that a positive outcome was achieved. Of course, the information is incomplete and cannot be treated as an event in the survival models and is lost to the study. Clearly, this situation presents potential for bias. However, in the current study, knowing that an individual is censored in a time period provides no information about whether an outcome occurs in later time periods.

A prison admission cohort might appear to be problematic in terms of censoring, but this is not necessarily the case. Because inmates are releasing during different time periods, some are observed post-release longer than other inmates; this means that some are at risk for the event (arrest) for a longer time period. Furthermore, if seriousness of crime is defined by sentence length, then inmates with longer sentences are seen as having committed more serious crimes and thus may be at greater risk for reoffending. In

the federal system, however, long sentences are often associated with drug crimes, such as distribution of crack cocaine and not necessarily violent crimes. Nonetheless, it is reasonable to assume that some issue is created by following the people with longer sentences for shorter periods of time once released. However, this situation is not necessarily problematic in terms of informative censoring because sentence length is related to the length of the time that someone is observed, and not related the outcome itself, which is the risk of an arrest.

Paul Allison (Allison, 2009), a distinguished scholar of survival methods, directly addressed the issue of recidivism among subjects whose different release times created varying observation periods: " …in many other data sets, however, the censoring times (or potential censoring times) vary across observations. This could happen, for example, if prisoners are released at different points in calendar time, but everyone is followed up until some particular date in calendar time. Those released earlier have longer potential censoring times than those released later." Allison goes on to say that "this variation in censoring times is relatively unproblematic if censoring occurs simply because the researcher stops the follow-up according to some prespecified rule." Problems with right censoring, or informative censoring occur when "… the censoring is part of the phenomenon under investigation, not a part of the research design."

In the current study, all of the censoring of data occurred as a result of the research design. The follow-up period ended on the date that the FBI rap sheets were obtained. There may still appear to be an issue with model specification, even if no apparent issue with informative censoring exists. Although censoring times do not provide direct information about survival times in this study, as would be the case with informative

censoring, there is an indirect relationship because of the correlations between sentence length, censoring, and recidivism. Some additional analyses were thus conducted to address this possible relationship.

The sample was interrogated to determine how many people were observed for less than a year. There were 104 people so identified; of those 104, 16 were already coded in the dataset as being arrested and 88 were not arrested. There were 853 people arrested in the whole sample. Of those arrested, almost 50% (430) were arrested within the first year. On October 3, 2012, the FBI provided the BOP with an update to the sample of inmates analyzed here. Of the 104 people who were not followed for an entire year in this study, only an additional 9 people were arrested within the first year of their release. If there was any bias in the estimates it would have been minimal because a relatively small portion of the sample was not observed for less than a year, and a portion of those people were already identified as being arrested.

Thus the potential problem of informative censoring is not an issue in the present study. Allison (2010) notes that in the presence of informative censoring, it is desirable to include as many of the covariates related to censoring as possible. This same admonition applies to the correlations between sentence length, censoring, and arrests. Variables that are related to both sentence length and arrests are included in the models of recidivism. Issues of specification are less likely under that scenario.

Chapter 5: Pathways to Prison Results

This study used latent class analysis (LCA) to examine pathways to federal prison using risk factors that have been highlighted in previous criminological and pathways literature. The analyses presented here tested whether the pathways identified by Daly (1994) or alternatively by Brennan (2012) were replicated or extended with a sample of federal offenders. This study includes factors that have been highlighted in the broader criminological literature such as employment, education, substance abuse history, familial criminality, parental substance abuse, childhood risk factors and several measures of criminal history (Sampson & Laub, 1993). In addition, factors such as the prevalence of childhood victimization and mental illness that the feminist literature cites as being important for women are also considered (Huebner et al., 2010). As stated earlier, this is one of the few quantitative studies to examine both male and female pathways to prison. Because the majority of the pathways research has only examined women, we will see if the pathways are replicated with men as well (for exceptions, see developmental pathways research, such as Moffitt, 1993; Thornberry, 2005).

Because latent class analysis is a relatively new approach and not widely used, an outline of the steps for this analysis will be briefly provided. The first step was to run a series of models adding an additional class with every analysis and then compare the results of the models to determine the best measurement model. There are two broad considerations when evaluating competing models: examination of model fit indices and subject matter expertise (McCutcheon, 2002). Two of the fit indices for latent class analysis are the Bayesian Information Criterion (BIC) and the Akaike Information Criterion (AIC). Because they both impose a penalty on the G-square, these measures are

used to identify the most parsimonious model (Akaike, 1987; Collins & Lanza, 2010; Schwartz, 1978).[56] Although both the AIC and BIC take into account the number of parameters in the model, the sample size is included only in the calculation of the BIC; as a result these two criteria do not always point to the same model as being the best model. In such instances of disagreement, the indices can be used to eliminate certain models, but additional information is needed to identify the final model (Collins & Lanza, 2010). Because fit indices sometimes fail to distinguish between models and provide a mechanistic mechanism for model choice, the expertise of the researcher must be used to determine if more complex models are theoretically meaningful and justified (Nagin, 2005). Two other fit indices that are not used as often to assess fit are the log likelihood and the G-squared; though not used as often these are nonetheless usually presented to determine if they are consistent with the AIC and BIC. A final check on model adequacy is to examine the percentage of seeds that converged to the same results when using random starting values.[57]

In addition to the fit indices, there are several items from the results of the statistical model used to help describe the resulting groups or pathways. First, because LCA models statistically identify classes or groups of individuals with similar characteristics, meaningful labels must be assigned by the end user to each class taking into account homogeneity, latent class separation, and theoretical meaning (Collins &

[56] These measures are similar in factor analysis.
[57] Using random start values is important because of the iterative nature of maximum likelihood estimation. MLE can produce parameter estimates based on local instead of the global maximum value of the likelihood function. Beginning with divergent starting values and finding that the model iterates to the same maximum point is evidence that the global maximum was found. In other words, the same coefficients for the parameters are found no matter what starting values were used to start estimation. The general guideline is to accept models where different starting values produced the same results at least 50% of the time (Collins & Lanza, 2010).

Lanza, 2010).[58] Second, the prevalence of the classes is provided which shows how the sample is distributed into each class. Third, posterior probabilities are calculated for each individual for each of the classes, which then can be used to assign an individual to a particular class. Each individual is then assigned to the class in which they had the highest probability of group membership; this is in contrast to the probabilistic classification inherent in LCA (Nagin, 2005).

One primary focus of this analysis was to determine if there were unique as well as overlapping pathways to prison for men and women. Men and women were analyzed separately for the above reasons and to ensure that the men would not overpower the models and mask potentially different pathways for the women. To be able to make direct comparisons between men and women, the same risk factors were included in the final models. The variables included in the following models mirror previous literature which examined female pathways to crime, gender-specific and gender-neutral risk factors.

Women's Pathways to Prison

For the women, the AIC ranged from 1018 for one latent class to a low of 763 for six latent classes (see table 5.1). The BIC started at 1061 for one latent class and dropped to 925 for two latent classes, and then rose slightly to 932 for three latent classes, and continued to increase with each successive class. The G-square started at 996 for one latent class and continued to decrease to 621 for six latent classes. This was also the case for the log-likelihood (-2455 for one class to -2268 for the sixth latent class). Although

[58] A latent class is considered homogeneous when the individuals in that class are more likely to provide the same responses to all of the variables in the model, comparable to factor saturation in factor analysis (Collins & Lanza, 2010). When a model has good latent class separation the item response probabilities vary across the latent classes for the different variables; this is comparable to a simple structure in factor analysis. In other words, no two latent classes will endorse the same pattern of responses across the indicators.

the AIC, the G-square, and the log likelihood continued to decrease for up to six classes, the BIC started to rise after the two class solution. Figure 5.1 shows graphically that the change in the AIC between the four class, five class and the six class solution were minimal (AIC decreased by 6.19 and 1.56, respectively). From the four class model to the five class model, the G-square decreased by 36.19, and further decreased by 25.56 to the sixth class. Although these two indices continued to decrease, there was minimal gain by adding two additional classes. Further examination of the percentage of seeds that converged with the best fitted model was also examined. For both the five and six class solutions, the percentage of iterations that agreed with the model were below 50%; for the five class solution 46.6% of the iterations arrived at the same model, while the six class model dropped to only 10%.

While the fit indices are suggesting that the four class solution maybe the best measurement model, there are two substantive factors that were examined to further compare the four and five class models: homogeneity and latent class separation. As mentioned earlier, a model has good homogeneity when the individuals within the class exhibit the same response pattern.[59] While there are a few instances in this study where the homogeneity is weak, overall the four pathways have fairly good homogeneity (see Table 5.2).[60] I also reviewed homogeneity for the five class solution. The results for three of the four pathways were the exactly the same for the five class solution as the four class

[59] Collins and Lanza consider good homogeneity when the item response probabilities are between 0 to .2 or .8 to 1 (Collins & Lanza, 2010).

[60] In the first pathway the majority of the items tend toward the upper and lower boundaries, except for a history of mental health problems, juvenile arrests, drug conviction, and parental drug use. The only item that had weak homogeneity in the second pathway was prior commitments. For the third pathway, the majority of the items fall along the boundaries except for a history of drug use, education and employment when arrested. All of the items in the fourth pathway aligned near the upper or lower boundaries.

solution. In the five class solution, the new pathway had one item with better homogeneity, but also had three items that had some homogeneity problems.[61]

To assess the latent class separation, it was necessary to compare the item response probabilities between the different classes. If there is good latent class separation, the item response probabilities vary between the classes, so no two classes have the same response pattern (Collins & Lanza, 2010). In this study, the four class solution for the women has respectable latent class separation. The weakest latent class separation occurred between two of the classes where five items overlapped, but the responses for the six other items differed dramatically.[62] The latent class separation for the five class model was very similar to the four class solution, but the new pathway had five items that overlapped with one of the original pathways and three items that overlapped with two of the other pathways.[63]

The last comparison between the four and the five class solution focused on the prevalence of the different classes. While three of the pathways remained essentially the same, the prevalence of one of the pathways decreased. This also impacted a few of the item response probabilities. Because the new pathway seemed to be a combination of two of the pathways from the four class solution, there did not appear to be a strong enough theoretical justification for the added complexity with the five class model. In addition, the differences in the fit indices from the four class solution to the five class solution and the low percentage of seeds that iterated to the final model in the five class solution suggest that the four class solution was the best model.

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[61] The items were history of abuse (.59), prior commitments (.51), and history of mental health (.47).
[62] The five items that overlap are: history of drug use, previous incarcerations, married at admission, employed when arrested, and convicted of a drug offense.
[63] The five items that overlapped with another pathway were: a history of mental health, outplacement as a child, juvenile arrests, history of drug use, and drug conviction.

Three of the four pathways for the women comprised relatively equal portions of the sample. The first pathway consisted of 28% of the sample (see Table 5.2). This group of women had the highest probability of childhood abuse, the highest probability that their parents abused alcohol or drugs, and were the most likely to be placed outside of the home as a child. Almost all of these women had a history of drug use. A little over half of this group had a history of mental health problems. These women also had the lowest levels of education, were likely to be unemployed when they were arrested, and were the least likely to be married when they were incarcerated. About half of the group was incarcerated for a drug offense and were likely to have been previously incarcerated (see Figure 5.2). This pathway appears to align with Daly's street pathway, with the additional factor of mental health issues which Daly described in the harmed and harming pathway. This pathway is also similar to Brennan's pathway labeled aggressive antisocial women. This pathway will therefore be called street women.

The second pathway contained the smallest percentage of women (13%). These women were the most likely to have at least a high school education, the most likely to be employed when they were arrested, and the most likely to be married when they were admitted to prison. This group of women had the highest probability of having mental health problems, but the lowest probability of having a history of drug use. While almost half of the women had been incarcerated before, only a tenth of them were arrested as a juvenile. None of the women in this group were currently incarcerated for drugs; the majority was incarcerated for either an economic crime or a violent crime (see Table 5.3). These women's childhoods were not trouble free but were not as problematic as the street women. Almost half of the women were abused in childhood and almost a quarter of their

parents abused drugs. This pathway is similar to Daly's other pathway, which Richie and Reisig subsequently labeled the economically motivated pathway and Brennan called the normal situational offender. This pathway will be called the situational offender path.

The third pathway comprised 28% of the sample. This group of women was likely to be incarcerated for a drug offense, and almost half had a history of drug use. Almost all of these women had no previous criminal history; this was their first incarceration and they did not have an arrest as a juvenile. Over half of the women were employed when they were arrested and almost half had at least a high school education. These women had stable childhoods with little or no abuse, no placements outside of their home as a child, and minimal parental substance abuse. This group of women had the lowest probability of having previous mental health problems. This group of women were basically first-time offenders and were very similar to what Brenan called normal functioning-drug dependent pathway; they had minimal or no mental health problems, no history of abuse, minor criminal histories, and were less marginalized. This pathway will be called the first-timers pathway.

The fourth group of women consisted of 30% of the sample. This group of women was likely to be incarcerated on a drug offense, and almost all of the women had a history of drug use. The distinction between this pathway and the first-timers path is their criminal histories and disrupted adult lives. A substantial proportion of these women have previously served time in jail or prison and about a quarter had been arrested as a juvenile. They were likely to be unemployed when they were arrested and only a third of this group had at least a high school education. These women appear to have had relatively stable childhoods: they did not have a history of abuse; it was less likely that

their parents had a substance abuse problem; and very few had been placed outside of the home during childhood. These women also had lower levels of mental health problems. In contrast to Daly's drug connected pathway, this group of women did have previous criminal histories and high levels of drug use.[64] This pathway also closely resembled Brennan's socialized subcultural pathway. This pathway will be called the drug connected offenders.

Before assessing prison misconduct and recidivism, the posterior probabilities for the pathway classifications were used to assign each individual to the class for which they had the highest probability. A trellis plot (see Figure 5.3) of the relative probabilities for each group is included to show the distributions for the classifications. The median values for all four groups were above .8, suggesting that the probability for the class assignments were relatively high for a large number of cases. The street pathway had the highest median (.94) compared to the rest of the classes. This group also had some outliers that were below a probability of .5, suggesting that those individuals were marginally assigned to that group. Similarly, the drug connected pathway had a median of .87, but the first quartile for the drug connected pathway dips below .5. Overall, the individual class assignments for the pathways were well above the probability being assigned by chance (.5).[65]

Men's Pathways to Prison

For the men's pathways to prison, the BIC started at 1921 for one latent class and dropped to 1426 for two latent classes, 1340 for three latent classes, and 1279 for four

[64] The timing and recency of drug use was not known in this study.
[65] Sensitivity analyses for the misconduct and recidivism models were examined by including only the cases that had probabilities greater than .60. The results of those analyses did not change from the original results.

latent classes (see Table 5.4). The BIC then increased to 1305 for five classes and to 1354 for six latent classes. The AIC, G-square, and the log-likelihood all continued to decrease as each class was added to the model. The AIC ranged from 1864 for one latent class to a low of 989 for 6 latent classes. The G-square started at 1842 for one latent class and continued to decrease to 847 for 6 latent classes. This was also the case for the log-likelihood, which ranged from -7681 to -7183. Even though the AIC, G-square and log likelihood continued to decrease with the more complex models, the amount of change for each of these measures became smaller and smaller after the four class solution. In addition, the BIC began to rise after the four class solution and continued to do so as each additional class was added to the model (see Figure 5.4). For the six class solution, only 10.5% of the random seeds converged to similar parameter estimates, so this model was ruled out. For the 5 class model, 86% of the starting values converged to a common solution. Thus, it appears that the best measurement model is either the four or five class solution.

Because there was no outright best model at this point, the item response probabilities and class prevalence were compared for the four and five class solutions. The overall homogeneity for the four class solution was relatively good; there were only a few instances where it was weak (see Table 5.5). There were two pathways that had two items with weak homogeneity.[66] Otherwise, the two other pathways only had one item that had weak homogeneity.[67] The homogeneity for the five class solution was very similar to the four class solution. For three of the pathways, the results were exactly the same in the five class solution as they were in the four class solution. All of the items in

[66] In one of the pathways drug conviction and employed when arrested were weak. In the other pathway, placement outside of the home during childhood and drug convictions were weak.
[67] A history of mental health problems was the item that had weak homogeneity in both pathways.

the new pathway hovered around the upper and lower boundaries. The homogeneity for this solution therefore seems viable.

There was also good latent class separation between the different pathways, although there were a few items where the proportions were similar. There was one pathway that had four items that overlapped with two of the other pathways.[68] Overall the variable married when admitted to prison had weak latent class separation for all of the pathways, which ranged from 13% to 34%. There was one pathway that had very good latent class separation and only had one item that was similar to an item in three different pathways. Despite the fact that there was some overlap between the different pathways, no two pathways had the same response patterns.

For the five class solution the new pathway had multiple items where the response was essentially the same as the other pathways. For three of the pathways, there were four items from this new pathway that were similar, although the items between the pathways were not always the same. For the fourth pathway, there was also three items that overlapped. As a result, there does not appear to be a high level of latent class separation for this additional class of men.

The last comparison between the four and the five class solution focused on the prevalence of the different classes. Similar to the women, for the five class solution three of the pathways remained exactly the same as the four class solution. For the men, the pathway that seemed most affected was the largest pathway. There were four items that decreased in prevalence when this pathway dropped in size. Otherwise, all of the other

[68] The items that overlapped with one of the pathways were placement outside of the home as a child, employed when arrested, married at prison admission and history of previous incarcerations. The four items that overlapped with the other pathway were was history of abuse, history of parental drug abuse, history of substance of abuse, and history of mental health problems

factors remained the same. The proportion of the pathways was very similar between the four and five class solution and there was not a high level of latent class separation for the five class solution. In addition, the BIC started to increase with each additional class after the four class solution and the differences between the fit indices after the four class solution became smaller and smaller (see Figure 5.4). The four class solution was therefore chosen as the best measurement model.

The first class comprised 20% of the sample of men. All of these men had the highest levels of the following risk factors: childhood abuse, parental substance abuse, history of mental health problems and drug use (see Table 5.5). Almost a quarter were placed outside of the home as a child. These men were likely to have previous incarcerations. They were unlikely to be married, did not finish high school and were unemployed when they were arrested. This pathway will be called the street pathway due to the enduring and severe problems these men faced consistently throughout their lives.

The second class was the smallest path for the men. The individuals in this pathway had the highest probability of having at least a high school education, were the most likely to be employed when they were arrested, and were the most likely to be married when they were admitted to prison. Of all the groups, they were the least likely to have a history of drug use. They did not have a history of being arrested when they were a juvenile and were least likely to have a prior incarceration. A little less than half of the men also had a history of mental health problems. This group of men was not incarcerated for drugs (see Table 5.6). This pathway had similar features to Daly's other pathway and Brennan's normal situational offenders. This group will be called the situational offender pathway.

In the third class, despite having neither a history of abuse during childhood or parents who abused drugs, almost half were placed outside of the home during childhood. Given that all of these men had been arrested as a juvenile, it is likely that the outplacement was in a juvenile detention facility. Almost all of these men did not have a high school diploma and were unemployed when they were arrested. In addition to having been previously incarcerated, a vast majority of this group had a history of drug use. Approximately half of this group was incarcerated on a drug charge. It seems that most of the risk factors for this group of men were related to their high levels of previous contacts with the criminal justice system. This path closely resembles Brennan's chronic serious offenders; this pathway will therefore be labeled the chronic offender pathway.

The fourth pathway for males contained half of the sample. These men were the most likely to be incarcerated for a drug offense, and a majority had a history of drug use. Although a high proportion of these men had previously served time in jail or prison, less than a quarter had been arrested as a juvenile. A little over half of the men were employed when they were arrested, and a third had at least a high school education. These men appear to have had relatively stable childhoods; they did not have a history of abuse during childhood, and it was unlikely that their parents abused drugs or alcohol. This group was very unlikely to be placed outside of the home during childhood and only a few of these men had a history of mental health problems. This pathway will be called the drug connected pathway.

As a final step, the posterior probabilities for the pathway classifications were used to assign each individual to the class for which they had the highest probability. A trellis plot of the relative probabilities for each group shows the distributions for the four

classes (see Figure 5.6). The median values for three of the groups were above .8, suggesting that the probability for the class assignments were relatively high for a large number of cases. The chronic offender pathway had a median of .714 and a mean of .75, which was a bit lower, but still higher than the guideline of .70 suggested by Nagin (2005). The pathway with the highest median was the drug connected pathway (.91); however, this group also had some outliers which bordered on the probability of .5 which suggests that those individuals were marginally assigned to that group. Similarly, the situational offender pathway had a median of .82, but the first quartile dips down to .6. Overall, the assumption that an individual was assigned to the appropriate class seems reasonable.[69]

Similarities and Differences for the Pathways to Prison between Men and Women

In summary, there were both similarities and differences between the men and women and their pathways to federal prison. Men and women basically had the same pathways for three out of the four pathways: the drug connected pathway, the street pathway, and the situational offender pathway. The last pathway identified for the men and the women were on completely opposite ends of the spectrum with regard to their previous criminal histories. More specifically, this group of women were basically first-time offenders and the men had the most serious criminal histories compared to the other pathways.

The first pathway that was similar between the men and the women is the pathway that had seemingly chaotic childhoods with high levels of family dysfunction. In

[69] Sensitivity analyses for the misconduct and recidivism models were examined by including only the cases that had probabilities greater than .60. All of the pathways that were significant in the original analyses remained significant; in addition, one new pathway emerged for all counts, one emerged for minor misconduct, and two emerged for serious misconduct.

this pathway, 76% of the women and 62% of the men were abused in childhood; 58% of the women and 68% of the men had parents who abused alcohol or drugs; almost 40% of both the women and the men were placed outside of their home; and over half were arrested as juveniles. While almost all of these men had spent time in prison before (95%), the women had a bit lower levels of previous incarcerations (77%). This pathway had the highest levels of previous mental health treatment (42%) for men and the second highest for the women (54%). This pathway appears to align with Daly's street pathway, with the exception that these men and women had previous mental health problems. Like Daly, this pathway for both the men and the women had high levels of childhood abuse, their parents abused drugs, and they were likely to be placed outside of their home. Although this pathway for the women had the most serious criminal histories compared to the other pathways, for the men there was another pathway that had a longer history of offending. Most of the women and the men were not employed when they were arrested. While almost half of the women were convicted of a drug offense in this pathway, only 23% of the men were convicted of a drug offense.

The underlying premise in Daly's street pathway group is that the women fled abusive homes to live on the street and supported themselves and their drug habits by committing petty crimes or selling drugs. The current study, however, only contains information about whether or not they were placed outside of their home and does not indicate if the individual ran away from home. For the men, the path to the streets was different than the women; the men either dropped out of school due to bad performance or to work. For Daly, there were many overlapping risk factors between the street pathway and the harmed and harming pathways, such as abuse or neglect during

childhood and growing up in chaotic households. One of the major differences seems to be that the women in the harmed and harming pathway had serious mental health problems, whereas this was not mentioned for the street women. In the current study, this pathway for both the men and women had mental health problems like Daly's harmed and harming pathway.

The second pathway was the smallest pathway for both the men and the women, and contained individuals who had more education, were more likely to be employed, more likely to have a high school diploma, and more likely to be married when arrested. In addition, for both genders this group of offenders was very unlikely to be convicted of a drug offense (<2%). Compared to the other pathways the men in this path were the least likely to be arrested as a juvenile (2%) and were the least likely to be incarcerated previously (34%). Because a third of this group was previously incarcerated, it is obvious they were not first-time offenders, but were adult onset offenders rather than juveniles. In contrast, the women in this pathway did not have the lowest levels of previous criminal activity. These women were not necessarily first-time offenders: 42% had previous incarcerations and 13% were arrested as a juvenile. Although this pathway did not have the highest levels of childhood problems, they did not appear to have trouble free childhoods either: 38% of the women and 26% of the men had a history of abuse; 25% of the women and 16% of the men lived in homes where there parents abused alcohol or drugs. This group had the lowest levels of past drug use compared to the other pathways (24% of women and 39% of the men). Both the men and women in this pathway had high levels of previous mental health treatment (40% and 65%, respectively).

This pathway is somewhat similar to Daly's other pathway, which Reisig and Richie renamed to the economically motivated pathway.[70] In Daly's configuration, this pathway contained four women who appeared vastly different than the other pathways. She described these women as first-time offenders who did not have substance abuse problems and whose crimes were related to greed or the desire for more money (Daly, 1994). Both Reisig et al. (2006) and Richie (1996) also found a similar group of women in their studies. Brennan also identified a similar pathway in the literature called the normal situational offender. Unlike Reisig and Richie, Brennan does not theorize the potential reason(s) for their criminal behavior, but describes this group as having less serious criminal histories and less risk factors than the other paths (Brennan et al., 2012). There are many similarities between these previous studies and the current study: these men and women have lower levels of past drug use, very little prior criminal histories, and higher levels of education. However, one difference in the current study is that this group of men and women had high levels of previous mental health problems. Whereas the men in this pathway were the least likely to previously incarcerated than the other pathways, this was not the case for the women. Men and women were also incarcerated for different types of crimes in this pathway (see Tables 5.3 and 5.6).[71] This pathway is labeled the situational offender pathway.

The third pathway that was similar between the men and the women was the drug connected pathway. Whereas this comprised half of the sample for the men, it comprised 30% for the women. Both the men and the women had very similar responses for a

[70] This pathway only consisted of four women in Daly's sample; the men did not have a similar pathway in her sample.
[71] While most of women were convicted of crimes related to monetary gains, such as fraud or embezzlement, most of the men in this pathway, were currently incarcerated for a sex offense.

majority of the factors in this pathway. Both had minimal histories of abuse in childhood (7% of the women and 5% of the men), very low levels of being placed outside of the home as a child (<1% for both men and women), and less than 20% had parents who abused alcohol or drugs. For both men and women, approximately a quarter of this pathway was arrested as a juvenile and had high levels of previous incarcerations (74% and 83%, respectively). The women had a higher proportion of previous mental health problems than the men (30% and 12%, respectively). The men were both more likely to be employed when they were arrested (53%) than the women (17%), and slightly more likely to have a high school diploma (34%) than the women (31%). Women had slightly higher levels of drug use than the men (91% and 86%, respectively). This pathway appears similar to Daly's drug connected pathway, though two of the elements in her description of this pathway were that women started using drugs with a partner while the men had more recreational drug use than serious addictions. These two tenets were not testable in the current study; this pathway will nonetheless be called the drug connected pathway because both men and women had high levels of past drug use as well as being incarcerated for a drug offense. Although the reason for selling drugs could not be determined from the data in the current study, it is feasible to imagine that these individuals were supporting their habits by drug activity.

In the last pathway, the men and the women had previous criminal histories that were on completely opposite ends of the spectrum: the women were basically first-time offenders while the men had the most serious criminal histories compared to the other pathways. The men and women were also quite different on a number of the other risk factors; therefore they will be discussed separately. The women in this pathway had low

levels of childhood risk factors. Their parents had minimal substance abuse problems, were not placed outside of the home, and had relatively low levels of abuse compared to the other pathways. They also had not been arrested as a juvenile and had not been previously incarcerated. Half of the women had a history of drug use. This group had the lowest levels of mental health problems and a little less than half had at least a high school education. This pathway is similar to Brennan's pathway called normal functioning-drug dependent offender, which consisted of women who had relatively minor criminal histories later in life (i.e. property or drug offenses), no histories of abuse, no identified problems in school, and no mental health problems. Although similar to Brennan's normal offender, the pathway in the current study was labeled first-time offenders.

Almost all of the men in this pathway had been arrested as a juvenile and had been previously incarcerated. A vast majority also had a history of drug use and the lowest levels of education. Otherwise, they do not have the other childhood risk factors, such as a history of abuse or parental drug abuse. Whereas previous researchers have found that the most serious offenders had dysfunctional childhoods, this was not the case for this pathway in the current study. For instance, Brennan's chronic serious offender pathway, which he deemed as the highest risk individuals, had long histories of criminal offending and a combination of other risk factors as well, such as childhood behavioral problems with school, histories of abuse, dysfunctional family life and aggressive behavior.[72] Absent these other risk factors, this pathway was called the chronic offender pathway.

[72] Brennan compared this pathway to Daly's harmed and harming pathway and Moffitt's life course persistent offenders.

Chapter 6: Do Pathways to Prison Predict Prison Misconduct?

The main mission of a prison system is to run a cost-effective, safe, and secure environment. Violence and general disorder in a prison impacts both staff and inmates and can lead to a stressful and potentially explosive environment (Schenk & Fremouw, 2012). Additionally, prison administrators have to balance costs and programming needs of inmates without creating an unnecessarily restrictive environment. Therefore, prison systems developed classification instruments to identify inmates in need of the most intensive and costly supervision. Prison misconduct has been used most often to validate these classification systems.

A large portion of the inmate population does not engage in serious or violent acts while incarcerated (DeLisi, 2003), and women are involved in even less violence than men (for an exception see, Bales & Miller, 2012). Being able to identify inmates who may become disruptive can help maintain order in a prison. Another goal of correctional agencies is to provide programming for inmates that will increase their skills for reentry and reduce misconduct while they are incarcerated (Richmond, 2009). Separating out potentially disruptive inmates makes the delivery of these services more efficient.

This chapter examines whether the pathways to prison predicted the amount of adjudicated misconduct that inmates committed during their current incarceration. Similar to previous research that examined prison misconduct for men, negative binomial models were used in the current study (DeLisi et al., 2010; DeLisi, Trulson, Marquart, Drury, & Kosloski, 2011; Drury & DeLisi, 2011).[73] Instead of examining what factors predict any involvement in prison misconduct (see Appendix B for the results of logistic

[73] The majority of prison misconduct studies that have examined women did not use regression techniques.

regression models), this analysis identified differences in regard to the amount or number of instances of behavioral problems.[74]

Separate analyses were conducted for women and men for several reasons. Because only a limited number of previous studies examined whether the same factors predicted misconduct for both men and women, the results are still mixed as to whether these factors exert the same influence for both genders. Also, women comprise a substantially smaller proportion of the correctional population; women therefore typically represent a smaller portion of samples. If both women and men were included together in the models, it would be necessary to include an interaction term between gender and other predictors, to evaluate potential differences. Otherwise, the more numerous male cases would overpower the effects for women.

The first section of this chapter examines women and misconduct. The second section examines men. The last section discusses the similarities and differences between women and men. Within each of these sections, a series of negative binomial models were examined to see if the results differed depending upon how the pathways were measured.[75] The first model specification only included the four classification variables that were calculated from the latent class pathway models (i.e., *pathways only* models). The second model specification again included the classification variables, and other factors not originally included when the pathways were constructed (i.e., *full pathways* models). Previous studies found these factors to be robust predictors of misconduct; these

[74] To ensure that time at risk was factored out of the models, the length an inmate was incarcerated was entered as an offset variable.

[75] Different models were examined because latent class analysis has been used rarely to quantify inmates into pathways to prison that subsequently predicted prison misconduct. A piecewise approach provided the opportunity to assess the effects of pathways with and without other risk factors included in the models.

factors included age, race, ethnicity, and previous criminal history.[76] The third set of models included the actual variables that created the pathways to prison classifications, as well as the criminal history and socio-demographic variables added to the previous model (i.e., *risk factor* models).[77] These three model specifications were important to determine if (1) the pathways alone predicted misconduct, (2) if there are additional factors above and beyond the pathways that significantly predicted misconduct and changed the effects of the pathway variables, and (3) if the results differed according to which approach was selected, i.e., the risk factor approach or the latent variable approach.

In addition to the varying specifications of the independent variables, the current study also measured misconduct in several ways: any misconduct, serious misconduct, minor misconduct, and violent misconduct. These additional analyses provide a comprehensive overview and investigation of the factors that impacted different kinds of misconduct.[78] Some of the classifications of misconduct were not exclusive of one another. All misconduct obviously contained all of the other measures. Likewise, the serious misconduct category contained the instances of violent misconduct. As mentioned previously, count models were used to analyze if the amount of misconduct an inmate is involved in differs by pathways to prison or other risk factors.[79]

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[76] Information for prior misconduct was only available for individuals previously incarcerated in federal prisons and not for state prisons or local jails. For this reason, prior misconduct was not included in the models.

[77] The four variables that represent the different pathways to prison are not included in this model.

[78] Previous research has reported mixed results on the factors that impact misconduct dependent on the measurement.

[79] The same models were also examined using logistic regression. The logistic models examined whether inmates were involved in misconduct, i.e., prevalence, as opposed to the negative binomial models which examined amount. See Appendix B for the results of those models. The results for the logistic models parallel the results discussed here for the negative binomial models. While the majority of inmates remained in the same security level during their incarceration, the propensity to engage in misconduct may change for those who moved to a different security level. This would not necessarily affect the logistic regression models but may affect the negative binomial models if an inmate was transferred to a higher security level for a prison infraction.

Women's Pathways and Prison Misconduct

The first analysis examined the pathways to prison to determine if the pathways alone had a significant impact on predicting the amount of prison misconduct. The first table represents the incidence rate ratios for all counts of misconduct, regardless of the seriousness of the event (see Table 6.1, column 1). The street pathway women had significantly higher levels of misconduct than the situational offender and first-timers pathways. The street pathway also had marginally higher levels than the drug connected pathway, while the drug pathway had marginally higher levels than the first-timers pathway. The results for minor misconduct were almost exactly the same as all counts of misconduct (see Table 6.2, column 1). Again, the street pathway had significantly higher levels of misconduct than the first-timers pathway, but the street pathway was only marginally significant compared to the situational offender pathway. The street pathway women also had marginally higher levels of minor misconduct than the drug women; in turn, the drug women had marginally higher levels than the first-timers.

For serious types of misconduct, the street pathway again had marginally higher levels of misconduct than the situational offender pathway and significantly higher levels than the first-timers pathway (see Table 6.3, column 1). The drug pathway did not significantly differ from the street pathway, the situational offender pathway, or the first-timers pathway. The last type of misconduct examined was violent misconduct. The results of violent misconduct were similar to serious misconduct. The street pathway had higher levels of violence than the first-timers and marginally higher levels than the situational offender pathway (see Table 6.4, column 1). The street pathway also had marginally higher levels of violence than the drug connected pathway. Otherwise, there

were no differences between the first-timers, the situational offender or the drug connected pathways.

No matter how misconduct is measured, the street pathway has significantly higher levels of misconduct than the first-timers pathway. When examining the variables used to create the pathway classifications, the street pathway women can be seen as being higher risk in every area than the first-timers. The street women had more abuse, were placed outside of the home, had a history of drug use, had previous incarcerations, and had more mental health problems. On the other hand, the first-timers were more likely to be employed when they were arrested, more likely to have a high school education, and more likely to be married than the street women. The street pathway also had consistently higher levels of misconduct than the situational offender pathway. Again, the street pathway can be seen as higher risk inmates than the situational offender women. The situational offender women had higher levels of employment, education, and were more likely to married than both the street and the first-timers. They also had the lowest levels of previous drug use. The street pathway group differed with the drug offenders for all counts of misconduct, minor and violent misconduct; they did not differ for serious types of misconduct.

The McFadden's R^2 was relatively modest for these models. Minor misconduct and all types of misconduct had the lowest values (.013); violent misconduct had the highest value (.030). The Cox-Snell maximum likelihood R^2 was slightly higher, ranging from .019 for serious misconduct to .035 for all types of misconduct. Even though there were significant differences in the pathways and levels of prison misconduct, as can be seen by looking at the pseudo R^2 values, these models are explaining a relatively small

percentage of the variance. There may thus be additional factors that were not included in these models that may help explain more of the variance in predicting prison misconduct. The next set of models will investigate that notion.

The next set of models examines the full pathways models (see Table 6.1-6.4, column 2), which controls for a host of factors that have previously been shown to be related to misconduct but were not included in the initial creation of the pathways to prison. Once these other factors are added into the model, the only pathway that remained marginally significant was the street pathway, which had higher levels of minor misconduct than the first-timers. In addition to that pathway, white women had marginally lower levels of violent misconduct than minority women. Hispanic women were marginally more involved in serious misconduct than non-Hispanic women. D.C. offenders were involved in higher levels of minor, serious, violent, and overall misconduct than federal offenders.[80] Younger women were also more involved in minor, serious, violent, and overall misconduct than older women. Lastly, women with higher USSC criminal history scores were involved in higher levels of minor misconduct.[81] Surprisingly, given previous research, criminal history was not significant for violent or serious misconduct. In addition, the other measures that proxy criminal history were not significant in any of the models (i.e. history of serious violence, history of recent violence, or history of escapes). The McFadden's R^2 and ML R^2 explained more of the variance than the pathways only models. For minor misconduct and all counts, the McFadden's R^2 had the lowest value (.07) and violent misconduct had the highest value

[80] For all types of misconduct, D.C. inmates had rates of misconduct that were 4 times (400 percent) those of non-D.C. inmates. For minor misconduct, D.C. inmates had rates that were 3.67 times higher than federal inmates. For serious misconduct, D.C. inmates had rates that were 5 times higher than those of federal inmates.

[81] For all counts of misconduct, the USSC criminal history score was marginally significant.

(0.14). The maximum likelihood R^2 was slightly higher, ranging from .09 for violent misconduct to 0.18 for all types of misconduct.

The last set of models for the women included all of the individual risk factors along with the variables used to construct the pathways (see Table 6.1-6.4, column 3). For all types of misconduct, women who were older had lower levels of misconduct than younger women; women who were employed when they were arrested had marginally lower levels of misconduct than women who were not employed; drug offenders had lower levels of misconduct than women convicted of non-drug offenses; women whose parents had a history of drug and alcohol abuse had lower levels of misconduct than women whose parents did not have a history of substance abuse (see Table 6.1, column 3). The results of minor misconduct were similar to all types of misconduct, except employment status at arrest was now not significant (see Table 6.2, column 3). Otherwise, women whose parents abused drugs, drug offenders, and older inmates had lower levels of minor misconduct. For the more serious misconduct, Hispanic women participated in more misconduct than non-Hispanic women; D.C. offenders participated in higher levels of misconduct than federal offenders; and those women who had a history of serious violence participated in marginally more misconduct than women who did not have a history of serious violence (see Table 6.3, column 3). Women incarcerated for a drug offense and older women participated in lower levels of misconduct. The only factor that significantly predicted violent misconduct was age. In addition, white women had marginally lower levels of violent misconduct than minority women. Women who had a history of drug use had marginally higher levels of misconduct than women who did not. The R^2 statistics for these models were similar to the full pathways models, with

the McFadden's R^2 ranging from .09 for minor and all counts of misconduct to 0.158 for violent misconduct. The maximum likelihood R^2 ranged from a low of 0.107 for violent misconduct to 0.228 for all types of misconduct.

In summary, although the first-timers pathway had significantly lower levels of misconduct than the drug connected pathway, this relationship did not hold up once other factors were added to the models. This was also the case for the situational offender pathway and the street pathway. The only pathway that remained significant was that the first-timers had significantly lower levels of minor misconduct than the street pathway. In addition, more of the variance was explained once other factors were added to the model, which suggests that there are additional factors above and beyond the pathways to prison that were important when examining counts of misconduct. Younger women were consistently involved in higher levels of misconduct, and for a number of the models D.C. offenders had higher levels of misconduct than federal offenders. When the actual predictors that were used to create the pathways to prison were included in the misconduct models, there were only a limited number that were by themselves significant (i.e. parental drug use, employment when they were arrested, and across the board drug offenders).[82]

Men's Pathways and Prison Misconduct

The same series of analyses were also conducted for the men. The first set of models examined the pathways only and misconduct, the second set of models added other factors in addition to the pathways variables, and the third set of models included the actual factors that created the pathways instead of the pathway indicators along with

[82] A history of drug use was also marginally significant for violent misconduct.

the other factors.[83] The different pathways significantly influenced the amount of misconduct for men (see Table 6.5 to 6.8, column 1). For all of the various categorizations of misconduct, the drug connected pathway and the situational offender pathway had significantly lower levels of misconduct than the street pathway and the chronic offender pathway. The situational offender pathway had significantly lower levels of serious and violent misconduct than the drug connected pathway.[84] The chronic offender pathway had significantly higher levels of minor misconduct than the street pathway and was marginally significant for violent and serious misconduct. The only pathways that did not differ were the chronic offenders and the street pathway for all types of misconduct, as well as the situational offender pathway and the drug connected pathway for minor misconduct. The McFadden's R^2 for these models ranged from .014 for minor misconduct to .026 for serious misconduct, while the maximum likelihood pseudo R^2 ranged from .023 for violent misconduct to .052 for all types of misconduct.

The next set of models reported whether the pathways to prison indicators remained significant in the presence of other factors, such as criminal history, age, race, and security level. For all counts of misconduct, once these additional factors were added to the model, the drug connected pathway still had significantly lower levels than the chronic offender pathway (see Table 6.5, column 2). The drug pathway also had marginally lower levels of all misconduct than the street pathway. There were no other significant differences between the other pathways for the total number of misconduct. In addition to these pathways, younger men participated in higher levels of misconduct than older men. Three of the variables that proxy criminal history were also significant. Men

[83] The incidence rate ratios are displayed for these tables (e.g., odds ratios).
[84] The situational offender pathway was also marginally different than the drug connected pathway for all counts of misconduct.

with higher USSC criminal history scores had higher levels of misconduct; men with a history of recent violence had higher levels of misconduct; men who were incarcerated for a violent offense had higher levels of misconduct. Lastly, men who had children who were juveniles when they were arrested had lower levels of misconduct.

For minor types of misconduct, the drug pathway was one of the few pathways that remained significant (see Table 6.6, column 2). The drug pathway was involved in less misconduct compared to the chronic offender pathway. The drug pathway was also marginally less involved in minor misconduct than the situational offender pathway. The chronic offenders were marginally more likely to be involved in minor misconduct than the street pathway. In addition to the pathways, the individual factors that predicted minor misconduct were very similar to the factors that predicted all types of misconduct. Younger men were involved in more misconduct than older men. Men who had a history of recent violence and men who were incarcerated for a violent offense were involved in more minor misconduct. Men who had children who were juveniles were involved in less misconduct. Medium security prison inmates were marginally more involved in minor misconduct than high security prison inmates.

For serious types of misconduct, individuals in the street pathway were involved in significantly higher levels of serious misconduct than both situational offender and the drug connected pathways, while individuals in the chronic offender pathway were involved in significantly higher levels than those in the situational offender pathway (see Table 6.7, column 2). In addition to these pathways, almost exactly the same factors were important for serious misconduct as for minor misconduct and all misconduct. Similarly, younger inmates were involved in higher levels of misconduct, as were men who had

higher criminal history scores. In contrast to the results of minor misconduct, men who were incarcerated in medium security prisons had significantly lower levels of serious misconduct than men imprisoned in high security facilities. Men incarcerated in low security prisons also had significantly lower levels than men incarcerated in high security facilities.

For violent misconduct, none of the pathway classifications remained significant and only two factors--age and security level--were important in predicting violent misconduct (see Table 6.8, column 2). Younger men were involved in more violent misconduct than older men. The only other significant variable was that men who were incarcerated in high security prisons had significantly higher levels than medium security inmates. Lower security prison inmates were also marginally less involved in violent misconduct than high security inmates. The fit statistics for the full pathways models explained more of the variance than the pathways only models. The McFadden's R^2 ranged from .045 for minor misconduct to a high of .067 for violent misconduct. The ML R^2 ranged from .062 for violent misconduct to 0.145 for all misconduct.

The last set of models reports the results of the individual indicators that were used to create the pathways to prison and not the pathway classifications themselves, as well as the additional factors included in the previous models (see Table 6.5 to 6.8, column 3). Only a limited number of variables that were used to construct the pathways were significant in these models. For example, men who had a history of abuse had marginally lower levels of serious misconduct. Men who had a history of previous incarcerations had higher levels of serious misconduct and marginally higher levels of violent misconduct. In addition, men who were married had marginally lower levels of

minor misconduct. The last significant indicator from the pathways was that men who were incarcerated for a drug offense had significantly lower levels for all three categorizations of misconduct (except for violent misconduct). Otherwise, there were very few changes from the full pathways models to the risk factor models for the previous criminal history and demographic variables. Younger inmates still had significantly higher levels of all four types of misconduct. Having a history of recent violence still increased the number of minor and all types of misconduct. Inmates incarcerated in medium-security prisons still had significantly lower levels of violent and serious misconduct than high security inmates. However, for minor misconduct, medium security inmates had significantly higher levels of minor misconduct than high security inmates. The significance of the USSC criminal history score lessened, and now was marginally significant for serious and any type of misconduct. Having parents that engaged in criminal activity marginally increased serious and violent misconduct. Lastly, having juvenile children remained significant for minor misconduct and all counts of misconduct. The McFadden's R^2 for these models ranged from .046 for minor misconduct to .073 for serious misconduct, while the maximum likelihood R^2 ranged from .066 for violent misconduct model to 0.156 for the overall misconduct model.

In summary, a number of the pathways to prison remained significant for the men in the presence of other criminal history and demographic variables in the models. But when the individual risk factors were entered into the model separately as independent variables, only a limited number of the variables were significant in predicting misconduct. It seems that when these factors are used to create latent classes, the results tell a different story than the factors by themselves. The pathways that did remain

significantly different in the presence of other factors were in the expected direction. For example, the drug connected pathway had significantly lower levels of misconduct than both the chronic offender pathway and the street pathway in two of the four models.[85] The findings for the drug connected pathway may be the result of a combination of factors. The drug connected pathway had lower levels of childhood risk factors than both the street and the chronic offender pathways, such as a history of juvenile arrests, prior incarcerations, and placement outside of the home as a child. In addition, while the drug connected pathway had very little abuse and low levels of parental drug abuse compared to the street pathway, they were similar to the chronic offender pathway. The drug connected pathway also had higher levels of education than both pathways, were more likely to be married, and more likely to be employed.

In addition, similar to previous research, younger men were consistently involved in more misconduct than older men. Three measures of criminal history were also consistently significant across the misconduct models: the USSC criminal history score, previous incarcerations and a history of recent violence. Several of the other indicators representing previous antisocial behavior did not exert any predictive power in the misconduct models (such as, history of serious violence, history of escapes, history of arrests as a juvenile, and pre-trial status). Prison security level was also only significant in a few instances. The only time that there was a difference between low security inmates and high security inmates was for violent misconduct; low security inmates had

[85] The drug connected pathway had significantly lower levels of minor and all misconduct than the chronic offender pathway. In addition, the drug pathway had marginally lower levels than the street pathway for minor and all misconduct and significantly lower levels of serious misconduct. None of the pathways were important in predicting violent misconduct.

marginally lower levels of violent misconduct than high security inmates.[86] In addition, medium security inmates were involved in significantly less serious and violent misconduct, but marginally more minor misconduct than high security inmates. Being incarcerated for a drug offense also significantly lowered misconduct in three of the models, but was not significant for violent misconduct. The majority of childhood risk factors were also not important in predicting different kinds of misconduct. Parental drug abuse and placement outside of the home as a child were not important predictors in any of the models; but a history of familial crime was significant in a few of the models and a history of abuse was important in one model. Some other factors that have been shown to be important in previous research were not important in the current study, such as race, ethnicity, employment status, education level, and history of drug use.

Depending on how the dependent variable is measured, both similarities and differences emerged. The only factor that was significant no matter how misconduct was measured was age at admission to prison. Otherwise, it seems that the results of minor misconduct and all counts of misconduct were similar, and serious misconduct was similar to violent misconduct. In hindsight these results are not surprising. Minor misconduct is much more prevalent than serious misconduct. It is likely that those individuals involved in more minor misconduct are also pushing the results of the overall misconduct models. Similarly, while violent misconduct is a more rare occurrence, these violations are also counted in the serious misconduct models.

[86] This occurred in the full pathways model, but was not significant in the risk factor model.

Similarities and Differences of Misconduct between Men and Women

One unexpected finding was that the pathways to prison classifications were more important in explaining prison misconduct for men. Prison pathways for women did not seem to be as predictive as they were for men. When the prison pathway classification variables were the only predictors in the models, eighteen out of twenty four possible comparisons were significant for the men. A total of twelve were significant for the women, but eight of them were only marginally significant.[87] Once the other risk factors were added to the models there was only one instance in which one of the pathways remained marginally significant for the women, for the men there were seven instances.[88] All of the pathway comparisons that were significant for both the men and the women, were in the expected direction.

In addition to the pathways to prison classifications, there were only a few factors overall that predicted misconduct for the women, while some of the more typical measures of criminal history highlighted in previous studies were important for the men. The most consistent predictor of misconduct for both men and women was age, which is similar to previous research.[89] For the majority of the models, race and ethnicity did not significantly impact misconduct. The only two exceptions were for women where white women had marginally lower levels of violent misconduct and Hispanic women were marginally more involved in serious misconduct. One of the few indicators that were

[87] For the men only one of the eighteen was marginally significant.
[88] For the women, the street pathway had marginally higher levels of misconduct than the first-timers path. For the men, the street pathway and the drug pathway had lower levels than the chronic offender pathway for minor misconduct. For serious misconduct, the situational offender pathway had lower levels than the chronic offenders, and the drug pathway had lower levels than the street pathway. For all types of misconduct, the drug pathway was lower than both the street and the chronic offender pathways.
[89] In addition, even though time served was used as an offset variable in the final models, because it was not of theoretical interest, a series of models were also examined where time served was entered into the models as an independent variable and it was also consistently significant. The results of the models that included length of time served as an independent variable are not included in this manuscript.

important for the women across the board was whether they were a federal offender or a D.C. offender; for the men there were no significant differences between the federal offenders and the D.C. offenders.

For the women, there was only one instance where a measure of criminal history was important in predicting misconduct; women with higher USSC criminal history scores were involved in higher levels of minor misconduct. This was not the case for men. Three of the variables that proxy criminal history were important in predicting misconduct. Men with higher USSC criminal history scores had higher levels of misconduct (all and serious); men with a history of recent violence had higher levels of misconduct (all and minor); men who were incarcerated for a violent offense had higher levels of misconduct (all and minor).[90] Surprisingly, given previous research, no measures of criminal history were significant for violent misconduct for either the men or the women. In addition, history of serious violence and history of escapes were not important in any of the models.

In contrast to some previous studies, a history of mental illness or mental health problems, which has been shown to be an important predictor of misconduct for women, exerted no influence on misconduct in women or men (Craddock, 1996; Salisbury et al., 2009; Van Voorhis et al., 2010; Wright et al., 2007). Similarly, a history of abuse, which has been found to be important for women in the past, was not significant in this study, while a history of abuse was marginally important for men. Other childhood risk factors, such as familial criminal activity and parental substance abuse were significant in a few of the models, but education and placement outside of the home were not important in predicting misconduct. Some of the adulthood social indicators were also not important,

[90] This was also marginally significant for serious misconduct.

such as employment status when arrested, marital status, or a history of drug use. Lastly, while having juvenile children when arrested did not impact prison misconduct for women, men who had juvenile children when they were arrested had lower levels of minor misconduct and all counts of misconduct.

Chapter 7: Do Pathways to Prison Predict Recidivism?

Given that 2 million people are incarcerated and the majority of those will return to their communities, even a slight decrease in the recidivism rate substantially affects both the prison population and public safety (Travis, 2005). Previous studies have shown that within three years of release, almost 65% of those released will return to prison (Langan & Levin, 2002) and revocations account for almost 35% of all new prison admissions (Petersilia, 2003; West et al., 2010). In contrast to state prisoners, the recidivism rate for federal offenders has been previously reported to be lower, at 41% (Harer, 1994). This revolving door of the criminal justice system has forced many government institutions to address the topic of reentry. While studies have shown that race, age, employment stability, education, substance abuse history, number of prior arrests, age of first arrest, criminal history can be significant predictors of recidivism for both men and women (Deschenes et al., 2007; Huebner et al., 2010), only a limited number of studies have attempted to extend the pathways framework to repeated criminal activity (Reisig et al., 2006; Salisbury & Van Voorhis, 2009).

This chapter examines whether the latent variables representing pathways to prison predicted post-release behavior. Similar to a number of other studies that have examined recidivism, survival analysis was used in the current study. Recidivism was defined as any new contact with the criminal justice system.[91] The layout of this chapter and the analyses mirrors the previous chapter on prison misconduct: models were run separately by gender. The first section examines women and recidivism and the second section examines the men. Within each of these sections, various models were examined

[91] A new contact with the criminal justice system included both probation violations and new arrests.

to see if the results differed depending upon how the pathways were measured. The first model specification included only the four classification variables that were calculated from the latent class pathway models (i.e., *pathways only* models). The second model specification included the classification variables, as well as other factors not originally included when the pathways were constructed (i.e., *full pathways* models). These additional factors such as age, race, ethnicity, and previous criminal history have previously been shown to be robust predictors of recidivism. These analyses also included prison misconduct, which is a more proximal measure of antisocial behavior. The third set of models included the actual variables used to construct the pathway groups as well as the criminal history and socio-demographic variables added to the previous model (i.e., *risk factor* models).[92] These three model specifications were selected to determine (1) if the pathways alone predict recidivism, (2) if there are additional factors above and beyond the pathways that significantly predict recidivism, and (3) if there were differing results between the risk factor approach and the latent variable approach. The third section of this chapter discusses the similarities and differences between men and women.

Women's Pathways and Recidivism

In the models including only the pathway designations, women in the first-timers pathway had a significantly lower hazard of recidivating than the street pathway and the drug pathway groups (see Table 6.9, column 1). The situational offender pathway also had a lower hazard of recidivating than the drug connected pathway. There were no significant differences between the following pathways: the situational offender pathway

[92] The four variables that represent the different pathways to prison are not included in this model.

and the street pathway, the street pathway and the drug pathway, and the situational offender pathway and the first-timers pathway. The pathways that were significant were in the expected direction. Women who had more serious criminal histories and a number of other risk factors were more likely to recidivate than women who were in prison for the first time. The Harrell's C for this model was .5901, which is below normal levels of acceptability.[93]

When socio-demographic variables and measures of previous criminal history were added to the pathway classifications, the impact of the pathways in predicting recidivism disappeared (see Table 6.9, column 2). Otherwise, there were five factors that were significant in predicting recidivism. Younger women had a higher hazard than older women; women who served shorter sentences had a higher hazard than women who served longer sentences; women who were involved in any misconduct during their last incarceration had a higher hazard then women who were not involved in misconduct; and women who had higher criminal history scores had a higher hazard than those who had less serious criminal histories. Women who reported that they had children who were juveniles when they were arrested had a higher hazard of recidivating. Both race and ethnicity were not significant predictors of recidivism, nor were the majority of the measures that proxy previous antisocial behavior, such as a history of recent violence, a history of serious violence, and a history of escapes.[94] Lastly, being convicted for a violent offense was not a significant predictor in this model. The Harrell's C for this

[93] The Harrell's C is equivalent to the ROC or AUC measures in regression models. The generally accepted guideline for model fit is .70.

[94] The analysis was repeated with the prison misconduct variables removed, and the custody classification variables were still not significant.

model was .7224, which was an improvement in the fit of the model compared to the pathway classifications alone and acceptable by prevailing standards of practice.

When the individual indicators that created the pathways were entered into the model, several of the factors that were significant in the previous model remained significant in this model (see Table 6.9, column 3). The length of time served, age at release and the USSC criminal history score all remained significant predictors of recidivism. Prison misconduct and women who had juvenile children when they were arrested were now only marginally significant. In addition to those factors, there were three items from the pathways that emerged as important. Women who had a history of drug use had a higher hazard than women who did not have a history of drug use. Women who were married when they were arrested had a marginally higher hazard than women who were not married when they were arrested. Women whose parents had a substance abuse problem had a lower hazard. Women who were convicted on a drug charge had a lower hazard, as were women who were incarcerated for a violent offense. Otherwise, childhood risk factors, such as a history of abuse during childhood, were not significant predictors of recidivism, nor was placement outside of the home as a child or a history of juvenile arrests. The Harrell's C for this risk factor model was slightly better than the full pathways model at .7547.

In summary, when the pathway classification variables were the only indicators in the survival model predicting recidivism, a few of the pathways were significantly different. The pathways that did differ were theoretically predictable. The street pathway women had elevated levels of risk and also had a higher hazard than the first-timers and the situational offender pathways that had lower levels of risk. For example, the street

pathway composed of women that had lower levels of education, were less likely to be employed, were more likely to be abused, were more likely to previously use drugs and had more serious criminal histories than both the first-timers pathway and the situational offender pathway. The differences between the latent classes disappeared, however, once other factors were entered into the model. In addition, only a few of the items that were used to create the pathways to prison were significant once they were entered into the model as individual indicators (i.e., history of drug use, parental drug use, drug offenders, and marital status). While there were many similarities between the results of the full pathways model and the risk factor models, two factors that were significant in the full pathways model were only marginally significant in the risk factor model: prison misconduct and women with juvenile children. In contrast, being incarcerated for a violent offense was not significant in the full path model but was marginally significant in the risk factor model. Otherwise, age, length of time served, and criminal history score were all still significant.

Men's Pathways and Recidivism

In the survival models that only included the pathway classifications, there were significant differences between all of the pathways (see Table 6.10, column 1). Notably, the street pathway had a higher hazard of recidivating than the situational offender pathway and the drug connected pathway. The chronic offender pathway had a higher hazard of recidivating than all of the pathways (the situational offender path, the drug connected path, and the street pathway). The drug connected pathway had a higher hazard than the situational offender pathway. Therefore, the situational offender pathway had the lowest hazard of recidivating compared to all of the pathways. The results of

these pathway comparisons were in the expected direction; the pathways that appear to have the highest risk factors recidivated quicker than those pathways with lower levels of risk. The Harrell's C for this model was .5852 which is below the generally acceptable level.

When additional factors were added to the model, the only pathway comparison that remained significantly different was that the chronic offender pathway that still had a higher hazard for recidivism than the drug connected pathway (see Table 6.10, column 2). The chronic offender pathway was also marginally significant compared to the situational offender pathway. In addition to these pathways, younger men had a higher hazard than older men: for each one year increase in age the hazard of arrest goes down by about 2.95 percent. Hispanic men also had a higher hazard of recidivating than non-Hispanic men. Several of the criminal history variables were important in predicting recidivism. Men who had higher USSC criminal history scores had a higher hazard of recidivating than men with less serious criminal histories. In addition, men who have previously been charged with escaping from prison had a higher hazard and men that had stronger family ties had a lower hazard. Men who voluntarily surrendered to prison had a lower hazard than men who were held in jail before they were convicted.[95]

There were also several indicators which significantly predicted recidivism that were associated with the most recent incarceration. Men who served more time in prison had a lower hazard of recidivating. Men who were involved in any type of prison misconduct or violent misconduct had a higher hazard than men who were not involved in misconduct. There were no significant differences between the various security levels.

[95] Whether an individual is held in jail until sentencing or whether they can surrender themselves to the BOP on their scheduled date to begin serving their prison sentence is determined by a judge. This could be a proxy of risk, with the lower risk individuals released to the community during pre-trial status.

D.C. offenders had a higher hazard of recidivating than federal offenders. Men who were incarcerated for a violent offense had a higher hazard than men not convicted for a violent offense. The Harrell's C for this model increased from the pathways only model to .6743, a value which borders on the generally accepted value of .70.

The third model includes the individual risk factors that were used to create the pathways to prison, as well as the additional criminal history factors included in the second model (see Table 6.10, column 3). All of the variables that were significant in the second model (i.e. *full pathways* model) remained significant in this model. More specifically, age, ethnicity, time served, the USSC criminal history score, D.C. offenders, total misconduct, violent misconduct, pre-commitment status, family ties, history of escapes, and incarcerated for violent offense were all significant predictors of post-release offending.[96] Only a few variables from the pathways to prison models were significant. Being arrested as a juvenile emerged as marginally significant--those men who had been arrested as a juvenile had a higher hazard of recidivating than men who were not arrested as a juvenile. Men who had a history of mental health problems had a higher hazard than men who did not have a history of mental health problems. Lastly, men who had been incarcerated previously had a higher hazard than men for whom this was their first incarceration. The Harrell's C for this model was .6810, which was slightly higher than the previous model.

In summary, in the presence of a host of factors that have been found to be related to male recidivism, including prior criminal history, age, etc., the chronic offender pathway still had a higher hazard of recidivating than the drug offenders. The driving

[96] There were two predictors that were now only marginally significant: D.C. offenders and current conviction for a violent offense.

force behind this pathway remaining significant may be the high number of men in this group that had been arrested as a juvenile and have been in prison previously; these are two of the three factors that are significant in the risk factor model. In contrast to previous research, a history of drug use, marital status when incarcerated and educational attainment were not important factors in predicting recidivism. The more distal childhood risk factors were also not related to recidivism, such as a history of abuse or parental substance abuse, or placement outside of home as a child. The only childhood factor that was significant was a history of being arrested as a juvenile. In addition, there were no differences between the different security levels and recidivism. While this is an unexpected finding, it is likely due to high correlations between security level and the other independent variables that the custody classification system uses.[97]

Similarities and Differences of Recidivism between Men and Women

Two different stories emerge when examining the factors that impact post-release behavior of women and men. For the women, none of the pathways to prison classifications held up once additional factors were added to the model, but the chronic offender pathway remained significant for the men. However, some of the risk factors that were used to create the pathways emerged as significant in the risk factors model for both women and men. But the factors that were significant were not the same for the men and the women. For example, while marriage was not a determining factor for men in predicting recidivism, it was not only significant for the women but also increased their risk for recidivism. While several studies have found that marriage can be an important factor for men in desisting from future criminal activity, some other studies did not find

[97] The significance of security level in the presence of other individual predictors of recidivism would indicate more of an institutional effect at the different security levels.

that marriage was significant in predicting recidivism (Farrington & West, 1995; Horney, Osgood, & Marshall, 1995; Laub & Sampson, 2003). The evidence is less apparent for women; there have only been a few studies that have examined the effect of marriage and recidivism. In addition, women who had juvenile children when they were arrested had a higher hazard of recidivating; however, this was not an important factor for the men.

Previous research on substance abuse and crime shows that substance abuse is a salient predictor of criminal behavior. In the current study, having a history of drug use was not an important predictor for the men, but significantly increased the risk of recidivism for women. Because the current study measured a history of drug use and was not a diagnosis of substance abuse, this more liberal definition inflated the prevalence and was not as concise. It is possible that the women were abusing substances with their partners and had more serious addictions, whereas the men were more recreational as Daly suggested in her study. Another item in which there was a gender difference was in the area of mental health. A history of mental health problems significantly increased men's likelihood of recidivating but a history of mental health problems was not a significant predictor of recidivism for women.

One of the more robust predictors of criminal behavior is past behavior; generally this has been established by measures of previous criminal history.[98] There have only been a limited number of recidivism studies that have included behavior while in prison, such as prison misconduct (for an exception, see Huebner & Berg, 2011; Trulson, DeLisi, & Marquart, 2011). Despite the potential difficulty of accessing misconduct data, this study provides evidence of its importance in examining recidivism. This study shows that

[98] Criminal history is typically measured by either number of prior arrest, number of convictions, or total time spent in jail or prison.

in addition to the usual measures of criminal history, prison misconduct remained significant for both men and women.[99] This study also suggests that misconduct, which is a more proximal indicator of criminal behaviors, proxies something different than typical measures of criminal history, such as juvenile arrests, the USSC criminal history score, security level and a history of recent violence. Given that other studies have shown that correctional programming can be effective in decreasing misconduct, and given that prison misconduct may increase recidivism, it is possible to hypothesize that correctional programming that decreases misconduct may help reduce recidivism (Camp et al., 2008).

Two other similarities between men and women which have consistently been important in recidivism studies are age and criminal history. Both of these variables operated as expected. Younger inmates were at higher risk of recidivism. Men and women who had more serious criminal history scores also had a higher risk of recidivism.[100] Otherwise, the three custody classification variables, which also measure criminal history, were only significant for the men but not for the women (e.g. pre-commitment status, history of escapes, and family ties).

Some of the more distal childhood risk factors were not important for either the men or the women in predicting recidivism. Previous familial criminal activity, history of abuse, and placement outside of the home as a child were not significant in the current study. While parental substance abuse was significant for the women in lowering their risk of recidivism, this was not important for the men.

[99] For women, involvement in any misconduct was marginally significant.
[100] Previous research has also shown that the USSC criminal history score predicts recidivism (Maxfield et al., 2005).

Chapter 8: Discussion and Conclusions

Since Daly's assessment almost twenty five years ago, there is more evidence that the risk factors for criminal activity are gendered. Unfortunately, there are still too few studies of misconduct and recidivism that incorporate both males and females to assess whether the processes that give rise to misconduct in prison and reoffending after release are the same for men and women. This deficiency is especially salient given the prominent role of certain risk factors in the gender-responsive literature, such as parental responsibilities, history of abuse, placement outside of the home as a child, and mental health related problems (Blanchette & Brown, 2006; Taylor & Blanchette, 2009; cited in Van Voorhis et al., 2010).

Furthermore, to date, no quantitative studies have tested and confirmed Daly's pathways with a male sample, which is in stark contrast to the preponderance of previous criminological research that typically focused solely on men. As Daly argued over two decades ago, it would be more appropriate to call most criminological theories "male-specific" (Daly, 1998a). Daly does not deny that the same factors may be applicable to both men and women, but some factors may be more important for men or vice versa. For example, though both men and women who have been incarcerated have high levels of mental illness, substance abuse and criminal thinking, studies have shown that females have even higher levels of mental illness and substance abuse and lower levels of criminal thinking than men (Morgan, Fisher, & Wolff, 2010).

The current study bridged the gap in the literature by examining pathways to federal prison, prison misconduct, and recidivism with a sample of 341 women and 1149 men. The research focused on three interrelated factors. First, it demonstrated that there

were empirically identifiable pathways that showed how different groups of people ended up in prison. Second, the analysis revealed that the pathways were somewhat nuanced by gender. Men and women were not strikingly different in the types of pathways they followed to prison, but there was a gender-unique pathway for each gender. There were also differences in how women and men were distributed across the three shared pathways. Third, the empirical analyses of the pathways approach identified important practical implications for correctional policy. For males, in particular, there was evidence that some of the pathways to prison were useful in predicting misconduct. Though the impact of pathways to prison was less salient for post-release offending, this research did find that prison misconduct predicts future arrests. Therefore, the pathways model is indirectly related to antisocial behavior after release.

Gendered Pathways to Prison

Pathways to prison for men and women were created with latent class analysis. The latent class models relied heavily upon indicators highlighted in the gender-responsive literature, such as childhood abuse, mental health history, juvenile arrests and placement outside of the home as a child.[101] The final misconduct and recidivism models added gender-neutral items such as age, race, ethnicity, criminal history, recent violence, escape history, and serious violent incidents. The methods used in this research are a significant improvement over previous analyses that used bivariate techniques with female inmates.

[101] The pathway to prison models only included one indicator for previous criminal history. This was largely due to the desire to be consistent with the previous work in this area and to avoid mixing events that occurred subsequent to adult incarceration into the definition of pathways to incarceration.

The four pathways that emerged from this analysis for men and women were both overlapping and unique. While three pathways were similar for both genders (drug, street, and situational offender paths), the last pathway represented opposite ends of the criminal justice spectrum: the path for women isolated first-time offenders while the path for men grouped more chronic serious offenders. There also were notable differences in the distributions of men and women in the common pathways. The most prevalent pathway for both the men and the women was the drug connected path, but approximately half of the men were assigned to this group while only a third of the women belonged to this group. In contrast, a higher percentage of women than men were assigned to the street pathway (28% and 20%, respectively). A slightly higher percentage of women (13%) were assigned to the situational offender pathway than men (9%). Almost a third of the women belonged to the first-timers pathway, while approximately a fifth of the men were labeled chronic offenders. These patterns show that females in the federal system had a first-time offender group not observed for men, and at the other end of the continuum, a group of men with serious criminal backgrounds with repeated incarcerations was observed.

If the first-time offender group represents the low end of criminal history and chronic, serious offenders the high end, then there appears to be a crude continuum of the seriousness of crime among the five categories. Seriousness of crime would be defined as the likelihood of causing physical or other harm to individuals other than the self. For the most part, men tended to fall into the more serious categories and women into the less serious ones. Recall that federal drug offenses are not typically for drug use but for drug trafficking. Men tended to coalesce around the serious grouping of drugs and chronic

offenders, where women tended to fall into the street and first-timer pathways. Although there were a number of women in the drug pathway, they were less represented than men in the drug pathway.[102]

Pathways to Prison and Future Antisocial Behavior

One of the questions investigated in this dissertation was whether pathways to prison predicted future antisocial behavior. When the indicators representing the pathways were the only predictors in the misconduct models, several pathways predicted antisocial behavior. For women, the street pathway had consistently higher levels of misconduct than the other pathways.[103] For the men, the street pathway and the chronic offenders also had higher levels of misconduct than the situational offender and the drug connected pathways.[104] The drug pathway for women had marginally higher levels than the first-timers pathway in two of the models.[105] For men, the drug pathway had significantly higher levels than the situational offenders and marginally more violent misconduct.

In examining recidivism, not as many significantly different pathways emerged. For women, the street pathway and the drug connected pathway had a higher hazard of recidivating than the first-timers. Otherwise, the situational offenders had a lower hazard of recidivating than the drug connected women. For the men, there were significant

[102] Previous research suggests that women's involvement in drug offenses does not typically occur alone and has often been in connection with their partner (Daly, 1998a).
[103] More specifically, in all of the models the street pathway had significantly higher levels than the first-timers. The street pathway also had marginally higher levels of misconduct in three of the four models than the drug connected and the situational offender pathways. For the drug connected path, all types, minor and violent misconduct were marginally significant. For the situational offenders, minor, serious and violent misconduct were marginally significant and all types of misconduct were significant.
[104] The street pathway had significantly more misconduct than the situational offender pathway for three of the models and higher levels than the drug connected path for all four models.
[105] All types of misconduct and minor misconduct.

differences between all of the pathways. The situational offender pathway had the lowest hazard of recidivating compared to all of the pathways. Conversely, the chronic offenders had a higher hazard of recidivating compared to all of the pathways. The street pathway also had a higher hazard of recidivating than the situational offender pathway and the drug connected pathway.

As noted above, there were significant differences between the pathways for both men and women in predicting misconduct when those were the only variables in the models. However, once additional predictors were added, a few of the pathways still influenced misconduct for men, but only one pathway comparison (street versus first-timers) was marginally significant for women. In addition, the vast majority of the pathways to prison did not predict recidivism once additional factors were added to the models. For the women, there were no differences between any of the pathway comparisons. In contrast, men in the chronic offender pathway still had a significantly higher hazard of recidivating than the drug connected path and the chronic offenders had a marginally higher hazard than the situational offenders. In other words, the hypothesized link between pathways to prison and future antisocial behavior was only selectively supported.

There could be a host of reasons for such modest findings. First, as mentioned earlier, this was a sample of federal offenders. Federal offenders are largely incarcerated for different crimes than state and jail inmates and have different socio-demographic features. State offenders are more likely to be in prison for violent crimes, which do not typically rise to the level of a federal offense. As a result, federal offenders tend to be significantly older on average than state offenders and are more apt to be incarcerated for

drug offenses. Therefore, some of the pathways that have been previously identified by Daly would not be applicable to a federal prison sample. Second, archival data were used for this study; therefore the measures used to create the pathways to prison were culled from existing data sources. Being able to guide the data collection on more theoretically identified concepts would have been more ideal. Third, although four pathways emerged for both men and women that were demonstrably different, a few of the key defining factors overlapped between pathways.[106] While there were similarities for some of the factors between the different pathways, there were also enough differences between the remaining factors to maintain respectable latent class separation to identify unique pathways. Fourth, when the pathways were the only variables in the model, they predicted both misconduct and recidivism. However, because this study also had the capacity to include other criminal history measures beyond a history of juvenile delinquency along with socio-demographic controls, it provided a more rigorous test of the pathways hypothesis. Consequently, in the fully specified models, the pathways were less important predictors of misconduct and recidivism than criminal history variables.[107]

The last point about including variables not in the LCA model for group identification is important because this issue was recently addressed in a report by the Methodology Center at Penn State. The authors argued that if the class membership defined by LCA models are then going to be treated as deterministic for subsequent

[106] Because the majority of women in the sample were arrested for drug offenses, it was not entirely surprising that only one pathway emerged that did not contain any drug offenders. This was also similar to repeat offenders for the men; the vast majority of men had been previously incarcerated, therefore only one pathway that had a number of low level offenders emerged.

[107] If the fit indices were only marginally improved when the traditional socio-demographic and actuarial crime covariates were added to the models of misconduct and recidivism, then those results would have justified the pathways as consistent predictors of misconduct and recidivism. But model fit increased substantially once the additional factors were added, thus showing the necessity of including these variables.

classify-analyze modeling, then all of the variables should be incorporated into the original identification of the groups (Bray, Lanza, & Tan, 2012). Otherwise, the relationship between the latent classes and the outcome is attenuated. The amount of attenuation is unique to each analysis. While this study attempted to include the additional variables of the misconduct and recidivism models in the original LCA identification models, the models did not converge. This suggests that an unknown attenuation process weakened the relationship between the groups and the outcomes in the models with all variables included.

While the LCA models used here produced the "best" measurement models of group identification, there is room for improvement in thinking ahead on what factors influence both future antisocial behavior and pathways to prison. The current study attempted to include variables from earlier in life, so as not to introduce temporal problems with causality, but there may have been additional factors in adulthood that would have been better at predicting future behavior while upholding the pathways to prison framework. LCA is still a relatively new approach and methods for using probabilistically-defined groups in proximal analyses are still evolving. At the time of the analyses, there were no studies known to this author that provided guidance. Recently, however, more research has emerged that supports the classify-analyze approach used in this study (Bray et al., 2012).

Additional Risk Factors and Antisocial Behavior

There were some interesting empirical findings among the individual risk factors of antisocial behavior independent of the pathway findings. The results showed that mental health problems for men increased their risk of recidivism, which supports the

findings from the Cambridge Study in Delinquent Development (Zara & Farrington, 2009, 2013). However, for women, a history of mental health problems was not predictive of future antisocial behavior; this stands in contrast to the gender responsive literature (Bloom et al., 2003; Salisbury et al., 2009; Van Voorhis et al., 2008; Van Voorhis et al., 2010; Wright et al., 2007). These findings might align with research which has argued that men externalize their problems, which can lead to destructive, aggressive, and criminal behavior, whereas women have more of a tendency to internalize their problems, which can lead to depression and anxiety (Agnew, 1992; Rosenfield, Phillips, & White, 2006). Regardless, these results suggest that while mental health issues may be fairly controlled during incarceration, continuity of care during the transition back to the community may reduce future criminal behavior.

There were also several notable gender differences that emerged in the recidivism analysis. Previous research consistently found a strong association between prior criminal behavior and future criminal behavior for men; less understood is whether this same relationship holds for women (Nagin & Paternoster, 2000).[108] Furthermore, while this relationship has been well documented for men, the reason for this relationship has been widely debated. The population heterogeneity perspective argues that stable individual differences, like self-control or criminal propensity formed during early childhood, will determine an individual's proclivity for criminal behavior throughout life. In addition, it has been argued that age has a direct effect on crime and that no other variable or factor in criminological theory can explain this relationship (Gottfredson & Hirschi, 1990; Hirschi & Gottfredson, 1983). Regardless of the statistical method used, age has been

[108] Because women generally have minor criminal histories and less violence compared to men, prior criminal history may not be as robust a factor in predicting future antisocial behavior.

shown to be a consistent predictor of criminal behavior across a wide variety of samples and various crimes. In the current study, age was the only individual-level factor that was statistically significant for both men and women across all of the prison misconduct and recidivism models.

As mentioned above, the population heterogeneity perspective argues that individual stable differences formed during childhood are the most important factors in explaining criminal behavior. One of the most well-known population heterogeneity theories is Gottfredson and Hirschi's theory of low self-control; they argue that self-control is formed by the ages of 8 to 10 years old. Parental attachment and supervision are essential in the formation of self-control, but if parents are involved in criminal activity or abusing drugs, then the likelihood that these parents are providing supportive and appropriate guidance for their children is diminished. Numerous studies have found that early childhood factors, such as family, education, self-control can be important predictors of desistance or persistent offending (Farrington & Hawkins, 1991; Moffitt, 2006; Piquero, Farrington, & Blumstein, 2007).

In contrast to the above studies, however, childhood abuse was not predictive of misconduct or recidivism in any of the models for the women; but for the men, a history of abuse was marginally significant for serious types of misconduct. Two other items that proxy dysfunctional home environments during childhood are parental substance abuse and parental criminality; these have previously been shown to increase criminal behavior for their children. Parental substance abuse predicted lower levels of misconduct and recidivism among women but not the men; while parental criminality was significant for the men but not the women. Future analyses need to replicate this finding and examine

why women coming from backgrounds of parental drug abuse had lower risks for recidivism.

In contrast to the population heterogeneity perspective, the state dependence perspective hypothesizes that past criminal behavior will impact future behavior more than stable individual differences. For example, arrest or incarceration may lessen one's ability to acquire stable employment which then increases the likelihood of future criminal behavior. Furthermore, some research has shown that early childhood problems or criminal propensity may not be as important in predicting adult offending, while indicators in adulthood, such as a supportive marriage and stable employment, were more important in decreasing criminal activity later in life (Laub, Nagin, & Sampson, 1998; Laub & Sampson, 2003).[109] These two perspectives can be seen as complimentary not contradictory; in fact, it is likely that criminal behavior is more fully explained by a combination of these two perspectives (Laub & Sampson, 2003).

While informal social control theory has provided evidence that marriage is an important element for men in desisting from future criminal activity (Farrington & West, 1995; Horney et al., 1995; Laub & Sampson, 2003), research on the effects of marriage on female criminality is sparse and results are mixed; it is possible that the marriage effect works as a protective factor for men and a risk factor for women. Sampson and Laub provided a frank assessment of the marriage effect

> "…we could perhaps put it more bluntly- given the crime differences between men and women, it is almost invariably the case that men marry "up" and women "down" when it comes to exposure to violence and crime. For this reason alone it is little wonder that marriage, to virtually any women, could benefit men. We admit this position is crude and pessimistic regarding the character of men, but would defend it as empirically correct. Indeed feminists are justified, by this logic, in recoiling at arguments about "good marriage" effects. Good for whom,

[109] But there has been less evidence whether these factors are also predictive for prison misconduct.

> we must ask. Yet given the gendered nature of the Glueck sample along with the historical context, we cannot help but focus here on male outcomes (Laub & Sampson, 2003 pp 45-46)."

The state of being married when admitted to federal prison was a protective factor for men with regard to institutional behavior, but it was unrelated to post-release behavior. For women, the effects of marriage are reversed. Being married was not significantly related to prison misconduct, but being married significantly increased the risk of recidivism once they are released—support for Laub and Sampson's assertions that marriage for women may have pernicious effects—especially in a high risk population like this one.[110]

In addition, the majority of the criminal history indicators in the current study were more predictive for the men than the women. This is also similar to the findings from the gender responsive literature (Salisbury et al., 2009; Van Voorhis et al., 2010). However, another measure which has been used as a proxy for criminal history, time served, was significant for both men and women in predicting recidivism. In addition, crime of conviction, which reflects the seriousness of the offense, has a long history of classifying offenders into hierarchies.[111] While extant research for state prisoners has shown that drug offenders have higher rates of recidivism than both violent offenders and public order offenders (Langan & Levin, 2002), drug offenders in the current study had significantly lower levels of both prison misconduct and recidivism.[112] Again, this result may reflect the differences between the federal and state laws that impact these prison

[110] Unfortunately, marital status was obtained from the pre-sentence report, and there was no information available upon release from prison. Therefore, it can only be hypothesized that individuals who came to prison married were still married when released from prison and that there were no gender differences.
[111] The most typical classifications parallel the major crime categories used by the Federal Bureau of Investigation's Uniform Crime Report: drug offenders, property offenders, and violent offenders.
[112] It was not significant in predicting recidivism for men.

populations.[113] On the other hand, while being incarcerated for a violent offense did not predict misconduct for either men or women, it lowered the risk of recidivism for women and marginally raised the risk for men.[114]

While criminal history can be seen as a static predictor for recidivism, once a person is incarcerated misconduct becomes a more salient predictor. Prison programs that target criminal attitudes and work opportunities can provide incentives for successful prison adjustment. These prison programs encourage pro-social behaviors among inmates both during incarceration and following release. The more immediate concerns for correctional administrators are the safety and security of their prisons, which primarily means preventing inmate misconduct. If, however, prison misconduct is caused by the same internal processes as post-release maladjustment, then the focus upon prison misconduct becomes even more compelling.

In recent years there has been mounting evidence that prison misconduct is an important predictor for recidivism (Cochran, Mears, Bales, & Stewart, 2012; Huebner & Berg, 2011; Huebner et al., 2010; Huebner, Varano, & Bynum, 2007; Jones, Brown, & Zamble, 2010; Lattimore, MacDonald, Piquero, Linster, & Visher, 2004; Trulson et al., 2011; Trulson, Marquart, Mullings, & Caeti, 2005). The current study corroborates this,

[113] There are stark differences between the federal drug laws versus state drug laws. At the federal level, the primary goal is to target high level drug offenders who manufacture, transport, and traffic drugs. Generally speaking, federal efforts do not focus on drug use or possession of small amounts of drugs. Sentences at the federal level are also much harsher than at the state level. Most inmates serving time for drug offenses in state prisons are more generally low-level offenders who were arrested for possession or selling small amounts of narcotics.

[114] Being convicted for a weapon charge was included in the violent offense category. Upon further examination of the description of the arrest in the PSI, only a small percentage of the women were actually involved in a violent act (one out of thirteen cases reviewed). For most of the women, the weapons charge stemmed from arrest warrants being served, typically for their boyfriends, in their residence, or from weapons being found during a drug arrest by undercover agents where the women were also with their boyfriend. It appears that women were more likely to be incarcerated as confederates of a more significant criminal perpetrator, such as a spouse or partner. It is possible that future research may be able to explain this anomaly. This is an example of the potential deficiencies of quantitative coding absent qualitative information.

suggesting that misconduct is an important consideration when examining recidivism. Among the several measures of criminal history included in the models, prison misconduct was a strong and consistent predictor, demonstrating that misconduct serves as a proxy for factors not captured by the typical criminal history measures.[115] Inclusion of prison misconduct in risk prediction instruments for recidivism may improve the predictive power of the instruments regardless of the theoretical concerns (Cochran et al., 2012).

It is perplexing that prison misconduct has not typically been included in recidivism studies (Delisi, Hochstetler, & Murphy, 2003). First, prison misconduct is the most recent measure of antisocial behavior after an inmate is released from prison (Trulson et al., 2011). Second, prison misconduct impacts recidivism because it is a proxy for criminal propensity and/or criminogenic prison experiences that increase criminal activity after release (Cochran et al., 2012; Trulson et al., 2011). Third, prison behavior is part of the life course, therefore, if prison misconduct is a continuation of antisocial behavior, then omitting the time while someone is incarcerated seems unwise (Huebner et al., 2010; Laub & Sampson, 2003; Trulson et al., 2011). Furthermore, there has been a debate as to whether the same factors predict both misconduct and recidivism, with some research showing that a number of factors are important in reducing both misconduct and recidivism (Cochran et al., 2012; Trulson et al., 2011). This also suggests that correctional programming that reduces prison misconduct may also reduce recidivism (Camp et al., 2008).

[115] Violent misconduct was also an important factor in predicting recidivism for men, but not for women. This difference might be explained by the fact that violent misconduct was a rare occurrence for women and there was not enough statistical power to detect significant differences.

Lastly, although substance use has frequently been associated with criminal behavior, the literature has been mixed regarding the impact that previous drug use has on prison misconduct and recidivism (Drury & DeLisi, 2010; Goetting & Howsen, 1986; Huebner et al., 2010; Jiang, 2005; Steiner & Wooldredge, 2009a; Trulson et al., 2011).[116] The current study also did not find a history of drug use to be important in predicting misconduct; a history of drug use was, however, an important factor in predicting recidivism for the women, though not for the men. If Daly is right and women, at least in the drug connected pathway, typically used drugs with their partners and had more serious addictions than men, then women may not only need substance abuse programming but additional resources fostering healthier relationships in adulthood (Daly, 1998a). Although this distinction is not testable with the current data, this may still provide an explanation as to why a history of drug use was significant for predicting recidivism for women but not men.

Policy Implications

While this was the first study to examine federal inmates and their pathways to prison for both men and women, the pathways to prison did not turn out to be a strong indicator of adjustment problems for the women, but did predict misconduct for the men. Because only a limited number of studies have used the pathways approach to classify offenders, a number of questions remain. In addition, there are even fewer, if any, studies that have then taken the pathways approach to assess potential future antisocial behavior.

[116] A history or drug use has ranged from 83% of state inmates and 78% of federal inmates in 2004 (Mumola & Karberg, 2006). A major confounding factor is how substance abuse is measured across different studies (Petersilia, 2003). Findings tend to coalesce around whether a history of substance abuse was noted in previous documents, such as the pre-sentence investigation or whether the drug use was self-reported by the inmate via survey data collection. These varying methods of capturing substance abuse can impact the importance of this risk factor in predicting criminal behavior.

The results of these analyses showed that further research on pathways and classification systems may be fruitful, at least for men.

The results of the current study may provide significant policy findings for correctional administrators and for correctional programming aimed at preparing an inmate for reentry. More specifically, this study showed that predictors of prison adjustment and/or recidivism did vary for the men and women. This can aid in finding ways to efficiently place inmates into more appropriate programs. This is essential at a time when the percentage of inmates participating in correctional programs has decreased despite the fact that prison populations exceed the intended capacity of the systems.

It was beyond the scope of this dissertation to assess whether pathways to prison might be important for guiding inmates into particular correctional programs. Future research should examine if individuals in certain pathways are more likely to volunteer and complete particular programs. From an empirical or methodological standpoint it appears that either the full pathways models or the risk factor models could both be informative. The risk factor approach provided important information as to what particular variables effect misconduct or recidivism; alternatively, the pathways approach also provides meaningful profiles of offenders with similar characteristics.

The LCA approach would give correctional staff the ability to target groups of inmates with similar risk factors early in their incarceration for particular programs in an effort to reduce misconduct and subsequent recidivism. For example, one of the paths for the men was the chronic offenders. These men had long criminal histories, but had lower levels of other types of risk factors. Because most of their risk factors were criminogenic, it may be more effective to place these men in programs that solely address criminal

attitudes and pro-social behavior. On the other hand, the street offenders had a number of early childhood risk factors as well as long criminal histories. Therefore, this group of inmates should be placed in multi-faceted programming which could address all of these factors.

In contrast, if the guiding principles relied on the risk factor models only, and not the profiles of groups of offenders, the program recommendations might be slightly different because they would be focused on one risk factor and not a combination of risk factors at the same time. If the risk factor was used to guide inmates into programming then the chronic offenders look similar to the street pathway. However, the LCA model showed that the street pathway had additional risk factors beyond their criminal histories that should be addressed. A further level of detail emerged with a group of women that were first-time offenders who also had higher probabilities of being employed, but had educational deficits and a history of drug use. These women may not necessarily need programs focused on antisocial attitudes, but programs that help them navigate social environments that may put them at risk for future criminal activities. In conclusion, there may be additional ways that the pathways approach may inform correctional practice and indirectly impact future antisocial behavior.

There were more similarities than differences in the pathways to prison for the men and the women; however, but the individual risk factor models revealed more differences than similarities. This indicates that these discrete factors may be gendered; therefore some correctional programs may be more beneficial for men than women or vice versa. Because the more typical measures of criminal history were more important in predicting misconduct for men than women, correctional programming focusing on

antisocial attitudes or behaviors should be more geared for men than women. Because D.C. women offenders have consistently higher levels of misconduct than federal offenders, it may be prudent to examine the appropriateness of using the same classification system for both types of offenders. In all models, drug offenders had lower levels of misconduct for both men and women. This suggests that we should pay more attention to offenders convicted of other types of charges. For men, ties to their family seem to be a protective factor against engaging in misconduct. Programs that foster family ties or social connections to people outside of prison could potentially lower misconduct. Lastly, though it seems that a number of correctional programs can be effective for both men and women, it may be beneficial to either create additional modules within already established programs to address gender specific issues or create additional programs that would be more beneficial for each of the genders.

Limitations and Future Research

There are several limitations with the current study worth noting. Though the latent class analysis approach was the most viable for grouping individuals with similar characteristics for the study of pathways to prisons, unlike other statistical modeling, it produces an exponential increase in the number of cells as the number of variables increase. Consequently, models become unstable quickly, especially if the sample size is not large (Collins & Lanza, 2010). Although the sample size in the current study was respectable, future research with more women would be beneficial. While a number of factors consistent with previous pathways research were included in the initial pathway models, items that were more typical criminal history factors and socio-demographic factors were included in the subsequent models that examined prison misconduct and

recidivism. In addition, in its current form, LCA modeling fits more within an exploratory framework. The researcher's judgment determines whether the model identified is consistent with previous analyses. This is in contrast to confirmatory methods, where the researcher employs statistical tests to determine whether previous findings are replicated.

Another limitation for the current study was the sampling strategy used for the original Mental Health Prevalence Study. The principal investigators sampled an admission cohort because the aim of their study was to estimate the prevalence of mental health problems prior to incarceration. In addition, this would allow them to later study the effects of institutionalization on mental health over time. If the current study only examined the pathways to prison and prison misconduct, an admission cohort would have been more than acceptable. But because this study also examined recidivism, and not all of the individuals in the sample were released from prison at the time of the analysis, a sample from a release cohort would have been a better sampling strategy. The majority of the information used for this study is not included in the BOP's operational database; therefore drawing another sample was not possible.

This had several adverse consequences for the study. First, the most serious offenders who also had the longest sentences were still incarcerated at the time of this analysis.[117] Although this could bias the results of the analysis, a vast majority of the sample was released from prison, thus giving us a reasonable certainty that the results of those released would not differ significantly than if the whole sample was analyzed. Second, even though the whole sample could have been used for the first two parts of the

[117] As of August 2013, there were 379 inmates still incarcerated from the sample and 39 are serving life sentences.

analysis (i.e., pathways to prison and prison misconduct), the sample was restricted to only those released from prison to ensure comparability across models. Third, because the sample was an admission cohort, the results may not generalize to the BOP standing population. Generally speaking, a random sample of the standing population is the more appropriate method for drawing conclusions about the BOP population overall, but if recidivism is to be examined, a release cohort would be more appropriate. Nonetheless, the same issues might pertain to a random sample; due to varying sentence lengths it could take years and years until the sample was released from prison, while those with life or death sentences would never actually release.

An additional limitation in the current study was that archival data was used for the analyses; this was problematic for two reasons. First, there were several risk factors that were not captured in the original study that would have been relevant in examining pathways to prison; I was therefore unable to test some of the hypotheses proposed by Daly. For example, there was no documentation as to whether there was a history of running away from home as a child, which was a key marker for the women in the street pathway. In addition, Daly's drug connected pathway linked a woman's drug use to that of her partner; this contextual information was missing in the current study. Second, the quality of relationships in adulthood, shown to be important for men (Laub et al., 1998), was unavailable. This made it impossible to assess whether criminal behavior is increased by adult dysfunctional relationships or decreased by supportive relationships. Third, inmates who are the least competent may have higher levels of both prison misconduct and recidivism, but there were no measures of intelligence or competency to test that assumption. Fourth, the measurement of substance use in the current study was a more

liberal definition than a formal diagnosis.[118] The proportion of inmates in this sample who were coded as having a history of drug use would thus naturally be larger than if it was measured as a history of substance abuse or a diagnosis. Whether the more liberal measure affects the results in this study remains an open empirical question. As the results previously described, a history of drug use was an important predictor of recidivism for the women but not the men. Accounting for this difference merits further investigation.

An additional research difficulty is that post-release information was unavailable. There are at least three post-release factors which are considered important in examining recidivism: employment information, substance use, and stable housing. But once the inmate is released from prison it is very difficult for prison officials to obtain any information about their lives in the community. If the offender is returned to custody, one data source available is the revocation report, which may or may not contain salient information. However, this information is not generated for those who desisted from crime. Future researchers could collaborate with parole and probation officers to collect this important information after the inmates are released from prison.

This research demonstrated that pathways to prison that describe common backgrounds of incarcerated individuals is a viable approach for examining the complex terrain that leads people into the criminal justice system. These findings also encourage further examination of the similarities and differences between men's and women's pathways to prison and their impact on future antisocial behavior. Furthermore, the importance of the pathways on receptiveness to treatment and treatment design remain

[118] An individual was considered to have a history of drug use if he or she reported using a drug for more than a year.

almost entirely unexplored. While this research showed the potential usefulness of LCA as a methodology, the identification of latent groups would benefit from larger samples, improved techniques and more refined measures. This study provides promising direction for future research in understanding what brings people to prison, what affects their behavior in prison, and what affects their behavior post-release.

Table 3.1
Descriptive Statistics:
Means and T-Tests

Variable	Male	Female	t-val	Prob.	N
Socio-Demographic Factors					
Age at Admission	32.55	33.12	-1.07	0.2842	1640
White*	0.5047	0.5401	-1.20	0.2292	1640
Hispanic*	0.1722	0.1283	2.16	0.0312	1640
High School Education*	0.2891	0.3610	-2.57	0.0104	1640
Currently Married*	0.2253	0.2246	0.03	0.9774	1639
Juvenile Children*	0.6210	0.6189	0.07	0.9433	1610
Employed at Arrest*	0.4570	0.3733	2.85	0.0045	1545
History of Mental Health*	0.2180	0.3930	-6.29	<0.0001	1640
History of Drug Use*	0.8483	0.7406	4.34	<0.0001	1640
Childhood Risk Factors					
Parental Substance Abuse*	0.2343	0.2799	-1.73	0.0843	1593
Parental Criminality*	0.2141	0.2201	-0.25	0.8056	1592
History of Childhood Abuse*	0.1815	0.3298	-5.55	<0.0001	1629
Any Out of Home Placement*	0.1852	0.1223	3.08	0.0021	1594
Criminal/Prison Factors					
History of Recent Violence*	0.2630	0.0963	8.48	<0.0001	1640
History of Serious Violence*	0.3989	0.1765	9.24	<0.0001	1640
Prior Commitment*	0.7930	0.5455	8.78	<0.0001	1640
Length of Time Served (months)	37.5424	31.652	5.89	<0.0001	1640
Hist of Escapes*	0.1872	0.1551	1.48	0.1396	1640
D.C. Offender*	0.0150	0.0401	-2.34	0.0196	1640
USSC Crim Hist Points	6.5055	4.1444	6.45	<0.0001	1640
Voluntarily Surrendered*	0.1011	0.2166	-5.03	<0.0001	1640
Incarcerated for Drug Offense*	0.4281	0.5187	-3.08	0.0021	1640
Incarcerated for Violent Offense*	0.4171	0.2005	8.68	<0.0001	1640
Juvenile Arrest*	0.4479	0.2299	8.42	<0.0001	1640

Note: Variables marked with an asterisk (*) are dichotomous and were coded in the affirmative. For example, the variable employed at arrest is coded as employed = 1 and unemployed = 0.

The statistical tests of significance used the Satterthwaite correction when unequal group variance was noted.

Table 3.2
Misconduct and Arrest Data:
Means and T-Tests

Variable	Male	Female	t-val	Prob.	N
Prison Adjustment					
Any Misconduct*	0.5387	0.3797	5.53	<0.0001	1640
Any Minor Misconduct*	0.4573	0.3422	4.07	<0.0001	1640
Any Serious Misconduct*	0.2883	0.1390	6.79	<0.0001	1640
Any Violent Misconduct*	0.1280	0.0802	2.82	0.0049	1640
Counts of Any Misconduct	1.6272	1.2941	1.79	0.0739	1640
Counts of Minor Misconduct	1.0600	1.0508	0.07	0.9481	1640
Counts Serious Misconduct	0.5671	0.2433	4.78	<0.0001	1640
Counts of Violent Misconduct	0.1896	0.1337	1.52	0.1295	1640
Recidivism					
Months to Event (or Censor)	28.428	36.613	-5.52	<0.0001	1640
Any CJ Contact after Release*	0.5474	0.4278	4.10	<0.0001	1640
New Arrest after Release*	0.3949	0.3048	3.28	0.0011	1640
Probation Viol after Release*	0.1524	0.1230	1.49	0.1370	1640

Note: Variables marked with an asterisk (*) are dichotomous.

The statistical tests of significance used the Satterthwaite correction when unequal group variance was noted.

Table 5.1
Fit Statistics for Latent Classes for Females

Number of Latent Classes	*df*	G-Square	AIC	BIC	log likelihood
1	*2036*	995.93	1017.93	1061.1	-2455.34
2	2024	789.16	835.16	925.42	-2351.96
3	2012	724.67	794.67	932.01	-2319.71
4	2000	683.11	777.11	961.55	-2298.93
5	1988	646.92	764.92	996.45	-2280.84
6	1976	621.36	763.36	1041.99	-2268.06

Figure 5.1
Fit Statistics for Women

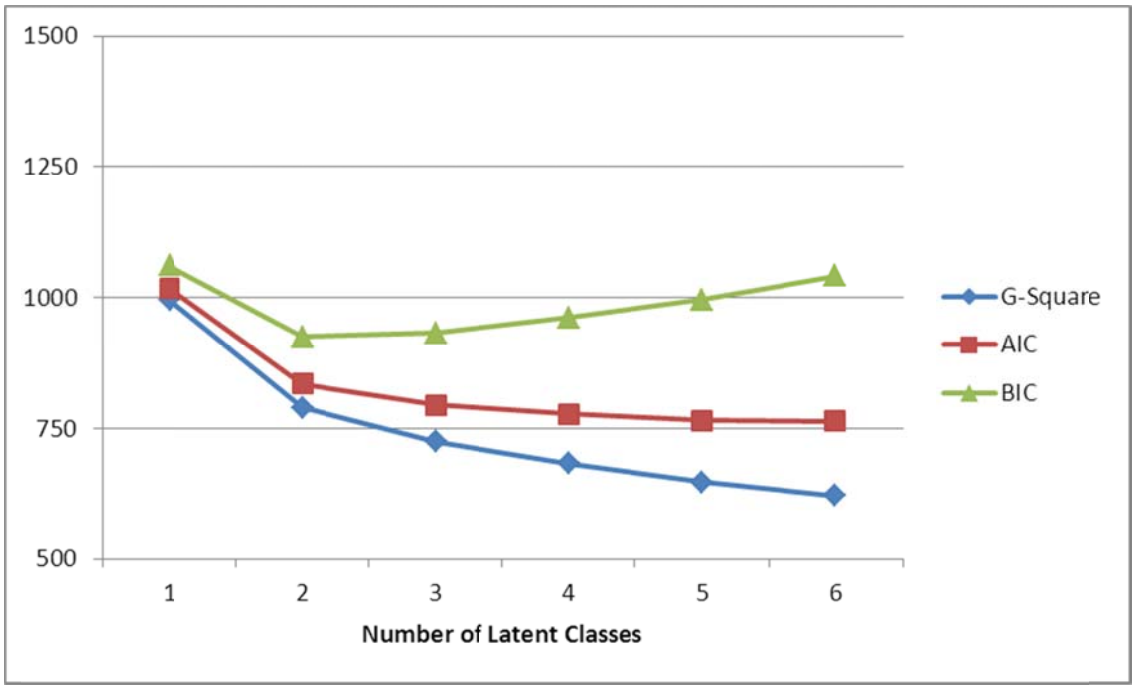


Table 5.2
Female Latent Class Pathways Endorsement of Factors

	Street	Situational	First-Timers	Drug
Latent Class Prevalence	0.2812	0.1347	0.2832	0.3009
Item-Response Probabilities				
Childhood Abuse	**0.7600**	0.3751	0.1590	0.0694
Parental Substance Abuse	**0.5796**	0.2479	0.0922	0.1906
Out of Home Placement	**0.3727**	0.1250	0.0004	0.0019
Juvenile Arrest	**0.4132**	0.1278	0.0658	0.2590
Prior Incarcerations	**0.7749**	0.4227	0.0690	**0.8345**
Drug Offense	**0.5376**	0.0150	**0.6125**	**0.6390**
History of Drug Use	**0.9920**	0.2383	**0.5424**	**0.9178**
History of Mental Health	**0.5434**	**0.6570**	0.2176	0.2991
Employed at Arrest	0.2036	**0.7173**	**0.5822**	0.1725
High School Education	0.1222	**0.8025**	0.4412	0.3103
Currently Married	0.1747	**0.3879**	0.2187	0.2035

Note: Item-response probabilities > 0.5 in bold (or largest %)

Figure 5.2
Female Latent Class Pathways Endorsement of Factors

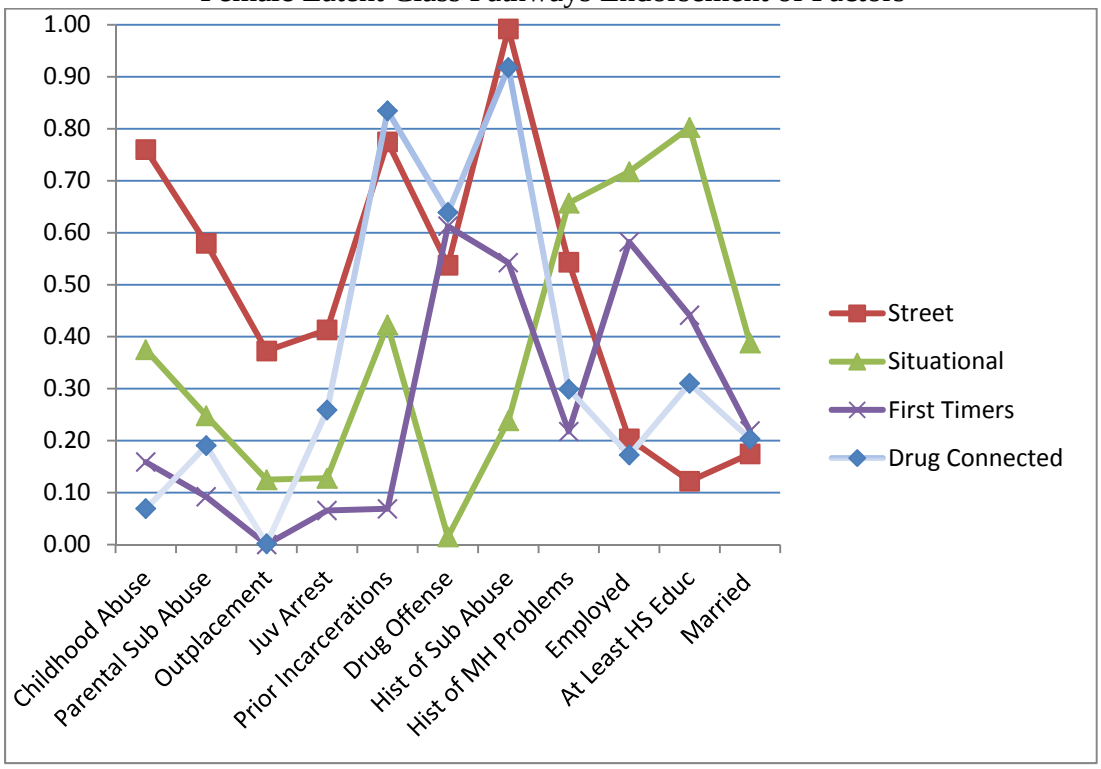


Table 5.3
Women's Paths and Crime of Conviction

	Street	Situational	First-Timers	Drug
Conviction Category				
Drug	55 (53%)	0	70 (62%)	69 (62%)
Violent	25 (24%)	15 (32%)	14 (12%)	19 (17%)
Economic	15 (14%)	27 (58%)	19 (17%)	15 (14%)
Other	8 (8%)	5 (11%)	10 (9%)	8 (7%)
Total	103	47	113	111

Figure 5.3
Trellis Plot for Women - Probability of Pathway Classifications

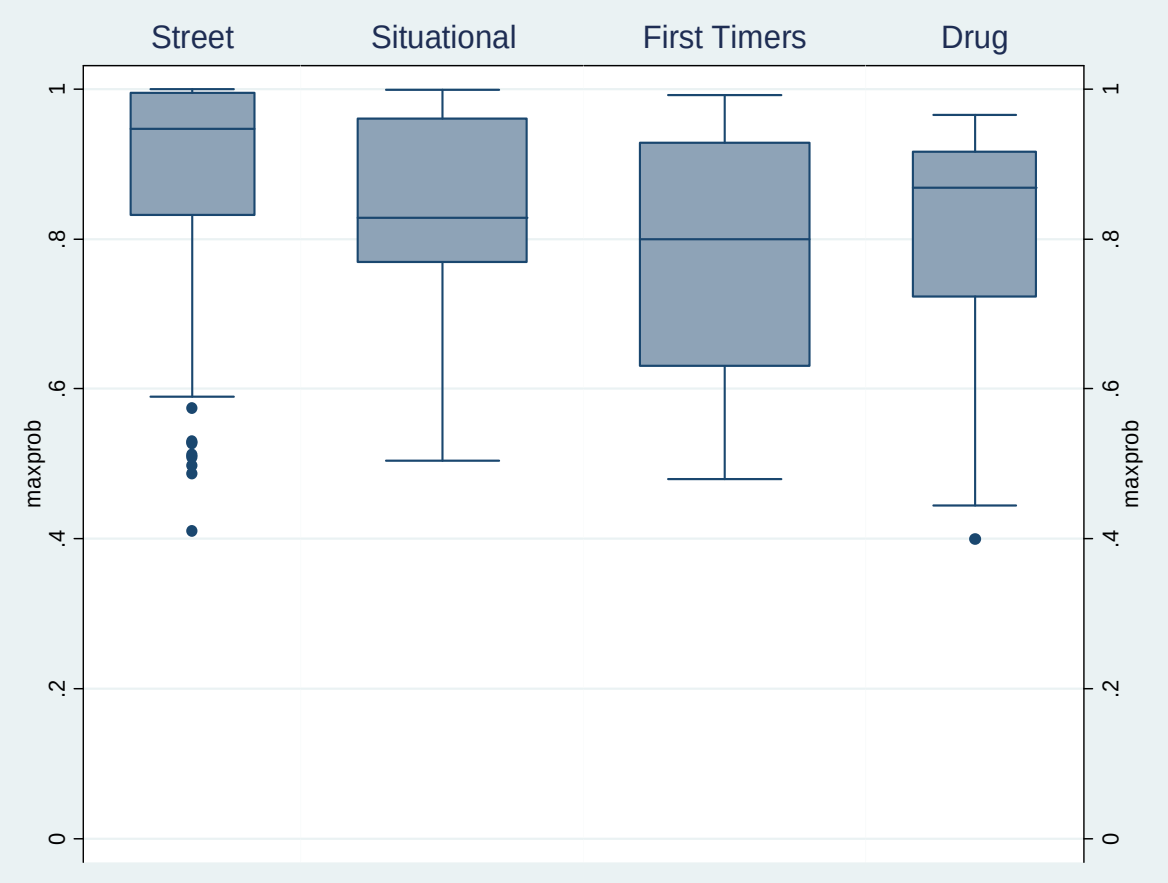


Table 5.4
Fit Statistics for the Latent Classes for Males

Number of Latent Classes	*df*	G-Square	AIC	BIC	log likelihood
1	2036	1842.10	1864.10	1920.68	-7680.93
2	2024	1261.37	1307.37	1425.67	-7390.57
3	2012	1090.23	1160.23	1340.26	-7305.00
4	2000	943.04	1037.04	1278.79	-7231.40
5	1988	883.34	1001.34	1304.81	-7201.55
6	1976	846.52	988.52	1353.72	-7183.14

Figure 5.4
Fit Statistics for Men

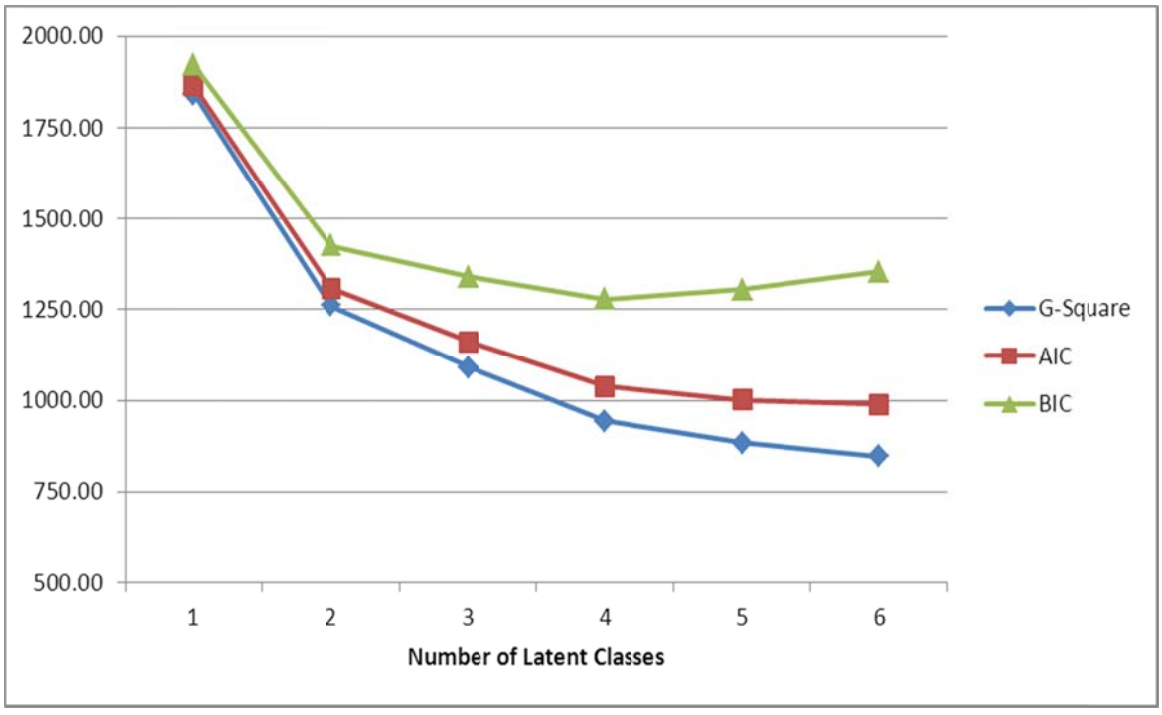


Table 5.5
Male Latent Class Pathways Endorsement of Factors

	Street	Situational	Chronic	Drug
Latent Class Prevalence	0.2037	0.0889	0.2037	0.5036
Item-Response Probabilities				
Childhood Abuse	**0.6170**	0.2592	0.0363	0.0487
Parental Substance Abuse	**0.6789**	0.1559	0.1043	0.1161
Out of Home Placement	0.3942	0.0327	**0.4803**	0.0009
Juvenile Arrest	**0.6071**	0.0231	**0.9795**	0.2423
Prior Incarcerations	**0.9514**	0.3429	**0.9563**	**0.7423**
Drug Offense	0.2298	0.0047	0.4453	**0.5770**
History of Drug Use	**0.9741**	0.3940	**0.8794**	**0.8653**
History of Mental Health	**0.4200**	0.4047	0.1762	0.1198
Employed at Arrest	0.2977	**0.7546**	0.3200	**0.5249**
High School Education	0.1614	**0.7817**	0.0754	0.3404
Currently Married	0.1772	**0.3461**	0.1298	0.2595

Note: Item-response probabilities > 0.5 in bold (or largest %)

Figure 5.5
Male Latent Class Pathways Endorsement of Factors

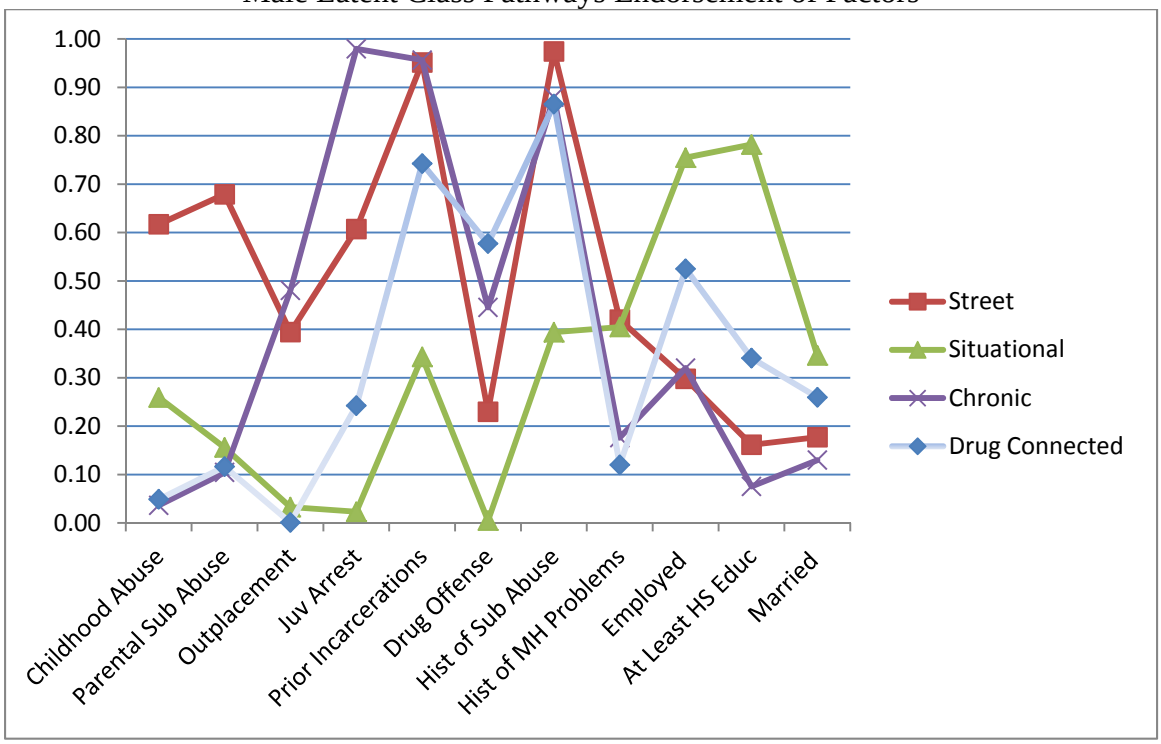


Table 5.6
Men's Paths and Crime of Conviction

	Street	Situational	Chronic	Drug
Conviction Category				
Drug	47 (18%)	0	116 (44%)	379 (59%)
Violent	148 (59%)	19 (19%)	1122 (46%)	164 (25%)
Sex	7 (3%)	48 (48%)	2 (<1%)	18 (3%)
Economic	34 (13%)	19 (19%)	13 (5%)	54 (8%)
Other	17 (7%)	14 (14%)	13 (5%)	32 (5%)
Total	253	100	266	647

Figure 5.6
Trellis Plot for Men - Probability of Pathway Classifications

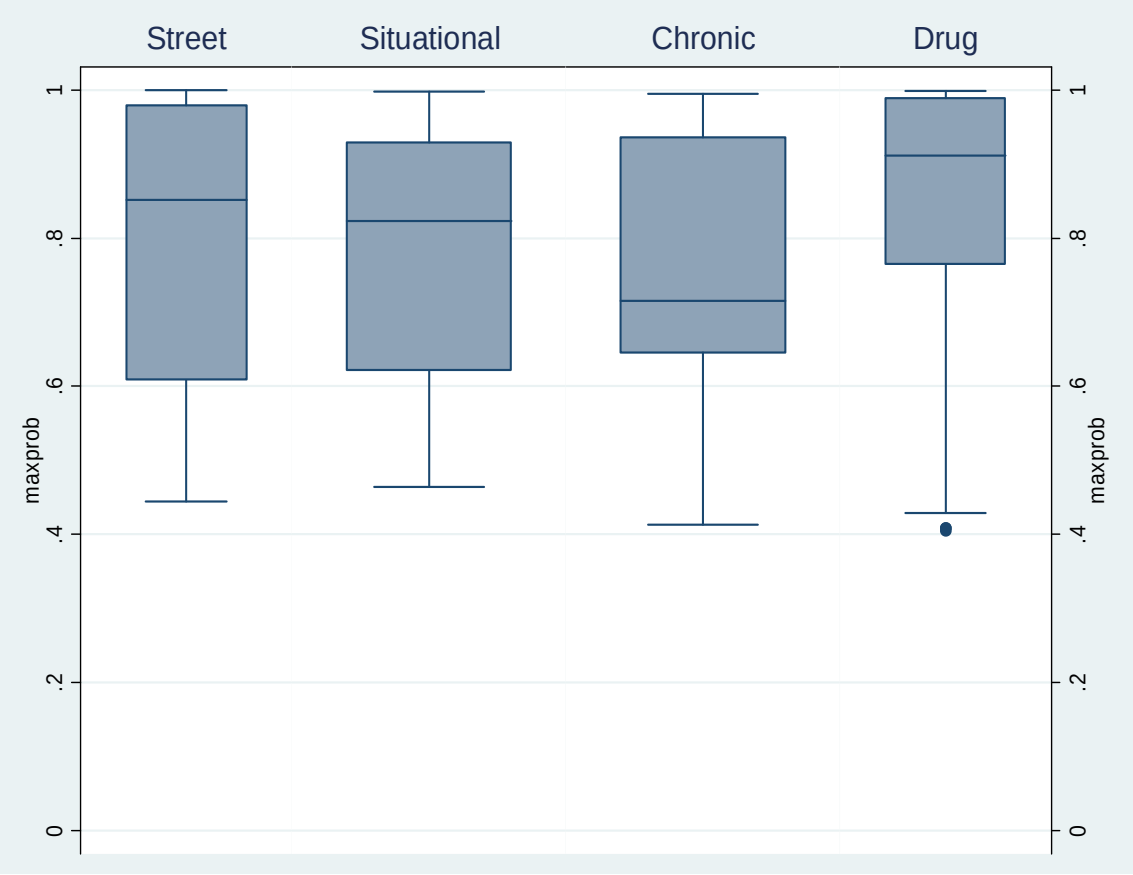


Table 6.1
Female Misconduct Negative Binomial Regression Models (All Counts)
Incident Rate Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	0.4480*	0.9009	
First-Timers vs. Street	0.3945***	0.6348	
Drug vs. Street	0.6413+	0.9190	
Situational vs. First-Timers	1.1357	1.4192	
Situational vs. Drug	0.6985	0.9802	
First-Timers vs. Drug	0.6151+	0.6907	
White		0.7328	0.7431
Hispanic		1.0085	1.0611
Age at Prison Admission		0.9287***	0.9216***
D.C. Offender		4.3142**	1.9838
Criminal History Score (USSC)		1.0324+	1.0121
History of Serious Violence		1.1547	1.2357
History of Recent Violence		0.6199	0.7167
Voluntarily Surrendered		1.2662	0.9610
History of Escapes		0.8520	0.8813
Current Conviction for Violent Offense		1.3635	0.8185
Parental or Sibling Criminal Activity		1.0942	1.1891
Had Juvenile Children When Arrested		0.8658	0.8021
History of Abuse			1.2634
History of Drug Use			1.4394
At Least High School Education			1.1091
Parental Drug Abuse			0.6061*
Placed Outside of Home in Childhood			1.1934
Arrested as a Juvenile			0.8601
History of Mental Health Problems			1.0390
Married at Admission to Prison			0.9124
Previous Incarcerations			1.3299
Employed When Arrested			0.6886+
Current Conviction for Drug Offense			0.4286**
N	338	338	338
McFadden's R^2	0.013	0.070	0.092
ML (Cox-Snell) R2	0.035	0.180	0.228

Exponentiated coefficients
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 6.2
Female Misconduct Negative Binomial Regression Models (Minor Counts)
Incident Rate Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	0.4690+	0.8853	
First-Timers vs. Street	0.3877**	0.5818+	
Drug vs. Street	0.6223+	0.8093	
Situational vs. First-Timers	1.2095	1.5218	
Situational vs. Drug	0.7536	1.0939	
First-Timers vs. Drug	0.6230+	0.7188	
White		0.7739	0.7725
Hispanic		0.7088	0.7773
Age at Prison Admission		0.9277***	0.9200***
D.C. Offender		3.6663*	1.6714
Criminal History Score (USSC)		1.0349*	1.0184
History of Serious Violence		1.0562	1.0721
History of Recent Violence		0.5870	0.6774
Voluntarily Surrendered		1.3739	1.0698
History of Escapes		0.8285	0.8420
Current Conviction for Violent Offense		1.3058	0.8165
Parental or Sibling Criminal Activity		1.1790	1.2960
Had Juvenile Children When Arrested		0.8662	0.8053
History of Abuse			1.3492
History of Drug Use			1.5129
At Least High School Education			1.1442
Parental Drug Abuse			0.6014*
Placed Outside of Home in Childhood			1.2637
Arrested as a Juvenile			0.8361
History of Mental Health Problems			1.1286
Married at Admission to Prison			0.8131
Previous Incarcerations			1.2494
Employed When Arrested			0.7125
Current Conviction for Drug Offense			0.4380**
N	338	338	338
McFadden's R^2	0.013	0.072	0.094
ML (Cox-Snell) R2	0.033	0.168	0.214

Exponentiated coefficients
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 6.3
Female Misconduct Negative Binomial Regression Models (Serious Counts)
Incident Rate Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	0.2780+	0.6163	
First-Timers vs. Street	0.4055*	0.7611	
Drug vs. Street	0.7261	1.2617	
Situational vs. First-Timers	0.6857	0.8098	
Situational vs. Drug	0.3829	0.4885	
First-Timers vs. Drug	0.5584	0.6033	
White		0.5671	0.5993
Hispanic		2.5383+	2.6974*
Age at Prison Admission		0.9190***	0.9138***
D.C. Offender		5.2436**	3.8017*
Criminal History Score (USSC)		1.0186	1.0088
History of Serious Violence		1.7675	1.9413+
History of Recent Violence		0.8372	0.9135
Voluntarily Surrendered		0.5641	0.5108
History of Escapes		1.2005	1.0722
Current Conviction for Violent Offense		1.4022	0.7661
Parental or Sibling Criminal Activity		0.8189	0.9249
Had Juvenile Children When Arrested		1.0672	0.9359
History of Abuse			0.9943
History of Drug Use			1.7285
At Least High School Education			1.0439
Parental Drug Abuse			0.7618
Placed Outside of Home in Childhood			1.1619
Arrested as a Juvenile			0.8030
History of Mental Health Problems			0.8497
Married at Admission to Prison			0.9638
Previous Incarcerations			1.6863
Employed When Arrested			0.9505
Current Conviction for Drug Offense			0.4523*
N	338	338	338
McFadden's R^2	0.017	0.116	0.133
ML (Cox-Snell) R^2	0.019	0.122	0.138

Exponentiated coefficients
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 6.4
Female Misconduct Negative Binomial Regression Models (Violent Counts)
Incident Rate Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	0.1314+	0.2178	
First-Timers vs. Street	0.3427*	0.7548	
Drug vs. Street	0.4130+	0.5811	
Situational vs. First-Timers	0.3841	0.2885	
Situational vs. Drug	0.3182	0.3992	
First-Timers vs. Drug	0.8300	1.2989	
White		0.4203+	0.4477+
Hispanic		1.7121	2.1227
Age at Prison Admission		0.9163**	0.9100**
D.C. Offender		4.5278*	3.8159
Criminal History Score (USSC)		1.0290	1.0330
History of Serious Violence		1.3875	1.3474
History of Recent Violence		1.0152	1.1100
Voluntarily Surrendered		0.9972	0.9787
History of Escapes		1.0883	1.0857
Current Conviction for Violent Offense		1.9116	1.1339
Parental or Sibling Criminal Activity		0.8566	0.9517
Had Juvenile Children When Arrested		1.6440	1.4936
History of Abuse			1.7212
History of Drug Use			2.9397+
At Least High School Education			1.2660
Parental Drug Abuse			0.7318
Placed Outside of Home in Childhood			1.5982
Arrested as a Juvenile			0.9794
History of Mental Health Problems			0.6826
Married at Admission to Prison			0.6623
Previous Incarcerations			0.8231
Employed When Arrested			1.1760
Current Conviction for Drug Offense			0.5298
N	338	338	338
McFadden's R^2	0.030	0.138	0.158
ML (Cox-Snell) R^2	0.021	0.094	0.107

Exponentiated coefficients
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 6.5
Male Misconduct Negative Binomial Regression Models (All Counts)
Incident Rate Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	0.5084***	0.9801	
Chronic vs. Street	1.1832	1.0956	
Drug vs. Street	0.5676***	0.8073+	
Situational vs. Chronic	0.4297***	0.8946	
Situational vs. Drug	0.8957	1.2140	
Chronic vs. Drug	2.0845***	1.3570**	
White		1.0610	1.0375
Hispanic		1.0291	1.0599
Age at Prison Admission		0.9504***	0.9486***
D.C. Offender		1.2768	1.2419
Criminal History Score (USSC)		1.0167*	1.0135+
History of Serious Violence		1.0494	1.0518
History of Recent Violence		1.2160*	1.1802+
Voluntarily Surrendered		0.7728	0.8111
History of Escapes		0.9209	0.9430
Current Conviction for Violent Offense		1.2158*	0.8808
Parental or Sibling Criminal Activity		1.0866	1.1043
Had Juvenile Children When Arrested		0.8063*	0.8183*
Low Security Prison		0.7603+	0.8446
Medium Security Prison		0.9944	1.0550
History of Abuse			0.8865
History of Drug Use			1.1703
At Least High School Education			0.8838
Parental Drug Abuse			1.0654
Placed Outside of Home in Childhood			0.8931
Arrested as a Juvenile			1.0963
History of Mental Health Problems			1.0658
Married at Admission to Prison			0.8427
Previous Incarcerations			1.1465
Employed When Arrested			0.9499
Current Conviction for Drug Offense			0.6164***
N	1127	1127	1127
McFadden's R^2	0.016	0.046	0.050
ML (Cox-Snell) R^2	0.052	0.145	0.156

Exponentiated coefficients
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 6.6
Male Misconduct Negative Binomial Regression Models (Minor Counts)
Incident Rate Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	.75057	1.3361	
Chronic vs. Street	1.4376**	1.2795+	
Drug vs. Street	0.6649***	0.8952	
Situational vs. Chronic	0.5221**	1.0442	
Situational vs. Drug	1.1287	1.4924+	
Chronic vs. Drug	2.1620***	1.4292**	
White		0.9876	0.9519
Hispanic		0.9674	1.0342
Age at Prison Admission		0.9519***	0.9528***
D.C. Offender		1.2564	1.2406
Criminal History Score (USSC)		1.0134	1.0106
History of Serious Violence		1.0421	1.0626
History of Recent Violence		1.2516*	1.2178+
Voluntarily Surrendered		0.8105	0.8708
History of Escapes		0.8612	0.8941
Current Conviction for Violent Offense		1.2304*	0.9399
Parental or Sibling Criminal Activity		1.0122	1.0099
Had Juvenile Children When Arrested		0.7178***	0.7306**
Low Security Prison		0.8588	0.8977
Medium Security Prison		1.2161+	1.2759*
History of Abuse			0.9298
History of Drug Use			1.1097
At Least High School Education			0.8826
Parental Drug Abuse			1.0397
Placed Outside of Home in Childhood			0.8810
Arrested as a Juvenile			1.1567
History of Mental Health Problems			1.0578
Married at Admission to Prison			0.7928+
Previous Incarcerations			0.9325
Employed When Arrested			0.9477
Current Conviction for Drug Offense			0.6754*
N	1127	1127	1127
McFadden's R^2	0.014	0.045	0.046
ML (Cox-Snell) R^2	0.039	0.118	0.122

Exponentiated coefficients
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 6.7
Male Misconduct Negative Binomial Regression Models (Serious Counts)
Incident Rate Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	0.1742***	0.3807*	
Chronic vs. Street	0.8134	0.8443	
Drug vs. Street	0.4201***	0.6968*	
Situational vs. Chronic	0.2141***	0.4509*	
Situational vs. Drug	0.4146*	0.5464	
Chronic vs. Drug	1.9364***	1.2116	
White		1.2223	1.2622
Hispanic		1.1023	1.0341
Age at Prison Admission		0.9438***	0.9361***
D.C. Offender		1.3802	1.3225
Criminal History Score (USSC)		1.0248*	1.0205+
History of Serious Violence		0.9766	1.0144
History of Recent Violence		1.1297	1.0938
Voluntarily Surrendered		0.7282	0.7044
History of Escapes		1.0669	1.0810
Current Conviction for Violent Offense		1.2492	0.8611
Parental or Sibling Criminal Activity		1.2155	1.2664+
Had Juvenile Children When Arrested		1.0599	1.0741
Low Security Prison		0.6172*	0.7768
Medium Security Prison		0.6760**	0.7406*
History of Abuse			0.7338+
History of Drug Use			1.1112
At Least High School Education			0.8647
Parental Drug Abuse			1.1496
Placed Outside of Home in Childhood			0.8811
Arrested as a Juvenile			0.9814
History of Mental Health Problems			1.0919
Married at Admission to Prison			0.9549
Previous Incarcerations			1.9694**
Employed When Arrested			0.8830
Current Conviction for Drug Offense			0.5723**
N	1127	1127	1127
McFadden's R^2	0.026	0.065	0.073
ML (Cox-Snell) R^2	0.049	0.116	0.131

Exponentiated coefficients
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 6.8
Male Misconduct Negative Binomial Regression Models (Violent Counts)
Incident Rate Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	0.1387**	0.3758	
Chronic vs. Street	0.6720	0.7547	
Drug vs. Street	0.3977***	0.7240	
Situational vs. Chronic	0.2063*	0.4980	
Situational vs. Drug	0.3487+	0.5191	
Chronic vs. Drug	1.6898*	1.0424	
White		1.0499	1.1153
Hispanic		1.1135	1.0471
Age at Prison Admission		0.9412***	0.9391***
D.C. Offender		0.8248	0.7779
Criminal History Score (USSC)		1.0193	1.0169
History of Serious Violence		1.0453	1.0109
History of Recent Violence		1.1084	1.1028
Voluntarily Surrendered		0.5086	0.5084
History of Escapes		1.0157	1.0098
Current Conviction for Violent Offense		1.3311	1.3672
Parental or Sibling Criminal Activity		1.3642	1.4197+
Had Juvenile Children When Arrested		0.8344	0.8198
Low Security Prison		0.5477+	0.5965
Medium Security Prison		0.5742**	0.5702*
History of Abuse			0.7109
History of Drug Use			0.8356
At Least High School Education			0.8035
Parental Drug Abuse			1.2309
Placed Outside of Home in Childhood			1.3115
Arrested as a Juvenile			0.8298
History of Mental Health Problems			0.9840
Married at Admission to Prison			0.8992
Previous Incarcerations			1.7337+
Employed When Arrested			0.9392
Current Conviction for Drug Offense			0.9615
N	1127	1127	1127
McFadden's R^2	0.024	0.067	0.071
ML (Cox-Snell) R^2	0.023	0.062	0.066

Exponentiated coefficients
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 6.9
Female Cox Proportional Hazard Models for Recidivism
Hazard Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	0.7099	0.9179	
First-Timers vs. Street	0.5991*	1.1086	
Drug vs. Street	1.2314	1.1614	
Situational vs. First-Timers	1.1850	0.8280	
Situational vs. Drug	0.5765*	0.7904	
First-Timers vs. Drug	0.4865***	0.9546	
White		1.0440	1.0026
Hispanic		0.6898	0.8176
Age when Released from Prison		0.9733*	0.9666*
D.C. Offender		2.0819	2.1935
Length of Time Served		0.5129***	0.5879***
Criminal History Score (USSC)		1.0815***	1.0704***
History of Serious Violence		0.8522	0.9418
History of Recent Violence		1.3023	1.2383
Voluntarily Surrendered		0.7653	0.7579
History of Escapes (at release)		1.2106	1.1209
Family Ties		0.5457	0.8886
Parental or Sibling Criminal Activity		1.0907	1.0333
Had Juvenile Children When Arrested		1.6926**	1.4253+
Any Misconduct During Current Incarceration		1.7176**	1.4942+
Any Violent Misconduct During Current Incarceration		1.0594	0.9209
Current Conviction for Violent Offense		1.1786	0.6096+
History of Abuse			0.8870
History of Drug Use			2.6479***
At Least High School Education			0.9336
Parental Drug Abuse			0.5989*
Placed Outside of Home in Childhood			1.4499
Arrested as a Juvenile			0.9201
History of Mental Health Problems			0.7577
Married at Admission to Prison			1.4928+
Previous Incarcerations			1.1199
Employed When Arrested			0.8856
Current Conviction for Drug Offense			0.4707**
N	338	338	338
Harrell's C	.5901	.7224	.7547

Table 6.10
Male Cox Proportional Hazard Models for Recidivism
Hazard Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	0.3690***	0.8357	
Chronic vs. Street	1.2523+	1.2184	
Drug vs. Street	0.6872***	0.9591	
Situational vs. Chronic	0.2947***	0.6859+	
Situational vs. Drug	0.5369***	0.8714	
Chronic vs. Drug	1.8223***	1.2704*	
White		0.9926	0.9468
Hispanic		1.2987*	1.3514*
Age when Released from Prison		0.9731***	0.9729***
D.C. Offender		1.9739*	1.8204+
Length of Time Served		0.7578***	0.7712***
Criminal History Score (USSC)		1.0330***	1.0244**
History of Serious Violence		1.0314	1.0342
History of Recent Violence		0.9772	0.9806
Voluntarily Surrendered		0.5346**	0.5465**
History of Escapes (at release)		1.4197***	1.4178**
Family Ties		0.7580*	0.7655*
Parental or Sibling Criminal Activity		0.9531	0.9399
Had Juvenile Children When Arrested		1.0144	1.0107
Any Misconduct During Current Incarceration		1.5103***	1.4930***
Any Violent Misconduct Current Incarceration		1.4090**	1.3886**
Current Conviction for Violent Offense		1.3215**	1.2884+
Low Security Prison		0.9454	1.0522
Medium Security Prison		0.9102	0.9380
History of Abuse			0.8195
History of Drug Use			1.1402
At Least High School Education			0.8597
Parental Drug Abuse			1.0905
Placed Outside of Home in Childhood			0.8799
Arrested as a Juvenile			1.1724+
History of Mental Health Problems			1.2333+
Married at Admission to Prison			0.9129
Previous Incarcerations			1.3739*
Employed When Arrested			1.0434
Current Conviction for Drug Offense			0.9758
N	1127	1127	1127
Harrell's C	0.5832	0.6739	0.6807

Appendix A

Results of LCA Models for Full Sample Males and Females

The sample for this study was an admission cohort and not a release cohort; therefore not all of the inmates from the full sample were released at the time of this analysis. Although the full sample could have been used to examine pathways to prison, and to a lesser extent prison misconduct, it seemed prudent to restrict the sample to inmates who were released in order to have comparable individuals across all of the analyses (i.e. pathways to prison, prison misconduct and subsequent recidivism). To determine if the pathways to prison were the same for both the release cohort and the full sample, latent class models were run with both samples.[119] For women, this increased the sample from 374 to 448; for men, the sample went from 1266 to 1823. The same set of steps that were described earlier in the manuscript for the release sample, were conducted for the full sample as well to identify the best measurement model. For both the men and the women, the four class solution appears to be the best solution (see Table A.1 and Table A.3). The results were almost exactly the same for the men regardless of the sample used: the prevalence of each of the pathways and the item response probabilities were basically the same for the release and the full sample (see Table A.4 and Figure A.4).

For the women, there were some differences between the release sample and the full sample models. While the fit indices pointed to the same number of classes as the best model, the prevalence of the classes shifted. For the release sample, the drug connected pathway contained approximately 30% of the sample; this increased to 50%

[119] The full sample included both those released and those still incarcerated.

for the full sample.[120] Part of the increase resulted from categorizing women that were still incarcerated into this pathway. The percentage of the street pathway declined from 28% to 13%.[121] The difference in the percentages might be a function of the increased sample size. Alternatively, it could be that the women who have longer sentences and are still incarcerated are somewhat different than those who have been released. Due to the long sentences associated with drug convictions, this shift in these pathways is not surprising. In addition, this increase in the drug connected pathway for the women in the full sample is more comparable to the proportion of men in that pathway. Whether this would affect the results of the misconduct and recidivism models is an empirical question that can better be answered after these women are released from prison. But because none of the pathways for women were significant in the release sample, it is unlikely that the results would differ significantly from the ones reported.

Although the percentage of women in the drug connected pathway grew, the endorsement in the risk factors for the pathways did not significantly change. For example, women in the economic motivated pathway still had a high probability of a history of mental health problems, high employment rates, higher levels of education and were more likely to be married when incarcerated. The women in the street pathway still had the highest probability of being abused, parental drug abuse, placement outside of the home during childhood, and a history of drug use.

In summary, the changes in the results of the LCA models from the release sample to the full sample were minimal for the men. There were more differences for the

[120] This percentage of the drug connected pathway for the women in the full sample is now almost the same prevalence for the men in this group.
[121] This increase in the repeat drug offender category actually brought the prevalence of the female pathway in line with the results from the male models.

women, but this may have resulted from the change in the sample size. Regardless, the results were not so different that completely different pathways emerged or that the item response probabilities drastically changed. Given these results, the dissertation focuses on the release sample.

Figure A.1
Fit Statistics for Latent Class Models for Females Full Sample

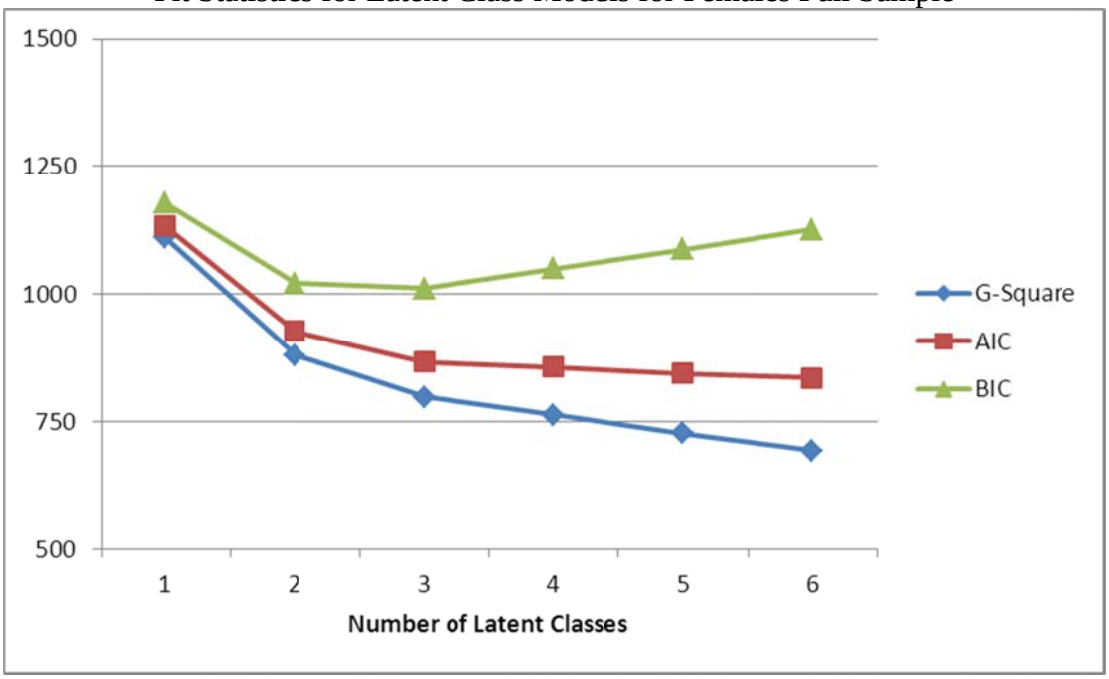


Table A.1
Fit Statistics for the Latent Classes for Females Full Sample

Number of Latent Classes	*df*	G-Square	AIC	BIC	log likelihood
1	2036	1110.77	1132.77	1177.92	-2928.43
2	2024	881.45	927.45	1021.86	-2813.77
3	2012	797.84	867.84	1011.50	-2771.96
4	2000	763.11	857.11	1050.04	-2754.60
5	1988	726.89	844.89	1087.07	-2736.49
6	1976	693.52	835.52	1126.96	-2719.80

Table A.2
Four Latent Class Model Female Full Sample - Endorsement of Factors

	Street	Situational	First-Timers	Drug Connected
Latent Class Prevalences	0.1338	0.0955	0.2597	0.5109
Item-Response Probabilities				
Childhood Abuse	**0.8038**	0.4101	0.1478	0.2732
Parental Substance Abuse	**0.4866**	0.3403	0.0288	0.3284
Out of Home Placement	**0.7362**	0.1251	0.0009	0.0011
Juvenile Arrest	**0.5668**	0.1058	0.0619	0.1978
Prior Incarcerations	**0.8796**	0.3880	0.1082	**0.6951**
Drug Offense	0.4690	0.0156	0.4931	**0.6813**
History of Drug Use	**0.9552**	0.2261	0.3932	**0.9236**
History of Mental Health	**0.6441**	**0.7507**	0.2027	0.3564
Employed at Arrest	0.2497	**0.6509**	**0.6248**	0.2249
High School Education	0.1509	**0.7996**	**0.5389**	0.2313
Currently Married	0.1920	**0.4106**	0.2316	0.2269

Item-response probabilities > 0.5 in bold (or largest %)

Figure A.2
Fit Statistics for Latent Class Models for Females Full Sample

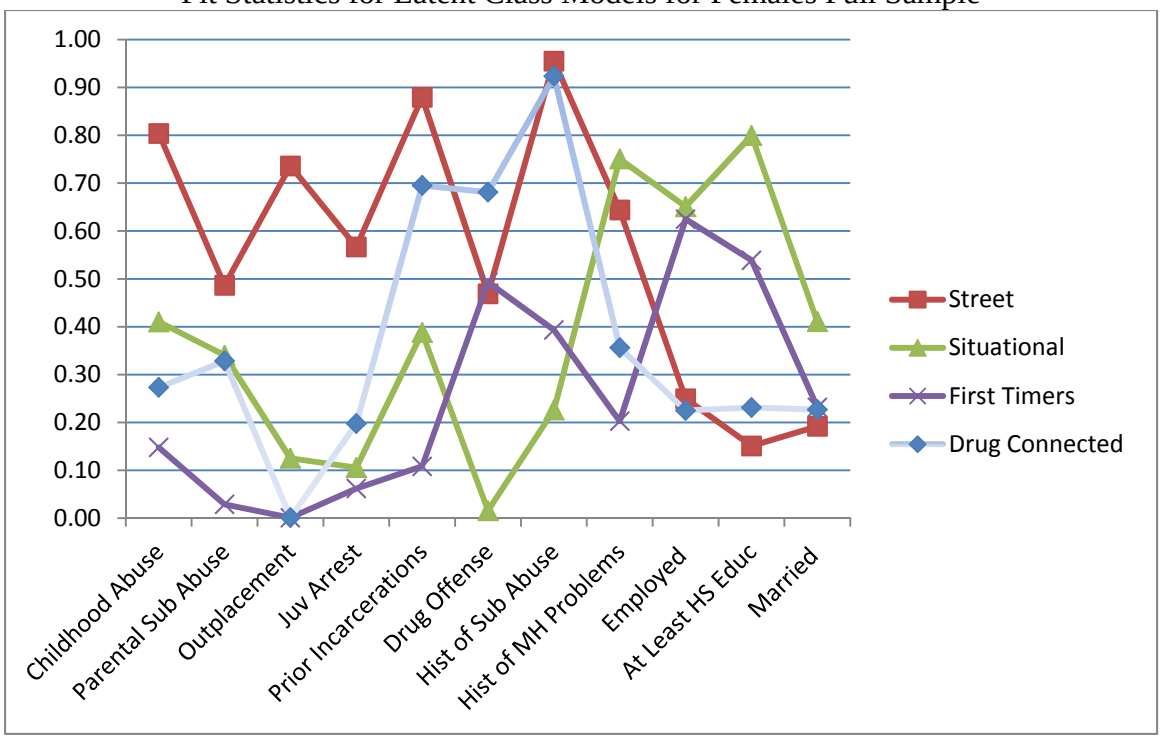


Figure A.3
Fit Statistics for Latent Class Models for Males Full Sample

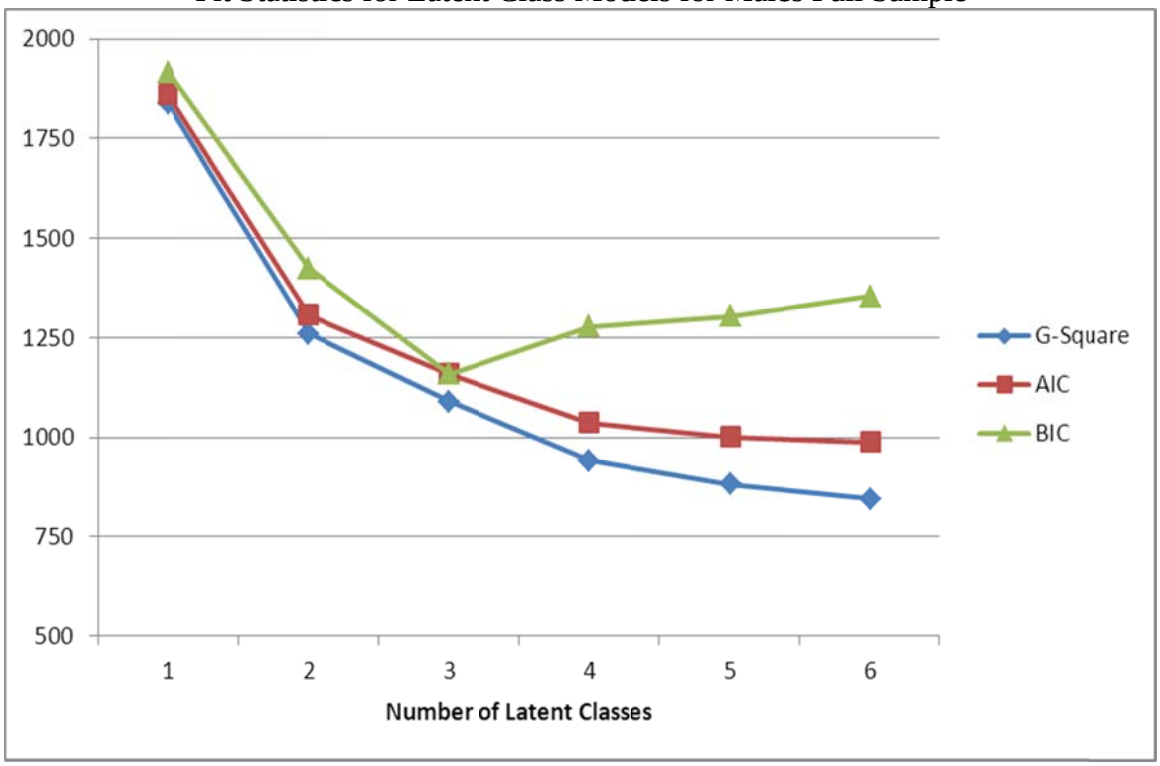


Table A.3
Fit Statistics for the Latent Classes for Males Full Sample

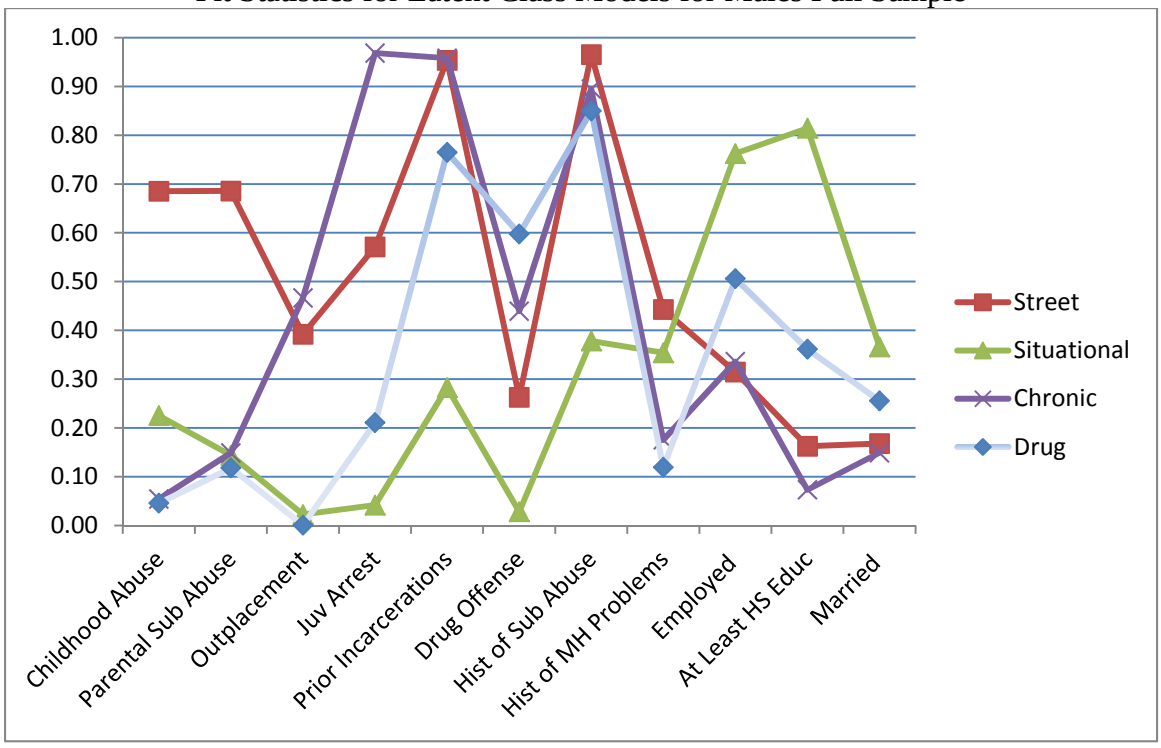
Number of Latent Classes	*df*	G-Square	AIC	BIC	log likelihood
1	2036	2370.40	2392.40	2452.99	-11066.14
2	2024	1488.94	1534.94	1661.63	-10625.41
3	2012	1251.33	1321.33	1514.11	-10506.60
4	2000	1061.44	1155.44	1414.32	-10411.66
5	1988	987.49	1105.49	1430.47	-10374.68
6	1976	949.53	1091.53	1482.62	-10355.71

Table A.4
Four Latent Class Model Male Full Sample - Endorsement of Factors

	Street	Situational Off	Chronic	Drug
Latent Class Prevalences	0.2009	0.0797	0.2253	0.494
Item-Response Probabilities				
Childhood Abuse	**0.6852**	0.2253	0.0540	0.0459
Parental Substance Abuse	**0.6856**	0.1437	0.1487	0.1180
Out of Home Placement	0.3920	0.0224	**0.4664**	0.0007
Juvenile Arrest	**0.5711**	0.0417	**0.9684**	0.2109
Prior Incarcerations	**0.9536**	0.2827	**0.9580**	**0.7650**
Drug Offense	0.2629	0.0281	0.4394	**0.5977**
History of Drug Use	**0.9654**	0.3781	**0.8947**	**0.8498**
History of Mental Health	**0.4430**	0.3540	0.1754	0.1193
Employed at Arrest	0.3145	**0.7624**	0.3358	**0.5061**
High School Education	0.1623	**0.8144**	0.0731	0.3614
Currently Married	0.1678	**0.3662**	0.1491	0.2557

Note: Item-response probabilities > 0.5 in bold (or largest %)

Figure A.4
Fit Statistics for Latent Class Models for Males Full Sample



Appendix B

Supplemental Analysis of Misconduct Models using Logistic Regression for Females and Males

Women's Logistic Regression Models

The first set of logistic regression models examined the women's pathways to prison to determine if the pathways alone had a significant impact on predicting prison misconduct while controlling for time served (see table B.1 to B.4, column 1). The first-timers pathway was less likely to have minor misconduct and total misconduct than the street pathway. The only other pathways that were significantly different were the drug connected pathway and the street pathway for minor misconduct. None of the pathways emerged as different from each other for both serious and violent misconduct. For those models, the McKelvey & Zavoina's R^2 ranged from .020 to .059, while the Efron's R^2 ranged from .042 to .099. The ROC was at acceptable levels ranging from .706 to .714.

The next set of models is the full pathway models (see table B.1 to B.4, column 2). Once additional factors were added to the model, none of the pathways remained significant. In addition, the only significant predictor for minor misconduct and all types of misconduct was age. Younger women were more likely to be involved in both types of misconduct compared to older women. For serious types of misconduct, in addition to age, D.C. offenders were more likely to be involved than federal offenders (see Table B.3, column 2). Hispanic women were also marginally more likely to be involved in serious misconduct than non-Hispanic women. Women with a history of serious violence were marginally more likely to be involved in serious misconduct. Otherwise, none of the other risk factors predicted serious misconduct. For violent misconduct, age and race were significant; white women were less likely to be involved in violent misconduct (see

Table B.4, column 2). The McKelvey & Zavoina's R^2 and the Efron's R^2 both explained more variance in the model than the previous pathways only model. The ROC was also higher for these models, ranging from .7438 .8291.

The last set of logistic regression models were the risk factor models, which do not include the pathway classification, but included the variables that created the pathways as well as the criminal history variables used in the previous models (see table B.1 to B.4, column 3). Again the indicator that was consistently significant in all of the models was age at admission. Younger inmates were more likely to be involved in misconduct across the board. Otherwise, there were only a few other predictors that predicted misconduct.

For any type of misconduct, crime of conviction was the only other important factor in addition to age (see table B.1, column 3). Women incarcerated for a drug offense or a violent offense were less likely to be involved in misconduct. For minor types of misconduct, women incarcerated for a drug offense were less likely to be involved in minor misconduct (see Table B.2, column 3). For serious misconduct, Hispanic women were more likely to be involved in misconduct. D.C. offenders were also marginally more likely to be involved in serious misconduct. Women incarcerated for a drug offense were less likely to be involved in serious misconduct. For violent misconduct, the two predictors, in addition to age, that were marginally significant were race and ethnicity (see table B.4, column 3). The McKelvey & Zavoina's R^2 and the Efron's R^2 were slightly higher for these models than both the pathways only model and the full pathways models. The ROC for these models was very similar to the full pathway models, ranging from .7448 to .8468.

The results of the logistic regression models were similar to the results of the negative binomial models in many respects, except for the models that only included the pathways to prison variables. There were only a few instances where the pathways were significantly different in the logistic regression models, whereas in the negative binomial models there were a number of instances where the pathways differed. But for both analyses, once additional factors were added to the models, the majority of the differences between the pathways disappeared. In addition, the vast majority of the variables used to create the pathways to prison were not significant when they were entered as individual risk factors. One factor that was significant in a number of the models was being incarcerated for a drug offense. Parental drug use was also significant in some of the negative binomial models, but did not emerge as significant in the logistic models. In addition, in all the models, younger women had both a higher prevalence and incidence of all types of misconduct. In contrast, the criminal history measures were not as important, nor were more distal risk factors from childhood.

Men's Logistic Regression Models

In the men's pathway only models, there were a number of differences between the pathways and only a few instances where there were no differences (see table B.1 to B.4, column 1). The results were the same for minor misconduct and any type of misconduct. The street pathway men were significantly more likely to be involved in both types of misconduct than the men in the situational offender and the drug connected pathways. The chronic offender pathway was also significantly more likely to be involved in misconduct than all of the other pathways. The last finding was that the men in the drug pathway were more likely to be involved in misconduct than the situational

offender pathway. For serious misconduct, the only pathways that did not differ were the chronic offender pathway and the street pathway (see Table B.7, column 1). For violent misconduct, there were two pathways that did not differ. Again, the chronic offender pathway and the street pathway did not significantly differ, and the situational offender pathway and the drug connected pathway did not differ. For these models, the McKelvey & Zavoina's R^2 ranged from .053 to .059, while the Efron's R^2 ranged from .042 to .100. The ROC values were close to the acceptable levels ranging from .6612 to .6979.

In the full pathway model, some of the pathways to prison remained significant even after adding other criminal history factors and socio-demographic information. The results of any type of misconduct and minor misconduct were very similar. The street pathway were more likely than the situational offender pathway to be involved in misconduct. The chronic offender pathway and the drug connected pathway were more likely to be involved in misconduct than the situational offender pathway. The chronic offender pathway was more likely than the drug offender pathway to be involved in misconduct. In addition to the pathways, several other factors significantly predicted involvement in misconduct: age, a history of serious violence, incarceration for a violent offense and incarceration in medium security prisons. Criminal history score and a history of escapes were significant in predicting minor misconduct.[122]

For serious misconduct, there were only two pathways that were marginally different. The chronic offender pathway was marginally more likely to be involved in serious misconduct than the situational offender pathway. Similar to minor and any kind of misconduct, age, criminal history score and incarceration for a violent offense also significantly predicted serious misconduct. Another important factor was that D.C.

[122] A history of escapes was marginally significant.

offenders had higher levels of serious misconduct than federal offenders. The last predictor, history of familial criminal activity, was marginally significant.

There were no significant differences in the pathways for violent misconduct. In addition to the pathways, there were only two additional factors that were important. White men were less likely to be involved in violent misconduct than minority men. Older men were also less likely to be involved in violent misconduct than younger men. The McKelvey & Zavoina's $R^2$and the Efron's R^2 both explained more variance in the model than the previous pathways only model. The ROC was also higher for these models, ranging from .7110 to .7339.

The last set of models examined the individual factors that were initially used to create the pathways to prison, as well as additional criminal history information. The majority of the indicators that were significant in the full pathways models were also significant in the risk factor models. In addition to those factors, some of the variables from the pathways were also important in predicting misconduct. More specifically, a history of abuse was significant in predicting violent misconduct and also marginally significant in predicting the three other measures of misconduct. A history of drug use was marginally significant only for any type of misconduct. Education was also important in predicting minor misconduct and marginally significant for all types of misconduct. Marital status was also important in predicting all types of misconduct and minor misconduct. Previous incarcerations and being incarcerated on a drug offense were significant for serious misconduct and any type of misconduct.[123] The McKelvey & Zavoina's R^2 and the Efron's R^2 were slightly higher for these models than for both the

[123] Conviction for drug offense was marginally significant.

pathways only model and the full pathways models. The ROC for these models were very similar to the full pathway models, ranging from .7197 to .7570.

There were both similarities and differences between the negative binomial models and the logistic regression models for the men. Overall the logistic regression models had more factors that were important in predicting misconduct than the negative binomial models. The set of models that were nearly identical were the models that only included the pathways to prison variables. For both sets of models the majority of pathways were significantly different from each other, but for the logistic models there were a few additional pathways that emerged as significant. This was also the case when additional factors were added to the models. There were more pathways that remained significantly different in the logistic regression models than in the negative binomial models. There were also additional risk factors in the logistic models that emerged as important that were not in the negative binomial models. For any type of misconduct, there were six additional factors that were significant in the logistic regression models.[124] For minor misconduct, there were two additional factors that were significant in the logistic models, but there were two other factors that were significant in the negative binomial models.[125] The following factors were not important in predicting how much serious misconduct men were involved in, but were important in differentiating whether or not they were any involved in any serious misconduct at all: DC offenders, surrender status, being incarcerated on a violent offense and medium security inmates.

[124] A history of serious violence, low security inmates, medium security inmates, high school education, married at admission, previous incarcerations. A history of escapes, a history of abuse, and a history of drug use were also marginally significant.

[125] A history of serious violence and education were significant in the logistic models; low security inmates and a history of abuse were also marginally significant. Having juvenile children and being incarcerated for a drug offense were significant in the negative binomial models but not the logistic models.

Table B.1
Female Misconduct Logistic Regression Models
Any Type of Misconduct
Odds Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	0.5450	0.8418	
First-Timers vs. Street	0.5277*	0.5781	
Drug vs. Street	0.7590	0.9534	
Situational vs. First-Timers	1.0326	1.4562	
Situational vs. Drug	0.7180	0.8829	
First-Timers vs. Drug	0.6953	0.6063	
White		0.6960	0.6864
Hispanic		1.1157	1.3596
Age at Prison Admission		0.9321***	0.9272***
D.C. Offender		3.0386	1.9614
Criminal History Score (USSC)		1.0117	0.9960
History of Serious Violence		1.0708	0.9899
History of Recent Violence		0.7051	0.6998
Voluntarily Surrendered		1.1134	0.9470
History of Escapes		0.9725	0.9100
Current Conviction for Violent Offense		0.9048	0.4912+
Parental or Sibling Criminal Activity		0.8818	0.9442
Had Juvenile Children When Arrested		0.7825	0.7466
History of Abuse			1.2328
History of Drug Use			1.6794
At Least High School Education			1.4339
Parental Drug Abuse			0.7806
Placed Outside of Home in Childhood			1.1725
Arrested as a Juvenile			1.0886
History of Mental Health Problems			1.1728
Married at Admission to Prison			0.8977
Previous Incarcerations			1.6431
Employed When Arrested			0.9248
Current Conviction for Drug Offense			0.3965**
N	338	338	338
McKelvey & Zavoina's R^2	0.020	0.129	0.173
Efron's R^2	0.090	0.165	0.197
ROC	0.6783	0.7348	0.7568

Table B.2
Female Misconduct Logistic Regression Models
Any Minor Misconduct
Odds Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	0.5734	0.8556	
First-Timers vs. Street	0.4789*	0.5565	
Drug vs. Street	0.5314*	0.6516	
Situational vs. First-Timers	1.1974	1.5376	
Situational vs. Drug	1.0790	1.3131	
First-Timers vs. Drug	0.9011	0.8540	
White		0.6584	0.6492
Hispanic		0.7783	0.9376
Age at Prison Admission		0.9345***	0.9319***
D.C. Offender		1.7436	1.2207
Criminal History Score (USSC)		1.0198	1.0037
History of Serious Violence		0.7605	0.6572
History of Recent Violence		0.8202	0.8218
Voluntarily Surrendered		1.1236	0.9811
History of Escapes		0.9422	0.8496
Current Conviction for Violent Offense		1.1914	0.7021
Parental or Sibling Criminal Activity		1.0851	1.1706
Had Juvenile Children When Arrested		0.8380	0.8205
History of Abuse			1.6320
History of Drug Use			1.4332
At Least High School Education			1.2604
Parental Drug Abuse			0.7376
Placed Outside of Home in Childhood			1.4920
Arrested as a Juvenile			1.1465
History of Mental Health Problems			1.1548
Married at Admission to Prison			0.8878
Previous Incarcerations			1.3453
Employed When Arrested			0.9844
Current Conviction for Drug Offense			0.4327*
N	338	338	338
McKelvey & Zavoina's R^2	0.026	0.139	0.182
Efron's R^2	0.091	0.170	0.196
ROC	0.6807	0.7392	0.7565

Table B.3
Female Misconduct Logistic Regression Models
Any Serious Misconduct
Odds Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	0.2804	0.5732	
First-Timers vs. Street	0.5277	0.9164	
Drug vs. Street	1.0058	1.3893	
Situational vs. First-Timers	0.5314	0.6255	
Situational vs. Drug	0.2788	0.4126	
First-Timers vs. Drug	0.5246	0.6596	
White		0.5329	0.5477
Hispanic		2.6483+	3.3646*
Age at Prison Admission		0.9009***	0.8990***
D.C. Offender		8.5779**	4.5666+
Criminal History Score (USSC)		1.0499	1.0415
History of Serious Violence		2.2170+	2.0074
History of Recent Violence		0.4218	0.4789
Voluntarily Surrendered		0.5077	0.4500
History of Escapes		1.3142	1.2920
Current Conviction for Violent Offense		1.3199	0.5799
Parental or Sibling Criminal Activity		0.7495	0.8317
Had Juvenile Children When Arrested		0.8196	0.7131
History of Abuse			0.8949
History of Drug Use			2.3395
At Least High School Education			1.2499
Parental Drug Abuse			0.6300
Placed Outside of Home in Childhood			1.1868
Arrested as a Juvenile			1.0710
History of Mental Health Problems			1.0790
Married at Admission to Prison			0.6829
Previous Incarcerations			1.3664
Employed When Arrested			1.0077
Current Conviction for Drug Offense			0.3166*
N	338	338	338
McKelvey & Zavoina's R^2	0.059	0.332	0.350
Efron's R^2	0.052	0.202	0.232
ROC	0.6863	0.8033	0.8194

Table B.4
Female Misconduct Logistic Regression Models
Any Violent Misconduct
Odds Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	0.2325	0.3206	
First-Timers vs. Street	0.6337	1.0984	
Drug vs. Street	0.6197	0.6870	
Situational vs. First-Timers	0.3669	0.2918	
Situational vs. Drug	0.3752	0.4666	
First-Timers vs. Drug	1.0225	1.5989	
White		0.3292*	0.3567+
Hispanic		2.7611	3.8302+
Age at Prison Admission		0.9002**	0.8976**
D.C. Offender		4.2297	3.3327
Criminal History Score (USSC)		1.0528	1.0583
History of Serious Violence		1.9286	1.5790
History of Recent Violence		0.5492	0.6348
Voluntarily Surrendered		0.6391	0.6250
History of Escapes		1.0828	0.9521
Current Conviction for Violent Offense		1.9660	1.1239
Parental or Sibling Criminal Activity		0.6407	0.6868
Had Juvenile Children When Arrested		1.5124	1.4280
History of Abuse			1.5514
History of Drug Use			2.9971
At Least High School Education			1.4303
Parental Drug Abuse			0.5826
Placed Outside of Home in Childhood			1.8527
Arrested as a Juvenile			1.5232
History of Mental Health Problems			0.8646
Married at Admission to Prison			0.5531
Previous Incarcerations			0.6287
Employed When Arrested			1.6315
Current Conviction for Drug Offense			0.4730
N	338	338	338
McKelvey & Zavoina's R^2	0.054	0.377	0.394
Efron's R^2	0.042	0.174	0.202
ROC	0.7003	0.8291	0.8468

Table B.5
Male Misconduct Logistic Regression Models
Any Type of Misconduct
Odds Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	0.2375***	0.4741*	
Chronic vs. Street	1.5549*	1.3936	
Drug vs. Street	0.6357**	0.8774	
Situational vs. Chronic	0.1527***	0.3402**	
Situational vs. Drug	0.3736***	0.5403*	
Chronic vs. Drug	2.4462***	1.5882*	
White		0.9463	0.9700
Hispanic		1.0515	1.0648
Age at Prison Admission		0.9443***	0.9409***
D.C. Offender		2.2988	2.1085
Criminal History Score (USSC)		1.0344**	1.0249+
History of Serious Violence		1.5194*	1.5728*
History of Recent Violence		1.2479	1.2302
Voluntarily Surrendered		0.9682	1.0497
History of Escapes		0.7352+	0.7240+
Current Conviction for Violent Offense		1.4053*	1.0679
Parental or Sibling Criminal Activity		1.0448	1.0353
Had Juvenile Children When Arrested		1.0129	1.0752
Low Security Prison		1.5161	1.8778*
Medium Security Prison		1.5591*	1.6587**
History of Abuse			0.7181+
History of Drug Use			1.4378+
At Least High School Education			0.6948*
Parental Drug Abuse			1.1874
Placed Outside of Home in Childhood			1.0564
Arrested as a Juvenile			0.9035
History of Mental Health Problems			0.9879
Married at Admission to Prison			0.6559*
Previous Incarcerations			1.5613*
Employed When Arrested			0.8068
Current Conviction for Drug Offense			0.6882+
N	1127	1127	1127
McKelvey and Zavoina's R^2	0.068	0.166	0.185
Efron's R^2	0.106	0.182	0.184
ROC	0.6870	0.7339	0.7448

Table B.6
Male Misconduct Logistic Regression Models
Any Minor Misconduct
Odds Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	0.2899***	0.5017*	
Chronic vs. Street	1.5355*	1.3716	
Drug vs. Street	0.6446**	0.8603	
Situational vs. Chronic	0.1888***	0.3657**	
Situational vs. Drug	0.4497**	0.5831+	
Chronic vs. Drug	2.3819***	1.5942*	
White		0.9399	0.9419
Hispanic		0.9567	0.9659
Age at Prison Admission		0.9416***	0.9408***
D.C. Offender		1.4362	1.3336
Criminal History Score (USSC)		1.0138	1.0071
History of Serious Violence		1.4314*	1.4697*
History of Recent Violence		1.2321	1.2177
Voluntarily Surrendered		1.1014	1.1890
History of Escapes		0.7760	0.7803
Current Conviction for Violent Offense		1.3476*	1.0386
Parental or Sibling Criminal Activity		0.9034	0.8959
Had Juvenile Children When Arrested		0.8290	0.8667
Low Security Prison		1.3752	1.5716+
Medium Security Prison		1.8292***	1.9355***
History of Abuse			0.7205+
History of Drug Use			1.4077
At Least High School Education			0.6745*
Parental Drug Abuse			1.2313
Placed Outside of Home in Childhood			0.9415
Arrested as a Juvenile			1.0602
History of Mental Health Problems			1.0142
Married at Admission to Prison			0.7144*
Previous Incarcerations			1.2757
Employed When Arrested			0.8563
Current Conviction for Drug Offense			0.7067
N	1127	1127	1127
McKelvey and Zavoina's R^2	0.058	0.154	0.168
Efron's R^2	0.074	0.135	0.146
ROC	0.6612	0.7110	0.7197

Table B.7
Male Misconduct Logistic Regression Models
Any Serious Misconduct
Odds Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	0.1947***	0.4786	
Chronic vs. Street	1.1355	1.1206	
Drug vs. Street	0.6218**	0.9611	
Situational vs. Chronic	0.1715***	0.4271+	
Situational vs. Drug	0.3132**	0.4979	
Chronic vs. Drug	1.8262***	1.1659	
White		1.2803	1.2986
Hispanic		1.2326	1.2495
Age at Prison Admission		0.9480***	0.9375***
D.C. Offender		3.4612*	3.2221+
Criminal History Score (USSC)		1.0398**	1.0347*
History of Serious Violence		1.4317+	1.5302*
History of Recent Violence		1.0361	1.0313
Voluntarily Surrendered		0.4806*	0.4674*
History of Escapes		1.0101	0.9732
Current Conviction for Violent Offense		1.4941*	1.0751
Parental or Sibling Criminal Activity		1.3770+	1.4486*
Had Juvenile Children When Arrested		1.2875	1.2949
Low Security Prison		1.1124	1.4175
Medium Security Prison		0.8646	0.9202
History of Abuse			0.7025+
History of Drug Use			1.2181
At Least High School Education			0.8890
Parental Drug Abuse			0.9366
Placed Outside of Home in Childhood			1.0365
Arrested as a Juvenile			0.7527+
History of Mental Health Problems			1.1251
Married at Admission to Prison			0.9377
Previous Incarcerations			1.9522**
Employed When Arrested			0.8430
Current Conviction for Drug Offense			0.6387+
N	1127	1127	1127
McKelvey and Zavoina's R^2	0.059	0.179	0.199
Efron's R^2	0.100	0.157	0.168
ROC	0.6979	0.7470	0.7570

Table B.8
Male Misconduct Logistic Regression Models
Any Violent Misconduct
Odds Ratios

	Class Only	Class & Risks	Risks Only
Situational vs. Street	0.2247*	0.5877	
Chronic vs. Street	1.0101	1.0070	
Drug vs. Street	0.5353**	0.8451	
Situational vs. Chronic	0.2225*	0.5836	
Situational vs. Drug	0.4198	0.6954	
Chronic vs. Drug	1.8868**	1.1916	
White		0.9943	1.0993
Hispanic		1.0895	1.0957
Age at Prison Admission		0.9518***	0.9507**
D.C. Offender		0.8371	0.8262
Criminal History Score (USSC)		1.0169	1.0125
History of Serious Violence		1.3239	1.4127
History of Recent Violence		0.9066	0.8854
Voluntarily Surrendered		0.5909	0.5896
History of Escapes		0.8436	0.8317
Current Conviction for Violent Offense		1.2896	1.2627
Parental or Sibling Criminal Activity		1.4719+	1.5293+
Had Juvenile Children When Arrested		0.8869	0.9066
Low Security Prison		0.5265+	0.6414
Medium Security Prison		0.5068**	0.5273**
History of Abuse			0.5136*
History of Drug Use			0.7442
At Least High School Education			0.8490
Parental Drug Abuse			1.2221
Placed Outside of Home in Childhood			1.5638+
Arrested as a Juvenile			0.7782
History of Mental Health Problems			1.0104
Married at Admission to Prison			0.7982
Previous Incarcerations			1.8018
Employed When Arrested			0.8936
Current Conviction for Drug Offense			0.9025
N	1127	1127	1127
McKelvey and Zavoina's R^2	0.053	0.159	0.184
Efron's R^2	0.048	0.088	0.099
ROC	0.6850	0.7360	0.7523

Appendix C

Federal Bureau of Prisons Misconduct Codes

SERIOUS TYPES OF MISCONDUCT	
Charge	**Number Code**
*Murder	100
*Assault with serious injury	101
Escape from secure facility	102
*Arson	103
*Possess dangerous weapon	104
*Rioting	105
*Encouraging others to riot	106
*Taking a hostage	107
Drugs (no longer active)	109
Refusing to take a drug test	110
Introduction of drugs (items)	111
Use of drugs (items)	112
Possessing drugs (items)	113
Sexual assault	114
Disposing item during search	115
Using mail for illegal purposes	196
Using phone for illegal purposes	197
Interfering with staff (greatest)	198
Disruptive conduct (greatest)	199
Escaping	200
*Fighting with another person	201
*Threatening bodily harm	203
*Extortion/blackmail/protecting	204
Engaging in sexual acts	205
Making sexual proposal or threat	206
Wearing a disguise or mask	207
Interfering with security device	208
Adultering food or drink	209
Possessing staff clothes	211
Engaging in group demonstration	212
Encouraging refusal of work	213
Introduction of alcohol in facility	215
Bribing official (staff member)	216
Exchanging money for contraband	217
Destroying property over $100	218
Stealing	219
*Using martial arts or boxing	220
Being in unauthorized area with opposite sex	221
Possessing intoxicants	222

Refusing alcohol test	223
*Assault without serious injury	224
Stalking	225
Possession of stolen property	226
Refusing physical exam	227
Tattooing or self mutilation	228
Sexual assault without force	229
Mail abuse, not for criminal activity	296
Phone abuse, not for criminal activity	297
Interfering with staff	298
Disruptive conduct	299
*Denotes the misconduct codes included in violent misconduct	

MINOR TYPES OF MISCONDUCT	
Charge	**Number Code**
Indecent exposure	300
Misusing authorized medication	302
Possessing unauthorized money	303
Lending for profit	304
Possessing unauthorized item	305
Refusing work or PGM assignment	306
Refusing to obey an order	307
Violating condition of furlough	308
Violating condition of community program	309
Being absent from assignment	310
Failing to work as instructed	311
Being insolent to staff member	312
Lying or falsifying statement	313
Counterfeiting or forging document	313
Participating in unauthorized meeting	315
Being in unauthorized area	316
Using unauthorized equipment	318
Using equipment contrary to instruction	319
Failing to stand count	320
Interfering with taking count	321
Gambling	324
Conducting a gambling pool	325
Possessing gambling paraphernalia	326
Contacting public without authority	327
Giving or accepting money without authorization	328
Destroying property $100 or less	329
Being unsanitary or untidy	330
Possessing a non-hazardous tool	331

Smoking where prohibited	332
Cheating on GED	333
Conducting business	334
Gang affiliation	335
Circulating petition	336
Mail abuse (not criminal)	396
Phone abuse (not criminal)	397
Interfering with staff	398
Disruptive conduct	399
Possessing unauthorized property	400
Possessing unauthorized amount of clothing	401
Malingering (feigning illness)	402
Smoking in unauthorized area	403
Using abusive or obscene language	404
Tattooing or self-mutilation	405
Using phone or mail without authorization	406
Violating visiting regulations	407
Conducting a business without authorization	408
Unauthorized physical contact	409
Mail abuse without authorization	410
Interfering with staff	498
Disruptive conduct	499

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http://www.bop.gov/policy/progstat/5270_009.pdf

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