THE IMPACT OF VIOLENCE EXPOSURE ON PSYCHOSOCIAL

OUTCOMES: HOW DO EXPOSED OFFENDERS ADAPT?

by

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ABSTRACT OF THE DISSERTATION

The Impact of Violence Exposure on Psychosocial

Outcomes: How do Exposed Offenders Adapt?

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Research has shown that traumatic events, including violence exposure, are associated with deleterious outcomes (Scarpa, 2003). While this has been studied extensively in the community, there has been very little attention to a population forced to live in an environment in which violence is common – jail. The present dissertation research examines the impact of violence exposure on a variety of psychological and behavioral variables. The research opens with three studies, two of which use a sample of ex-offenders, and concludes with a longitudinal study assessing jail inmates. The first study (Study 1) examines the effect of violence exposure on aggression in a sample of emerging adults. Results show those with more exposure to violence endorse aggressive beliefs, which leads to increased levels of aggression. In Study 2, I survey a group of males recently released from prison about their experiences with sexual assault and murder in prison and determine their association to psychiatric symptoms post-incarceration. The results provide support for the detrimental impact of prison violence on symptoms of anxiety and post-traumatic stress. Study 3 evaluates the relation between pre-

incarceration mental health problems, feelings of safety during incarceration, and victimization during incarceration in a group of formerly incarcerated males. It further examines how these variables affect psychosocial adjustment during re-entry. The results indicate all three examined variables are uniquely associated with psychosocial difficulties. The final study, Study 4, investigates experiences before, during, and after jail to examine their relation to mental health functioning and recidivism. Four hundred male and female adult inmates were recruited to participate in a 16-week study. During this time period, surveys were administered at four separate times: Wave 1) Within the first three months of admission to jail; Wave 2) Five weeks after Wave 1; Wave 3) Six weeks after Wave 2; Wave 4) Approximately one month post-release. Recidivism data was collected for all participants. Overall, the results suggest that violence exposure, both during incarceration and in the community, negatively impacts mental and behavioral health; however, exposure to violence, in jail or in the community, did not increase the likelihood of recidivism.

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have any research to examine. I hope that my research offers a starting point for organizations to assist you with the struggles of re-entry.

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General Introduction

Violence can occur in a variety of settings including the home, neighborhood, and school. It may even transpire in relatively secure environments such as prison or jail. In addition to those directly involved in the violence, many more are indirectly exposed. This is problematic because both direct and indirect forms of violence exposure increase the risk of psychological difficulties (e.g., Boxer & Sloan-Power, 2013; Malinsoky-Rummell & Hansen, 1993). Additionally, the impact of violence exposure on psychosocial functioning does not dissipate with time, even several years after the violence exposure (Boxer, Middlemass, & Delorenzo, 2009). The plurality of research on violence exposure examines community-based exposure. However, other contexts are also worth examining, especially the incarceration environment in which the rate of violence exceeds that of the community (Wolff, Blitz, Shi, Siegel, & Bachman, 2007).

Adverse outcomes associated with violence exposure

The negative sequelae associated with exposure to violence in the community have been well documented. Community violence exposure increases aggression, depression, anxiety, antisocial behavior, and post-traumatic stress (PTS; see Buka, Stichick, Birdthistle, & Earls, 2001). Similarly, research conducted with war veterans indicates that combat exposure is associated with major depression, generalized anxiety, and post-traumatic stress disorder (PTSD; Hoge et al., 2004). Unfortunately, only a handful of studies have examined the psychological impact of violence encountered during incarceration. The results are analogous to the community and combat violence findings, yet it is not known if violence exposure in

one setting (i.e., incarceration) is causally related to more severe outcomes than violence exposure in other settings (i.e., community).

The limited research investigating violence exposure during incarceration shows that it elevates risk for PTS (Hochstetler, Murphy, & Simons, 2004), anxiety (Ireland, 2005; Listwan, Colvin, Hanley, & Flannery, 2010), depression (Ireland, 2005; Listwan et al., 2010), emotional distress, aggression, and antisocial behavior (Boxer et al., 2009). Encountering violent, coercive environments in prison might also increase the risk of recidivism (Listwan, Sullivan, Agnew, Cullen, & Colvin, 2011). While research examining the impact of exposure to violence in the community has employed longitudinal methods, the work conducted on offender populations is primarily cross-sectional, constraining inferences about causality.

Violence in prison

Prison is a violent place (Irwin, 1980; Johnson, 1987). Inmates are more likely to become victims of violence in prison than in the community (Cooley, 1993). Wolff and colleagues (Wolff et al., 2007) found that male inmates self-reported physical assault victimization in prison 18 times that of males in the general population; female inmates were 27 times more likely to be victimized in prison than in the community. For males, staff-on-inmate physical violence is more common than inmate-on-inmate violence (i.e., 156 per 1,000 inmates versus 75 per 1,000 inmates); conversely, females are more likely to be victims of physical violence by other inmates than staff members (i.e., 92 per 1,000 inmates versus 51 per 1,000 inmates; Wolff et al., 2007). Physical assault is only one form of violence

inmates frequently encounter in prison; sexual assault is another violent act inmates are often confronted with in prison.

The incidence of sexual assault in prison has recently gained attention in light of The Prison Rape Elimination Act of 2003. Congress passed this Act, an attempt to curtail sexual assault in prison by gathering more information on prison rape and holding correctional facilities accountable. Studies examining the prevalence of sexual assault estimate 1.6-22% of males and 2.3-27% of females are sexually victimized in prison (Struckman-Johnson & Struckman-Johnson, 2002; Struckman-Johnson, Struckman-Johnson, Rucker, Bumby, & Donaldson, 1996; Wolff, Blitz, Shi, Bachman, & Siegel, 2006). In contrast, approximately .6-8.3% of the male general population report sexual assault victimization and 3-15% of the female general population report lifetime sexual assault victimization (see Acierno, Resnick, & Kilpatrick, 1997; Elliott, Mok, & Briere, 2004). Females are more likely to be sexually victimized by other inmates than staff members (i.e., 212 per 1,000 inmates versus 76 per 1,000 inmates), whereas the rate of sexual victimization for males is greater for staff perpetrators than other inmate perpetrators (i.e., 76 per 1,000 inmates versus 43 per 1,000 inmates; Wolff, Blitz, & Shi, 2007). The large variation in victimization rates across studies is a result of different sampling methods, inconsistencies in defining sexual assault, and disparities in the prison culture throughout institutions of assorted security levels. Nonetheless, inmates under constant watch are facing elevated rates of direct exposure to violent crimes – an experience that is likely to have profound psychological consequences.

Role of trauma and mental health in perpetrating violence

Examining violence exposure and its impact on offenders is important because those in the justice system encounter significantly more traumatic experiences than their non-criminal counterparts (Cima, Smeets, & Jelicic, 2008; Wolff & Shi, 2012). This translates into an increased risk for mental health problems and highlights the disproportionate number of mentally ill individuals represented in correctional facilities. A Bureau of Justice Statistics (2006) report estimated over half of all prison and jail inmates exhibit mental health symptoms. Psychological difficulties also elevate the risk of sexual and physical victimization by other inmates and staff members (Blitz, Wolff, & Shi, 2008; Wolff, Blitz, & Shi, 2007). Moreover, some scholars have coined the phrase, "hurt people who hurt people," to describe individuals that suffer from psychological damage following a traumatic experience and consequently, engage in violence towards others (e.g., Barrett, Mills, & Teesson, 2011). Mentally ill offenders are more likely than offenders without a mental illness to have a history of violent crime; furthermore, of those that go on to become repeat offenders, mentally ill offenders are also more likely to be violent recidivists (BJS, 2006). Offenders returning to the community with multiple traumatic experiences and mental health problems pose a serious challenge to reducing engagement in criminal behavior and successfully transitioning back to society.

Existing theoretical models explaining inmate adaptation

Research examining inmate adjustment and offender outcomes has been limited in determining the causal mechanisms responsible for mental and behavioral problems. Without longitudinal data to differentiate pre-incarceration

factors from those arising during incarceration, we are unable to determine if these mental and behavioral problems are imported into incarceration or emerge as a byproduct of the deprived incarceration environment. Some research suggests that inmate adjustment depends on an inmate's pre-incarceration experiences and characteristics, termed the importation model (see Figure 5, pg. 158; Irwin & Cressey, 1962). This includes factors such as education, race, sex, relationships, substance use, belief systems and norms, values, motivations, attitudes, and prior criminal history (e.g., Lahm, 2008; Schrag, 1961; Thomas, 1977). Conversely, others have provided support for a deprivation model that posits the incarceration environment responsible for inmate adaptation (see Figure 5, pg. 158; Sykes, 1958). This theory contends that oppressive incarceration conditions explain inmate response to imprisonment. Examples of these types of variables include crowding, segregation, lack of rehabilitation programs, and unsafe conditions (see Jiang & Fisher-Giorlando, 2002; Useem & Piehl, 2006). Research testing these two models shows support for both theories, leaving researchers unable to come to a consensus about which set of variables are responsible for inmate adjustment (see Jiang & Fisher-Giorlando, 2002). In addition, these examinations fail to consider a number of important concepts.

The bulk of scientific inquiries testing these opposing theories define inmate adaptation in terms of disciplinary infractions or institutional misconduct and do not incorporate specific mental health symptoms in the operationalization of inmate adaptation (e.g., Dhami, Ayton, & Loewenstein, 2007; Hochstetler & DeLisi, 2005; Jiang & Fisher-Giorlando, 2002). Furthermore, the models need updating, as they do

not examine exposure to violence in the community or incarceration as possible

variables influencing adjustment. Finally, the importation and deprivation models

need to be tested longitudinally in jail, a short-term environment, and extended to

include re-entry adjustment (see Figure 5, pg. 158).

State of the literature with respect to violence, mental heath, and incarceration

In the 1960s and 1970s, many researchers became interested in determining

the psychological impact of incarceration. A number of cross-sectional studies

examined the "pains of imprisonment," but the results varied (see Bukstel &

Kilmann, 1980; Porporino & Zamble, 1984). A small number of longitudinal studies

examining inmate adaptation appeared in the late 1980s and early 1990s, but the

results still did not provide a clear story. For instance, Zamble (1992) examined

long-term prisoners four times over seven years and found that inmates' emotional

states improved over time, disciplinary incidents decreased, and medical problems

related to stress also decreased over time. Zamble (1992) concluded that prison

might not be as harmful as once believed.

Conversely, Gibbs (1987) also examined inmates in a longitudinal fashion,

but found a different set of complex results. He assessed jail inmates 72 hours after

confinement and asked them to report on their current and pre-jail symptom levels

and assessed them again five days later. He found that psychological symptoms

including depression, anxiety, and obsessive-compulsive behaviors, were

significantly higher 72 hours after confinement compared to pre-incarceration

levels. However, when he returned five days later, symptom severity significantly

diminished. In addition, Gibbs (1987) found that inmates without pre-jail

psychological problems showed sharper increases in symptomology 72 hours after confinement compared to those entering with mental health difficulties. This underscores the need to adopt a transactional approach when examining inmate adjustment. The transactional approach does not assume that inmate adaptation will be the same for all inmates; instead, it takes into account the differing experiences, preferences, and reactions of all inmates and views adaptation at the individual level (Toch, 1992).

The transactional approach to inmate adaptation stresses the idea that inmates enter incarceration with varying backgrounds and each inmate will have a unique experience during incarceration (Toch, 1992). The manner in which an inmate adapts can be attributed to characteristics imported into incarceration, and/or the conditions of confinement. Studies testing the importation and deprivation model have diminished in recent years, but the use of more advanced statistical programs and analyses, in conjunction with longitudinal methods, have made it easier to answer research questions that were once a challenge. The proposed research attempts to update older importation and deprivation theories and integrate them with more recent efforts to quantify and relate violence exposure in jails and prisons to psychosocial outcomes.

Researchers have started to consider violence exposure as a potential factor related to offender outcomes, although there has not been any longitudinal research thus far. In a study with formerly incarcerated males, Boxer et al. (2009) found that exposure to violence during incarceration was related to aggressive and antisocial behavior, after controlling for community violence exposure and other demographic

factors. A separate group of researchers examined a group of male parolees and found that pre-prison violence exposure indirectly related to symptoms of post-traumatic stress and depression through victimization experiences inside prison (Hochstetler et al., 2004). These studies suggest that the setting in which violence exposure occurs is important and that prison or jail violence exposure plays a vital role in adjustment after release. The complex relation between violence exposure in the community and violence behind bars deserves further investigation. To date, no longitudinal research exists examining the independent and interactive effect of violence exposure in the two settings, incarceration and the community, on symptoms of psychiatric disorders.

Overview of the present dissertation research

The overarching goal of this dissertation is to demonstrate the damaging effect of violence exposure on mental health and behavior, particularly in an offender population. The research begins with a cross-sectional study using subjects from the general population to examine the association between community violence exposure and aggression. The next two studies utilize parolees and ex-offenders. The first study with parolees queried males recently released from prison about their experiences with violent crime during incarceration to determine their association with current levels of psychological functioning. The following study with ex-offenders evaluated the role of severe victimization during incarceration, pre-incarceration mental health problems, and feelings of safety during incarceration on current psychosocial measures. The dissertation concludes with a longitudinal study using jail inmates. This study investigates the role of violence

exposure, both inside and outside incarceration, on mental health symptoms, behavioral outcomes, and recidivism (see Figure 5, pg. 158).

STUDY 1: COMMUNITY VIOLENCE PROJECT

The first study in this dissertation project used a sample of emerging adults not currently involved in the justice system to assess the role of community violence exposure and aggression preferences in predicting general aggressive behavior. I further examined the mediating role of beliefs supporting the use of aggression in both relationships. This study set the stage for subsequent dissertation projects by providing a glimpse into the detrimental impact of violence exposure in a relatively low-risk sample.

Introduction

The transition to adulthood, or "emerging adulthood," is characterized by increased risk-taking, aggression, and violence (Arnettt, 2000; Marcus, 2009; Scarpa et al., 2002). One documented risk factor for aggression is exposure to violence (Scarpa, 2003). Rates of exposure to community violence, particularly serious violence-related events, are relatively high, even for low-risk samples (i.e., 76% victims of violence; 92% witnessing violence; Scarpa et al., 2002). The great potential for discontinuity during the emerging adulthood period (Arnett, 2000; Schulenberg, Maggs, & O'Malley, 2003) and the ubiquitous nature of violence exposure (Scarpa et al., 2002) means that research on violence in this population can be fruitful for advancing developmental theory. In this study, I examined the effects of violence exposure on aggression in emerging adults and the processes through which this occurs.

Aggression has been dichotomized as instrumental or expressive, and aggressive individuals have been conceptualized as showing one form or the other predominantly (Archer & Haigh, 1997; Campbell, Muncer, & Coyle, 1992). Instrumental aggressors seem to process social information differently than do expressive individuals, and engage in greater physical aggression compared to expressive aggressors and to non-aggressive individuals (Alexander, Allen, Brooks, Cole, & Campbell, 2004; Crick & Dodge, 1996). However, trait-like variations in the instrumentality and expressivity of aggression typically have not been studied jointly with the social-cognitive substrates of aggressive responding. The present study explores the extent to which violence exposure relates to aggression through impacts on beliefs about the acceptability of aggressive responding, and how those beliefs might act in accordance with preferences for the instrumental use of aggression in the expression of aggressive behavior.

The majority of research conducted on this topic has focused on the association between exposure to violence and negative psychosocial outcomes (Scarpa, 2003), without examining the process through which this occurs (Kuther & Wallace, 2003). Some scholars have proposed theories that suggest cognitive processes are responsible for the development of aggressive behavior, particularly in the face of repeated violence exposure (e.g., Anderson & Bushman, 2002; Boxer et al., 2008; Guerra & Huesmann, 2004; Kliewer et al., 2006; Ng-Mak, Steuve, Salzinger, & Feldman, 2002). One specific social-cognitive function that has been implicated directly in the development and manifestation of aggressive response styles over time is the *normative belief* – that is, an individual's belief regarding the

appropriateness or normativeness of aggressive behavior as a response to provocation specifically or as a broader behavioral style generally (Huesmann & Guerra, 1997). Guerra, Huesmann, and Spindler (2003) found that over time, children exposed to more neighborhood violence engaged in more aggressive behavior and developed normative beliefs more supportive of aggression; additionally, normative beliefs mediated links between violence exposure and aggression. However, these associations have not been tested in a slightly older group of emerging adults.

In this study, I collected data from a population of emerging adults to examine two key issues: First, what are the effects of violence exposure on aggression and how do beliefs about the acceptability of aggressive responding account for this relationship? Second, how do preferences for aggression predict general aggressiveness as a result of aggressive social cognitions?

Method

Participants

Participants in this study were 250 undergraduates enrolled in an introductory psychology course at a university in the northeastern US (mean age = 20.60 years, SD = 4.83, range = 18-57; 16% Black/African American, 17% Hispanic/Latino, 21% White/Caucasian, 29% Asian, 17% other). The sample was primarily female (n = 172) with diverse backgrounds. Most subjects were living in or near a heavily urbanized metropolitan community in the northeastern United States; the remaining subjects were living in nearby municipalities with similar degrees of urbanization.

Measures

   Exposure to violence. I used a well-established self-report measure to examine exposure to violence in the home and neighborhood (Richters & Saltzman, 1990). The Survey of Exposure to Community Violence contains 17 questions inquiring about a wide range of violence an individual might be exposed to as a witness or victim (e.g., "In the last year: Have you seen somebody get shot?"; "In the past year: Have you been hit or pushed by someone?"; α = .85). Participants responded yes/no to each question pertaining to exposure in the past year; individuals who indicated yes gave an approximate frequency of exposure (e.g., yes, a few times).

   General aggressiveness. General aggressiveness was measured via a subscale of the Adult Self-Report (ASR; Achenbach & Rescorla, 2003). Participants were asked to think about the past six months and used a three-point scale (very true or often true… not true) to respond to 20 statements (α = .79) describing aggressive behavior.

   Beliefs about aggression. Participants completed the Normative Beliefs About Aggression Scale (NOBAGS; Huesmann & Guerra, 1997), which measures beliefs about the appropriateness of aggressive responding. The measure contains 20 short aggressive scenarios (α = .88) in which participants must rate the appropriateness of the response using a four-point scale (It's really OK… It's really wrong).

   Aggression preferences. Preference for the instrumental or expressive use of aggression was measured using a shortened version of the Expressive-Aggression Questionnaire (EXPAGG; Campbell, Muncer, McManus, & Woodhouse, 1999).

Participants used a 5-point likert scale to rate the degree to which they agreed or disagreed with 16 aggressive statements (α = .85). A ratio was created during analysis using the method suggested by the scale authors in which scores greater than one indicate preference for instrumental over expressive use of aggression (Campbell et al., 1999).

Procedures

All procedures were reviewed and approved by the university institutional review board overseeing the investigation. Participants were undergraduates attending a metropolitan-area public university in the northeast. They were required to complete a certain number of research credits in order to receive their final grade for an introductory psychology course. Participants completed a 30-minute online questionnaire examining exposure to violence, general aggressiveness, beliefs about aggression, and aggression preferences. The survey could be completed on campus or off campus, at a convenient time for the participant. Upon completion, participants received credit for their participation that counted towards their total research credits needed to complete the course.

<div align="center">Results</div>

Descriptive Analyses

Descriptive statistics on all variables used in the analysis are provided in Table 1 (pg. 125). Over three-fourths of the sample reported some form of exposure to violence in the home or neighborhood (84%; n=210). When converted to nominal groups, 19.2% (n=48) preferred instrumental aggression, 71.2% (n=178) were expressive aggressors, and 9.6% (n=24) did not have an aggression preference. The

variable general aggressiveness was transformed using a reciprocal or inverse

procedure in order to reduce the extreme positive skew. This transformation is

reflected in Table 1 (pg. 125); all other variables approximated a normal

distribution and did not require transformation.

Exposure to violence and general aggressiveness

Exposure to community violence correlated positively with general

aggressiveness (r = .41, p < .001), as well as beliefs approving of aggression (r = .14,

p < .05). As Figure 1 (pg. 154) illustrates, I conducted a mediation analysis and found

that beliefs supporting the use of aggression partially mediated the relation between

exposure to violence and general aggressiveness (Sobel test = 2.11, p < .05).

Additionally, ethnicity did not moderate the relation between exposure to violence

and aggression (β = -.05, p > .05).

Aggression preferences and general aggressiveness

The aggression preferences ratio correlated positively with aggression (r =

.21, p ≤ .001), as well as beliefs approving of aggression (r = .44, p < .001). When

separated by gender, the aggression preferences ratio for males remained positively

correlated with aggression (r = .33, p ≤ .001) and beliefs approving of aggression (r

= .40, p < .001). However, for females, the ratio was not significantly correlated with

aggression (r = .10, p > .05), but the ratio correlated positively with beliefs

approving of aggression (r = .41, p < .001) The next mediation analysis explored the

impact of endorsing beliefs supporting the use aggression on the relation between

aggression preferences and general aggressiveness. There was a significant initial

relationship between aggression preferences and aggression that was non-

significant after controlling for beliefs supporting the use of aggression indicating

greater endorsement of beliefs that legitimize aggression serves as mediator in the

relation between preference for instrumentality and general aggressiveness (Sobel

test = 4.49, *p* < .001; see Figure 2, pg. 155). This relationship was particularly related

to males (*p* ≤ .05), but not significant for females (*p* > .05).

Discussion

The results suggest that beliefs about the appropriateness of aggressive

responding are critical for understanding more about the development of

aggression in emerging adults. It has been reported that individuals with greater

levels of violence exposure tend to be more aggressive (Scarpa et al., 2002). What is

less clear are the channels through which this process occurs. The results of this

study suggest that exposure to violence promotes greater endorsement of

aggressive beliefs, thereby increasing general aggressiveness. The finding that

ethnicity did not serve as a moderator in the relation between exposure to

community violence and aggression highlights the universal impact of this

phenomenon.

The results of my study also demonstrate how beliefs supporting aggression

can account for heightened aggression in individuals who prefer instrumental to

expressive aggression. Instrumental individuals process social information

differently by endorsing more aggressive beliefs, resulting in an increase in

aggression. This mediating relationship was only found in males, which is consistent

with the idea that males are generally instrumental aggressors (Owusu-Banahene &

Amedahe, 2008). Women are typically expressive aggressors; thus, they may

process social information differently than males (Owusu-Banahene & Amedahe, 2008).

However, a few limitations should be noted. This study was cross-sectional; thus, without temporal ordering, we are unable to infer causality. Subsequently, the results are limited to statistical mediation. Notwithstanding these limitations, this study demonstrates the potential for a broader understanding of the development of aggression that incorporates trait-like preferences (i.e., instrumentality versus expressivity) as well as contextually-sensitive social-cognitive mechanisms (i.e., learned beliefs about the appropriateness of aggression).

STUDY 2: PRISON EXPERIENCE PROJECT

The first project expanded our knowledge of the deleterious outcomes associated with violence exposure, but utilized a relatively low-risk sample. Moreover, aggression was the only outcome variable examined. The next study assessed a group of male parolees recently released from prison to evaluate the role of exposure to specific types of violence during incarceration on psychological functioning after release.

Introduction

Violence is common in prison (Irwin, 1980). Several studies have reported the rate of victimization to specific crimes while in prison (e.g., McCorkle, 1993; Struckman-Johnson & Struckman-Johnson, 2000; Wolff et al., 2007). Relatively less research has focused on witnessing violence during incarceration despite community studies, which show that the type of exposure may play a role in the severity of symptoms (e.g., Hughes, 1988). Victims experience more psychological

difficulties following exposure than witnesses (e.g., Muller, Goebel-Fabbri, Diamond, & Dinklage, 2000; Wolfe, Crooks, Lee, McIntyre-Smith, & Jaffe, 2003); however, less severe forms of violence exposure such as hearing about violence can also be detrimental to mental health (Scarpa, Hurley, Shumate, & Haden, 2006). The focus of the current investigation was to examine the possible relation between exposure to different forms of violence during incarceration, specifically sexual assault and murder, and elevated levels of mental health symptoms; the study further investigated the way in which a participant was exposed to the violence and how this related to differences in mental health outcomes.

Previous research examining the impact of violence exposure during incarceration on mental health symptoms is limited by the use of an all-inclusive violence exposure measure (Listwan et al., 2010). This constrains inferences on the effects of specific acts of violence on measures of mental health. The current study analyzed the impact of exposure to sexual assault and exposure to murder during incarceration. I selected these two forms of violence because of the nonexistent literature on exposure to murder, and the Prison Rape Elimination Act that has brought awareness to the sexual assault problem in prisons. Without much knowledge on the effects of exposure to murder and sexual assault during incarceration, we must turn to community studies to shed some light.

Exposure to murder can take a substantial toll on mental health. The limited research on exposure to a murder has primarily focused on witnessing a murder during childhood or among war veterans. Children who have witnessed a murder suffer from symptoms of post-traumatic stress (e.g., Pynoos & Eth, 1984); one study

on young adults found increases in depression and drug use after witnessing someone being badly injured or killed during childhood (Schilling, Aseltine, & Gore, 2007). Similarly, war veterans experience depression, anxiety (Hoge et al., 2004), and post-traumatic stress after viewing and/or participating in deadly violence (Hoge et al., 2004; Maguen et al., 2010). Currently, no known studies have asked inmates about their exposure to murder during incarceration and reported the effects separate from an overall violence exposure score.

There has been slightly more attention on the effects of sexual assault victimization, including some contributions to the prison literature. Victims of sexual assault in the general population report problems with depression (Burnam et al., 1988), anxiety (Kilpatrick et al., 1985), fear (Kilpatrick, Veronen, & Resick, 1979), suicidal thoughts or attempts (Kilpatrick et al., 1985), and substance use (Burnam et al., 1988). The scant literature on the effect of exposure to sexual assault during incarceration found that victims reported increased levels of fear (Lockwood, 1980; Sacco, 1982), depression (Fagan, Wennerstrom, & Miller, 1996), anxiety (Fagan et al., 1996; Lockwood, 1980), compromised safety (Wolff & Shi, 2011), suicidal thoughts and attempts (Fagan et al., 1996; Lockwood, 1978; Struckman-Johnson & Struckman-Johnson, 2006), post-traumatic stress symptoms (Fagan et al., 1996), and somatic problems (Sacco, 1982). These unfavorable outcomes present challenges to successful re-entry (Boxer et al., 2009) and call attention to the insufficient knowledge of the impact of exposure to sexual assault and murder during incarceration.

The current study targets gaps in the literature to examine specific, under-researched acts of violence in prison and their association to psychiatric symptoms. I hypothesized that those exposed, in any way, to a sexual assault during incarceration would have significantly greater anxiety, depression, and PTS symptoms than those not exposed to sexual assault during incarceration. Likewise, I hypothesized greater anxiety, depression, and PTS symptoms in those exposed, in any form, to a murder during incarceration compared to those not exposed to a murder. I further examined exposure during a recent prison stay and hypothesized that those with more severe exposure would have greater anxiety, depression, and PTS, accounting for pre-prison trauma.

Method

Participants

Participants in this study were 69 males recently released from prison and living in residential programs located in the Northeast. Residential programs were part of a state parole board initiative to facilitate transitions from prison for selected parolees. The sample was diverse (64% Black/African-American, 20% Hispanic/Latino, 16% White/non-Hispanic; mean age = 36 years, SD = 10 years, range = 20-66). Participants had extensive involvement in the justice system in terms of number of arrests (mean = 9.45, SD = 10.16, median = 8, range = 1-79 arrests) and convictions (mean = 5.44, SD = 6.02, median = 4, range = 1-46 convictions). Mean prison time served across all participants was 3.49 years (median = 1.25, SD = 5.64, range = .33-31 years). With the exception of one participant interviewed at the start of his second month of release, all subjects were

interviewed during the first month of release from prison. Analyses were conducted with and without the participant who exceeded this time frame (interviewed in second month of release) and no differences were found.

Measures

     Exposure to severe prison violence. Participants responded to questions measuring their exposure to sexual assault and murder during their most recent prison stay and a prior prison stay. The measure was taken from earlier work (Boxer et al., 2009) highlighting the association between prison violence exposure and poor psychological adjustment in formerly incarcerated individuals. Participants responded yes/no to their exposure to the two forms of violence and then indicated the way in which they were exposed.

     Responses from this measure were used to create two types of indicators used for inferential analyses on the effects of exposure to murder and sexual assault: 1) Dichotomous variables for any form of exposure to sexual assault or murder during any prison stay (i.e., 0 = no exposure to murder, 1 = exposure to murder; 0 = no exposure to sexual assault, 1 = exposure to sexual assault). 2) Two ordinal variables representing an exposure hierarchy for sexual assault and murder during a recent prison stay, with greater values indicating more severe forms of exposure. The range of the variable for sexual assault was 0-2, with 0 = no exposure ($n = 56$, 81%), 1 = indirect exposure ($n = 5$, 7%), and 2 = direct exposure ($n = 8$, 12%). Indirect exposure included word of mouth, hearing it recorded after the event on an audio recording device, and seeing it recorded at a later time via a video recording device; direct exposure included hearing or seeing it live and victimization.

The same hierarchy was used for murder; the range for this variable was also 0-2. Most participants had not been exposed to murder during a recent prison stay, 0 = no exposure (*n* = 59, 86%), but a few had been exposed indirectly, 1 = indirect exposure (*n* = 3, 4%), and some directly, 2 = direct exposure (*n* = 7, 10%). Participants were not given the option to indicate exposure to murder via victimization, due to the impossible scenario. This variable focused on recent exposure because I wanted to expand on prior work (Boxer et al., 2009) and investigate the impact of specific, more severe forms of violence on mental health during a period that would be most salient to participants, thereby increasing the accuracy of recall.

Mental Health Measures. Participants completed the following measures assessing their current mental health:

1) Depression. I assessed the depression subscale (e.g., crying, loneliness; 12 items; α = .85) of the *Adult Self-Report* (Achenbach & Rescorla, 2003) to determine the level at which participants were experiencing symptoms of depression. Respondents used a 3-point scale (0=not true, 1=somewhat true, 2=very true) to rate how closely each item described their adjustment over the prior six months. A raw score was calculated using procedures developed by the scale authors to form meaningful, internally-reliable estimates of depression symptoms listed in the DSM-IV. Higher scores represent greater levels of depression symptoms.

2) Anxiety. The anxiety subscale (e.g., nervous, tense; 7 items; α = .77) of the *Adult Self-Report* (Achenbach & Rescorla, 2003) was examined to determine the level at which participants were experiencing symptoms of anxiety. Participants

used the same 3-point scale to describe their adjustment as the depression subscale. A raw score was calculated using the same procedures above in the depression subscale to create a DSM-IV estimate of anxiety whereby higher scores represent greater levels of anxiety.

3) Post-traumatic Stress. Participants completed the PTSD Checklist (PCL; Weathers, Litz, Herman, Huska, & Keane, 1993), a self-report measure that assesses the degree to which participants are experiencing symptoms of post-traumatic stress disorder following a traumatic event. Participants used a 5-point scale to indicate how much they experienced 17 different problems (e.g., "Repeated disturbing memories, thoughts or images of a stressful experience from the past?") during the past month. Scores were computed as the mean of all 17 items, with higher scores indicating greater post-traumatic stress ($\alpha = .92$). An important distinction should be made between post-traumatic stress (PTS) and post-traumatic stress disorder (PTSD). Individuals with PTS experience an assortment of PTSD symptoms, but do not meet the criteria for a clinical diagnosis in terms of the necessary number of symptoms for all three clusters as outlined in the DSM-IV. Those that do meet the DSM-IV criteria for over a month are described as having PTSD.

Control Variable: Trauma History. In order to control for other lifetime traumatic experiences outside of prison that may account for some of the variance in the dependent variables, participants responded to the Trauma History Screen (Carlson et al., 1996). Respondents answered yes/no to experiencing 13 traumatic events (e.g., "Has this event ever happened to you: A really bad car, boat, train, or

airplane accident?"). Scores were computed as the sum of all 13 items with higher scores denoting exposure to more traumatic events (α = .70).

Procedures

Procedures were reviewed and approved by the university institutional review board overseeing the investigation and the facilities referring participants to the project. Participants were recruited from state parole board programs at three residential sites serving offenders re-entering the community. Site staff shared information about the project with potential participants. Standing appointment times for interviews were arranged with each site, and site staff managed sign-up lists for potential participants. Interviews were scheduled for times during which large groups of participants could be available (e.g., after group meetings) and held in private spaces on-site. Data were collected during individual interview sessions following informed consent. Interviews were presented on laptop computers running the MediaLab software program (Empirisoft, 2008). Research assistants were present to provide aid with data entry or question comprehension; otherwise, they positioned themselves away from the participants to maintain the privacy of the protocol. Interviews lasted about 60-90 minutes. Upon completion, participants received a US Postal Service money order in the amount of $25.

<div align="center">Results</div>

Descriptive Analyses

Exposure of any form to sexual assault or murder during any period of incarceration was 26.1% for homicide and 26.1% for sexual assault. Descriptive

statistics on the mental health and trauma variables used in the analysis are

provided in Table 2 (pg. 126).

Differences Between Exposed/Not Exposed Groups

To examine the impact of severe prison violence exposure on depression,

anxiety, and post-traumatic stress symptoms, I conducted a series of t-tests. I

utilized an alpha of .10 during analyses to conserve Type II error. Table 3 (pg. 127)

displays the results of the t-tests. Those exposed to murder and/or sexual assault

during any prison stay experienced significantly greater levels of post-traumatic

stress and anxiety than those not exposed, but the exposed/not exposed groups did

not significantly differ with respect to symptoms of depression. Observed effect

sizes for post-traumatic stress and anxiety were in the medium range per Cohen's *d*

(Cohen, 1988).

Mental Health Analyses Using Hierarchical Exposure

I next conducted a multivariate analysis of covariance (MANCOVA) for both

exposure hierarchies – one for sexual assault and one for murder (see Table 4, pg.

128). I wanted to examine the way in which participants were exposed to sexual

assault and murder during a recent prison stay and the impact this had on

symptoms of anxiety, depression, and PTS. Pre-prison lifetime trauma history was

included as a covariate. I further examined group differences using planned

contrasts in which the reference group was the "no exposure" group.

The multivariate test for group differences in the murder variable was

significant, Wilks's λ = .80, F (6, 126) = 2.53, *p* = .02; however, univariate ANCOVAs

were not significant for any of the three dependent variables: depression, anxiety, or

PTS. Planned comparisons did not reveal significant differences between the three groups after controlling for pre-prison trauma.

The multivariate test for group differences in the sexual assault variable was significant, Wilks's λ = .84, F (6, 126) = 1.92, p = .08, and univariate ANCOVAs revealed significant differences for anxiety and PTS. The ANCOVA for depression was not significant. Planned comparisons showed that the direct exposure group had significantly higher levels of depression, anxiety, and PTS than the no exposure group, controlling for pre-prison trauma. The indirect exposure group had significantly higher levels of anxiety compared to the no exposure group after accounting for pre-prison trauma history. Effect size estimates indicated by partial η^2 values suggest modest effects.

Discussion

The results of this study with respect to symptoms of anxiety, depression, and PTS are consistent with prior work that shows the deleterious mental health outcomes associated with prison violence (e.g., Boxer et al., 2009; Hochstetler et al., 2004; Ireland, 2005; Listwan, et al., 2010). However, it was surprising that symptoms for all three measures of mental health did not increase in participants with general exposure or increasing severity of exposure to sexual assault or murder. This could be the result of a measurement issue or an unwillingness to report true feelings of depression, anxiety, and PTS. These unexpected results highlight the need to examine discrete forms of violence in relation to specific mental health disorders because each form of violence uniquely affects specific symptoms.

It is also worthwhile to draw attention to the percentage of individuals in my sample meeting clinical criteria for depression, anxiety, and PTSD. Despite null results for the relation between exposure to violence and depressive symptoms, 15% of the sample met clinical criteria per the DSM-IV for depression. In the general US population, about 7% of adults suffer from depression (Kessler, Chiu, Demler, & Walter, 2005). Approximately 22% of my sample met clinical criteria per the DSM-IV for anxiety, which is slightly higher than the 18% of adults in the general population that suffer from anxiety (Kessler et al., 2005). But even more bothersome was the 14.5% of my sample that met clinical criteria for PTSD. This proportion is staggering when compared to the general population where PTSD of this magnitude affects 3.5% of the population (Kessler, et al., 2005). The prevalence rate of PTSD in combat veterans, a widely studied population affected by PTSD, is approximately 14-17% which makes my population comparable to those returning home from war (e.g., Hoge, Terhakopian, Castro, Messer, & Engel, 2007; Schell & Marshall, 2008). The idea that the experience of incarceration can have similar psychological effects as war is very troubling and likely to have powerful consequences for those re-entering society.

The current study is not without limitations. This study was cross-sectional in nature; consequently, I am unable to make causal inferences regarding the effect of exposure to prison violence on symptoms of mental health. While it is possible that prison violence leads to mental health difficulties, it is also likely that deficits in psychological functioning, prior to prison, place individuals at increased risk for exposure to violence. Individuals may become distressed and seek mental health

treatment prior to encounters with violence in prison, which may also contribute to my findings. The inconclusive directional and/or bi-directional nature of this relationship underscores the critical need for longitudinal research in this area. Additionally, my sample consisted entirely of males; however, females are also exposed to violence during prison and have unique mental health needs (Dennehy, 2007). Finally, although I was able to document significant effects on mental health of any exposure to sexual assault or murder, I was not able to observe similarly robust effects using finer-grained exposure categories. Subsequent studies should recruit larger samples to increase power for examining the impact of different forms of exposure.

Many inmates will eventually be released from prison into the community. In 2010, the rate of Americans on parole was 357 per 1,000 residents, one of the highest in decades (Bureau of Justice Statistics, 2011). What happens inside of prison will play a pivotal role in the future of these inmates and how they handle the outside world. The present study suggests that those exposed to violence during incarceration may have difficulty adjusting post-release because of related mental health problems.

STUDY 3: COMMUNITY RETURN STUDY

The next study further investigated exposure to violence during incarceration on psychosocial outcomes, but also considered the impact of feelings of safety during incarceration and the role of pre-incarceration mental health problems on current psychological functioning. This study, while cross-sectional,

provides the first test of the importation and deprivation theories in the dissertation research conducted thus far.

Introduction

It is well known that traumatic events increase the risk for psychological problems (e.g., van der Kolk, 1987). Some interpersonal traumas such as sexual and physical assault have been shown to have a cumulative effect on post-trauma symptomology including anxiety, depression, and dissociation (Follette, Polusny, Bechtle, & Naugle, 1996). Yet individuals may encounter additional traumas outside of victimization experiences that place them at-risk for mental and behavioral problems. Each risk factor makes an individual incrementally more vulnerable to psychosocial difficulties. Possessing multiple vulnerabilities may yield severe consequences, especially for those involved in the criminal justice system. In this study, I examine the following three vulnerabilities within the context of importation and deprivation theories (see review of these theories in the general introduction) and determine their relation to psychosocial outcomes in a group of male ex-offenders: feelings of safety while incarcerated, pre-incarceration mental health problems, and victimization during incarceration.

Prior research has examined each of the three vulnerabilities assessed in this study separately and linked them to a host of negative outcomes. For instance, inmates that fear the incarceration environment show more psychological disturbances than those who are less afraid (McCorkle, 1993). This places a large number of inmates at risk for mental health problems because one study found that 45% of inmates felt somewhat unsafe in prison (McCorkle, 1993). Moreover,

inmates victimized during incarceration feel significantly less safe in prison than those without direct victimization experiences (O'Donnell & Edgar, 1999). It appears that some risk factors, or vulnerabilities, may be linked. In particular, the relation between variables imported into incarceration and those derived from the incarceration environment deserve further examination.

Mental health problems imported into the incarceration environment may play a role in the adjustment difficulties inmates experience. For example, inmates reporting psychological problems including depression, anxiety, and PTSD tend to feel less safe than those without these mental disorders (Wolff & Shi, 2009). Mentally ill inmates are also at-risk for becoming victims of violence during incarceration. Wolff and colleagues found that male inmates with a mental disorder are 1.6 times more likely to be physically victimized and 2.8 times more likely to be sexually victimized by another inmate than their non-disordered counterparts (Blitz, Wolff, & Shi, 2008; Wolff, Blitz, & Shi, 2007). The danger of developing or possessing one of these vulnerabilities is high – research has found increased rates of recidivism for mentally ill offenders as well as those that perceive the incarceration environment as threatening (Listwan et al., 2011).

The present study expands on previous research to examine the complex relation between pre-incarceration mental health problems, feelings of safety during incarceration, and victimization during incarceration. I was interested in determining how these variables affect psychosocial adjustment during re-entry. It is plausible that a number of offenders have multiple, if not all, of these risk factors and that the interaction of multiple vulnerabilities may account for psychosocial

problems that persist well past leaving the threatening incarceration environment.

My examination of these variables also allowed for a test of the importation and

deprivation theories. Pre-incarceration mental health problems represent imported

characteristics, while feelings of safety and victimization during incarceration are

factors derived from the incarceration environment. I predicted that the interaction

of importation and deprivation variables would generate the highest levels of

psychopathology.

<div align="center">Method</div>

Participants

Participants in this study were 100 formerly incarcerated males in the

northeastern US (mean age = 38.33 years, SD = 10.41, range = 19-65; 84%

Black/African American, 9% Hispanic/Latino, 5% White/Caucasian, 1% Asian, 1%

other) recruited from two local organizations. The first organization specializes in

reentry services for recently-released offenders. They offer a variety of services

including case management, counseling, and assistance with preparing and finding a

job. The second organization assists individuals with a history of incarceration in

finding educational opportunities and returning to school. The majority of

participants (97%) had a felony conviction on record. Most participants were not

currently under criminal justice supervision via probation or parole (77% not on

probation; 69% not on parole) at the time of the study. Participants' involvement in

the justice system was diverse in terms of total time spent incarcerated (mean =

6.40 years, SD = 7.60, range = 0-36.90 years). Most subjects were living in or near a

heavily urbanized metropolitan community.

Measures

       Severe victimization during incarceration. Participants responded to 7

questions measuring victimization to serious forms of violence during any time-

period of incarceration. These questions were drawn from a larger scale, the

National Violence Against Women and Men Survey (NVAWMS; Tjaden & Thoennes,

2000), which has been adapted and used to measure sexual and physical

victimization in prisons (e.g., Wolff & Shi, 2009). Participants responded yes/no to

each question; mean scores were computed and used during analyses with higher

scores indicating more victimization (KR20 = .79).

       Feelings of safety while incarcerated. Participants responded to 15 questions

assessing how safe they felt in certain areas of the institution (e.g., the yard, your

cell, the shower, etc.) and from specific harms while incarcerated including: being

hit, punched, or physically attacked by other inmates, having property stolen or

damaged, having staff use physical force against inmates, being sexually assaulted

by staff/inmates, gang violence, being pressured into performing sex acts on other

inmates, and HIV or hepatitis infection. The questions regarding safety in specific

areas were drawn from previous work examining patterns of victimization and

feelings of safety in prisoners (Wolff & Shi, 2011). The remaining harm questions

were adapted from a measure created by the Federal Bureau of Prisons, the *Prison*

Social Climate Survey (Camp, 1999), and were also utilized in prior work by Wolff

and colleagues (Wolff & Shi, 2011). Respondents used a Likert scale ranging from 0

= *very safe* to 5 = *very unsafe* to indicate how safe they felt during any period of

incarceration. Scores were computed as the mean of all 15 items with higher scores denoting greater unsafe feelings during incarceration (α = .93).

Pre-incarceration mental health problems. I asked participants three questions to assess their mental health prior to incarceration (KR20 = .70). First, I asked them if they had or thought they had any kind of mental, emotional, or "nerve" problems before incarceration. Next I asked participants if they had been in counseling or psychotherapy prior to incarceration. Finally, I asked participants if they took any prescribed medications for "nerves or mental or emotional problems" before being incarcerated. Participants who gave a positive response to at least one of the three questions were coded as 1 = having pre-incarceration mental health problems (*n* = 28); participants who did not indicate a positive response to any of the three questions were coded as 0 = no pre-incarceration mental health problems (*n* = 72).

Psychosocial adjustment. Participants completed a variety of measures assessing their current psychosocial adjustment:

1) Post-traumatic stress symptoms. Participants completed the PTSD Checklist (PCL; Weathers et al., 1993), the same measure used in the 2nd study, the Prison Experience Project.

2) Emotional distress. I computed emotional distress using the depression and anxiety subscales of the Adult Self-Report (ASR; Achenbach & Rescorla, 2003), as well as a 4-item emotional distress checklist. The anxiety and depression subscales were also utilized in the Prison Experience Project. The 4-item checklist is based on validated self-report measures that assess emotional distress in the past

month with questions such as, "In the past month, how many times did you feel very

sad? How man times did you get really upset about something?" Participants

responded to these questions using a 6-point scale (0 = *not at all* to 5 = *five or more*

times; α = .84). I calculated a composite score by summing the standardized scores

for all three scales (α = .63). This composite was used in prior work examining the

effect of violence exposure during incarceration on psychosocial adjustment at a

broader level (Boxer et al., 2009).

    3) Antisocial behavior. I also calculated a composite score for antisocial

behavior using the antisocial behavioral tendencies subscale of the ASR (Achenbach

& Rescorla, 2003), the physical aggression subscale of the Buss-Perry Aggression

Questionnaire (Buss & Perry, 1992), and a 10-item aggression checklist. Participants

used the same 3-point scale on the ASR as the emotional distress questions to report

the degree to which 20 antisocial statements described them over the past 6 months

(e.g., hot temper, threatening others, lie or cheat; α = .88). The physical aggression

subscale of the Buss-Perry includes 9 questions that measure the instrumental

component of an aggressive personality (e.g., "I have become so mad I have broken

things."; 0 = *not at all like me* to 4 = *exactly like me*; α = .69). The 10-item aggression

checklist was derived in a similar manner as the 4-item emotional distress checklist.

The 10 items ask participants to report on aggressive experiences in the past month

(e.g., "How many times did you hit or push someone?"; α = .87) using a 6-point scale

(0 = *not at all* to 5 = *five or more times*). I calculated the composite score by summing

the standardized scores for all three scales (α = .72). This composite was also used

in a prior study examining similar issues (Boxer et al., 2009).

Control variables. I included a set of control variables that would potentially account for additional variance in the model. I chose the controls based on a previous study (Boxer et al., 2009) with a comparable population. Significant control variables in the regression analyses performed in Boxer et al. (2009) were retained and included in the models; thus, I included age, education (less than high school; high school graduate or equivalent or more than high school), race/ethnicity (African American; Hispanic/Latino; Other), current housing situation (halfway house; with family including spouse or partner), and employment (employed full- or part-time or student full-time; unemployed, including retired or on disability). These control variables were dummy-coded with the exception of age. One additional control was added to my models: witnessing violence during incarceration. The witnessing questions were drawn from the NVAMS, the same scale as the severe victimization questions (Tjaden & Thoennes, 2000), and included 6 questions that mirrored the victimization questions (KR20 = .80). Participants responded yes/no to each item and mean scores were computed with higher scores denoting greater levels of witnessing violence during incarceration.

Procedures

Procedures were reviewed and approved by the university institutional review board supervising the investigation and the two local organizations referring participants to the project. Participants were recruited through one of two local organizations that work with ex-offenders. At both sites, I asked employees to verbally advertise the study to all clients. The only restriction I placed on recruitment was gender. In this study, I was primarily interested in learning about

the experiences of males; thus, females were excluded from participating. Both organizations provided space on-site to conduct the study and I held standing appointment sessions during times when a large number of clients would be present (e.g., before or after classes, talks, or group meetings). I conducted the interviews in small groups while maintaining confidential responding or in separate, private offices at the sites. The interviews were conducted electronically, on laptop computers using MediaLab software (Empirisoft, 2008). A graduate student and research assistants were present for the interview, but only aided with comprehension problems or difficulties with data entry. The interviews took approximately 60-90 minutes and participants received a $40 U.S. Postal Service money order once they completed the study.

Plan of analysis

I conducted three ordinary least squares (OLS) sequential regression models, one for each psychosocial adjustment variable, to test the hypotheses and examine interactions. Each model contained the same predictors in all four blocks: 1) Control variables (age, education, race/ethnicity, housing, employment, and witnessing violence during incarceration); 2) Vulnerability variables (feelings of safety while incarcerated, severe victimization during incarceration, and pre-incarceration mental health problems); 3) Two-way interaction terms (includes all three, two-way interactions using predictors in block 2); 4) Three-way interaction term (feelings of safety while incarcerated by severe victimization during incarceration by pre-incarceration mental health problems). All continuous variables used in the creation of interaction terms were centered prior to multiplying the variables together to

form the interaction (Aiken & West, 1991). Significant interactions were probed

following the method outlined by Holmbeck (2002). The empirical work in this area

has been scarce; thus, to protect against Type II error (i.e., retaining the null

hypothesis when it is false; Keppel, 1991), I applied an alpha level of $p < .10$ for

accepting statistically significant effects.

<div align="center">Results</div>

Descriptive analyses

Table 5 (pg. 129) shows the specific forms of victimization and witnessed

violence during incarceration and the percentage of participants positively

reporting experience with each particular form of violence. Only 11% of the sample

reported no violence exposure during incarceration in the form of witnessing or

being a victim of violence. Table 6 (pg. 130) displays descriptive data for all three

criterion variables: post-traumatic stress, emotional distress, and antisocial

behavior.

Psychosocial adjustment regression analyses

During the remaining analyses, the *n* decreased from 100 to 92 because eight

participants failed to complete a question used in the controls (housing status). The

pattern of results was similar without the inclusion of the housing variable (at $N =$

100), so in an attempt to keep the regression models congruent with the prior study

examining similar issues (i.e., Boxer et al., 2009), I included the variable thereby

decreasing the *n*. Additionally, I examined "missingness" using a dummy-coded

variable to ensure that unresponsive participants were not experiencing

significantly different levels of psychosocial adjustment compared to participants

that completed all questions. The results of the *t*-tests showed that the eight

participants did not differ significantly from the other participants in their reported

levels of emotional distress, $t(98) = -1.15$, $p = .25$, antisocial behavior, $t(98) = .79$, $p =$

.47, or PTS, $t(98) = -.69$, $p = .49$.

Antisocial behavior. The results of all OLS models are detailed in Tables 7, 8,

and 9. Table 7 (pg. 131) shows the results for the antisocial behavior model. At the

final significant step, one control variable and two main effects remained significant.

The beta for age was negative suggesting that younger subjects self-report more

antisocial behavior, after controlling for all other predictors in the model. Severe

victimization during incarceration and feelings of safety while incarcerated were

also significant such that increased levels of victimization predicted increased levels

of antisocial behavior and greater unsafe feelings during incarceration were

associated with increased antisocial behavior, controlling for all other variables. The

third and fourth steps did not contribute a significant increase in the total amount of

variance explained by the model; therefore, the significant two-way interaction in

the third step is not interpretable.

Emotional distress. With regard to emotional distress (see Table 8, pg. 133),

four control variables remained significant in the second step, the last significant

step of the model. This included: age, education, halfway home housing, and

employment. All betas were negative which suggests that younger subjects, those

with less education, those who are unemployed, and participants not living in a

halfway home report more emotional distress, controlling for all other predictors.

Similar to the antisocial behavior model, two main effects were significant, feelings

of safety while incarcerated and severe victimization during incarceration. Greater unsafe feelings during incarceration and higher levels of victimization during incarceration were related to increased emotional distress. As in the previous model, the third and fourth steps did not contribute a significant increase in the total amount of variance explained by the model and this was reflected by the insignificant two-and three-way interactions.

Post-traumatic stress symptoms. The results of the post-traumatic stress model can be found in Table 9 (pg. 135). The final significant step of the model revealed two significant control variables, two main effects, and two interactions. Housing status was significant for both living in a halfway home and living with family. Both coefficients were negative indicating that those not living in a halfway home and those not living with family experienced the most amount of post-traumatic stress. The model showed a significant positive relation between severe victimization during incarceration and PTS. Pre-incarceration mental health problems were also significantly related to increases in PTS. These predictors remained significant even after accounting for other variables entered in the model. Pre-incarceration mental health problems significantly moderated severe victimization during incarceration. The interaction of pre-incarceration mental health problems and feelings of safety during incarceration was also significant, after controlling for all other variables. The three-way interaction in this model was not significant; this corresponded to the insignificant increase in variance added by the fourth step of the model.

I probed the two significant interactions in this model and found that in those without pre-incarceration mental health problems, there was a significant positive relation between victimization and post-traumatic stress symptoms (β = .41, p = .00). However, in the pre-incarceration mental health group, this relationship was not significant (β = .01 p = .95; see Figure 3, pg. 156). In the interaction between pre-incarceration mental health problems and feelings of safety during incarceration, there was a significant, strong positive relation between feeling unsafe during incarceration and PTS in the pre-incarceration mental health problem group (β = .51, p = .00); similarly, the group without pre-incarceration mental health problems also showed this significant relationship, but it was not as strong (β = .17, p = .09; see Figure 4, pg. 157).

Discussion

The negative outcomes associated with the examined vulnerability variables created by the incarceration environment and those imported into incarceration supports prior research suggesting an integrated importation-deprivation model is most appropriate for understanding offender adjustment (Hochstetler & DeLisi, 2005). However, the distinct set of outcomes associated with each risk factor highlights the need to assess each vulnerability variable independently. Although I did not anticipate this finding, it was interesting that the relation between victimization and post-traumatic stress symptoms was not significant for the pre-incarceration mental health group. This could indicate that individuals with mental health problems reach a threshold whereby they are unable to experience any further increases in symptom levels. Their overall level of psychopathology may be

elevated, but they have experienced habituation, helping them cope with any additional distressing situations (e.g., victimization). The finding that pre-incarceration mental health predicted PTS is also noteworthy because it suggests that there may be a mediating variable such as victimization or other traumatic experiences during incarceration worth examining. For example, Hochstetler and colleagues (Hochstetler et al., 2004) found that previous trauma had significant direct effects, as well as indirect effects via prison victimization, on PTS and depressive symptoms in a group of male parolees. The lack of potential mediators measured in the study introduces the limitations of the study.

As in the previous studies, the cross-sectional design does not allow temporal ordering; consequently, I am unable to determine if the current psychosocial problems reported were present prior to the measured vulnerabilities. This also limits causal statements about the role of imported characteristics or variables emerging as a product of the institution on current psychosocial functioning. In the same session, I asked participants to retroactively report on their feelings and experiences during incarceration as well as more recent symptoms of emotional distress, PTS, and antisocial behavior. Some participants may have experienced overlap in reporting time, particularly if they were recently released (i.e., they were reporting on symptom levels during the time they were incarcerated). This is problematic because it confounds the directional relationship of these negative experiences and mental/behavioral problems. It is also concerning that despite a measure of pre-incarceration mental health problems, I was unable to determine the specific symptoms or diagnoses associated with mental health history. It is plausible

that some of the psychosocial problems measured in the study were related to the pre-incarceration psychological problems. Finally, my sample consisted entirely of males and cannot be generalized to female offenders returning to the community.

Despite these limitations, this study shows a statistical relation among three risk factors (i.e., victimization during incarceration, pre-incarceration mental health problems, and feelings of safety during incarceration) that make offenders vulnerable to adjustment problems during re-entry. This study highlights the importance of both imported characteristics/experiences and those created by the incarceration environment; these findings also expand the importation-deprivation approach to examine mental health outcomes post-release, emphasizing the enduring impact of these vulnerabilities. The results indicate a need for further investigation using longitudinal methods.

STUDY 4: THE JAIL EXPERIENCE PROJECT

An estimated 11.8 million people were admitted to jail in 2011, nearly 18 times the number of new prison commitments (BJS, 2012). Jail is relatively common experience, yet researchers know little about the impact of short-term incarceration. The final project provides the first longitudinal study to causally link experiences before, during, and after jail to mental health problems, aggressive and antisocial responding, and recidivism. It also examines the developmental trajectory of female offenders, a population often overlooked in the justice system.

Introduction

The notion that incarceration is harmful has been a topic of debate among scholars for years. Recent research suggests that incarceration yields persisting

psychological damage because of experiences with violence in jail or prison (Boxer et al., 2009). However, the scientific literature on this topic is insufficient for a number of reasons. First, the majority of studies have been cross-sectional, limiting the ability to make causal inferences. The second drawback is the lack of research in jail, a more common short-term incarceration environment, compared with prison. Finally, the bulk of this research has been on males and does not consider the unique experiences and needs of incarcerated women. The dearth of scientific inquiry has prevented evidence-based policy recommendations useful in the fight against recidivism.

A critical omission from the literature on offender experiences and subsequent needs is the issue of gender differences. Females in the justice system are often overlooked, yet women are entering the criminal justice system at a much faster rate than males (Harrison & Beck, 2003). It is important to understand the complex histories female inmates present because they have often suffered abuse, have a history of drug and alcohol problems, and are twice as likely to suffer from a current serious mental illness than male offenders (see Richie, 2000; Steadman, Osher, Robbins, Case, & Samuels, 2009). These differences should be handled appropriately within the incarceration environment, as well as incorporated into interventions, classification and risk assessments, and rehabilitation and re-entry programs (Owen, 1999). If evidence-based practices are to integrate gender differences, researchers must begin to recognize and examine the role of gender in theory. This study explores the theories of inmate adjustment to determine if they are gender and race specific, and assesses their role in re-entry outcomes.

The overall goal of this study is to examine developmental changes in mental and behavioral health throughout a stay in jail and into the community. Furthermore, I investigate how these factors contribute to the success of the offender upon release. There are five related objectives:

Objective 1: To examine change in mental health and behavioral functioning over the course of a jail stay and shortly after release.

I will use mental health and behavioral data collected at all four waves to describe offender adjustment throughout time in jail and shortly after release. This aim is descriptive; thus, I do not have specific hypotheses about the development of psychosocial difficulties. However, I do believe these trajectories will look different in men and women, as well as different racial groups. Once different developmental trajectories are identified, I will then determine if recidivism differs significantly by trajectory group. Subsequent objectives will examine the influence of trauma and violence exposure in predicting these trajectories.

Objective 2: To evaluate the causal link between adverse pre-incarceration experiences, or those that were imported into jail, on mental and behavioral outcomes both during and after incarceration.

I hypothesize that trauma, as measured by the Trauma History Scale, and community violence exposure prior to incarceration will predict increased mental health and behavioral problems (i.e., anxiety, depression, PTS, aggression, antisocial behavior, and substance use), and recidivism. If confirmed, this set of findings would provide support for the importation model.

Objective 3: To determine the role of coercive jail experiences, or those originating from the jail environment, on psychosocial maladjustment in jail and the community, as well as recidivism.

I expect to find that experiences endogenous to the jail environment will elevate psychosocial symptoms as well as the rate of recidivism. This set of results would be consistent with the deprivation model. I will test the deprivation model by examining experiences with segregation and jail violence in relation to psychosocial outcomes. I expect to see an increase in mental health symptoms including anxiety, depression, and PTS, when participants are exposed to violence in jail, but these symptoms will stabilize as habituation occurs. Concurrent with this pattern, aggressive behavior will increase as a result of jail violence exposure, but will not plateau. Subjects exhibiting this pattern will be at-risk for recidivating. This pattern of results would be consistent with a pathologic adaptation model (Ng-Mak, Salzinger, Feldman, & Stueve, 2004). However, I also believe the interaction of the importation and deprivation models will produce more difficulties, as measured by mental and behavioral health, as well as recidivism, than either model independently.

Objective 4: To assess whether experiences post-release account for the variation in re-entry success, as measured by psychosocial outcomes and recidivism.

I will test the hypothesis that exposure to community violence post-release predicts greater levels of anxiety, depression, PTS, aggression, antisocial behavior, and substance use. I believe it will also predict increased rates of recidivism. I term this the re-entry model. Prior work has shown that community violence exposure is

a risk factor for poor adjustment in the re-entry population (Boxer, Schappell, Middlemass, & Mercado, 2011).

This objective will also test the interaction of the three models: the importation, deprivation, and re-entry models. As in the third objective, I will use violence exposure before, during, and after jail to create this three-way interaction term, testing the exposure types additively and interactively using the same criterion variables above. Based on prior work that highlights the effect of violence exposure during incarceration on functioning after controlling for pre-incarceration trauma and violence exposure (e.g., Boxer et al., 2009), I hypothesize that exposure to violence in jail, compared to pre-jail violence exposure and post-release violence exposure, will serve as the strongest predictor of mental health and behavioral problems, as well as recidivism. However, I believe the worst outcomes will be associated with offenders that experienced high levels of violence exposure during all three periods.

Objective 5: To study the potential moderating role of gender, race, expectations, social support, and locus of control in the relation between negative experiences with violence pre-incarceration, during jail, and post-release on mental health and recidivism; to measure the mediating role of coping behaviors and cognitive beliefs in the relation between violence experiences during jail on recidivism and the development of psychopathology.

I will evaluate the role of risk and protective factors in the relation between violence exposure, experienced at any point in the offender's life, and mental/behavioral functioning, as well as recidivism. Informed by prior work

highlighting the role of protective factors in the relation between trauma and mental health (see Bonanno, 2004), I hypothesize that high levels of social support, realistic expectations about jail and the re-entry process, and high internal locus of control will mitigate the impact of violence exposure, reducing mental health and behavioral symptoms and decreasing the risk of recidivism. Additionally, I predict a significant interaction between substance use and mental functioning (i.e., anxiety, depression, and PTS) with respect to recidivism. At low levels of substance use, I presume there will be little relation between psychological outcomes and recidivism; higher levels of substance use will reveal a positive relation between these variables. I will also conduct moderator analyses to explore the possibility that relation between violence exposure in the three different periods and psychosocial outcomes and recidivism vary as a function of race and gender. This exploratory analysis will identify how race and gender play an important role in adjusting to experiences with violence and how the various theories may be gendered and race-specific.

Finally, I hypothesize that maladaptive coping styles and endorsement of cognitive beliefs or attitudes that support aggressive and criminal behavior will mediate the relation between violence exposure during incarceration and increased mental/behavioral problems, as well as recidivism. Moreover, substance use will mediate the link between violence exposure and recidivism.

Method

Research Design

The study employs an adapted version of the rotating panel, longitudinal design without replacement in order to examine developmental changes in mental and behavioral functioning in a group of jail inmates. The panel design is the highest standard for conducting longitudinal studies, particularly because it reduces sampling error (Frees, 2004). The study is comprised of thirty panels; each panel contains participants who enrolled in the study the same week. Assessments took place during four waves (approximately 16 weeks) and recidivism data were collected for released participants. Figure 6 (pg. 159) visually displays the assessment schedule for a full panel. The entire study, including all waves for all participants, spanned one year and eight months. The study includes both prospective and retrospective components.

Each panel of participants completed questionnaires at four waves: W1) Within the first three months of admission to jail; W2) Five weeks after W1; W3) Six weeks following W2; W4) Approximately one month post-release. The average length of stay in this jail is 90 days (per data received from the jail); thus, I approximated W4 to be completed four weeks after W3, but I allowed an extra three months for release whereby participants could complete W4 in the community (after having 3-4 weeks of adjustment in the community). I also conducted a state-wide criminal justice records review, facilitated by the New Jersey State Parole Board, on all released participants to obtain a measure of recidivism three months post-release. The variance in release date and completion of W4, in addition to the unequal panel sizes, compelled me to adopt a modified version of the rotating panel design. An ideal rotating panel design would adhere to strict guidelines regarding

equal group sample sizes and a specified schedule for when each wave would occur (Duncan & Kalton, 1987); however, the challenges of conducting a research study outside of a laboratory, in a secure jail setting, rendered this impossible. Nonetheless, my design strategy allowed me to achieve my goal of examining the relation between experiences in jail and community re-entry.

In line with the goals of this study, longitudinal designs allow analyses of change over time (Frees, 2004). By observing the temporal ordering of events and controlling for autoregression on key indicators over time, the direction and magnitude of causal relationships can be established (Kenny & Zautra, 2001). Panel studies, a type of longitudinal design, measure the same individuals (i.e., a panel) at two or more points in time (i.e., waves) in order to determine individual trajectories of change and the variables responsible for this change (Gravlee, Kennedy, Godoy, & Leonard, 2009). Rotating panel designs use a series of panels with staggered start and end dates, creating overlapping panels (De Vaus, 2001).

The overall research design and measurement protocol emanate from a theoretical framework, permitting me to test different hypothesized models (refer to Figure 5, pg. 158). I include retrospective self-reports of trauma history and community violence exposure at W1 in order to test the *importation model*. Multiple assessments during incarceration, spanning from the first week admission to release, provide data to test the *deprivation model*. The final assessment post-release and the recidivism review offer information on experiences in the community during re-entry and re-entry success, which allows me to test the *re-entry model*. All psychosocial outcomes, with the exception of recidivism, were

assessed at all waves to measure change in symptoms, as well as control for autoregression when examining other predictors. This also allows me to test the *pathologic adaptation model* (Ng-Mak et al., 2004) in which high levels of violence exposure, also measured at each wave, is associated with low levels of distress but elevated levels of aggressive behavior.

Participants

Participants in this study were 402 inmates (n=320 males; n=82 females) from Hudson County Correctional Center (HCCC) located in Kearny, New Jersey (mean age = 35.41 years, SD = 11.04, range = 18-66; 53% Black/African American, 27% Hispanic/Latino, 15% White/Caucasian, 1% Asian, <1% Native American, 4% other). The racial/ethnic composition of the entire jail is 41% African American and 42% Hispanic; thus, my sample is representative of the minority racial/ethnic composition of the overall jail population. Approximately 10% of the overall jail population is female; however, my sample was 20% female. I oversampled females in order to obtain a meaningful sub-sample of women by W4. Seventy-two percent of all inmates at HCCC are between the ages of 24 and 50; my sample also had 72% of participants within this age range. Taken together, I was able to recruit a sample representative of the overall jail population at HCCC, thereby making the study generalizable to other urban correctional facilities.

Three quarters of the participants were single (76%) and the majority had a high school diploma/GED or some high school (72%). Only 5% reported being a combat veteran. Most participants reported extensive criminal histories; 90% were incarcerated before and 79% had a prior incarceration at HCCC. A prior

incarceration in jail was more common than prison for participants (45% versus 7%, respectively), but 41% reported spending time in both jail and prison. The average number of times a participant went to jail was 8.81 (SD = 12.14, range = 0-100); the average number of times a participant went to prison was 2.73 (SD = 4.95, range = 0-56). The majority of participants (73%) had a felony conviction on record, but only 19% were convicted of a violent offense. Forty-five percent of participants reported being incarcerated as juvenile. Lifetime incarceration varied greatly (mean = 5.37 years, SD = 6.45, range = 0-37.92 years), as well as the total amount of time spent incarcerated at Hudson County (mean = 152.89 days, SD = 113.54, range = 4-694 days).

The amount of time participants spent in the community following their most recent release from incarceration until December 30, 2014, the date at which the records review was conducted was also very diverse (mean = 337.66 days, SD = 142.61, range = 1-606 days). Within three months after the first date of release, 10% of the full sample recidivated (33 men, 10% of the male population; 7 women, 9% of the female population). Twenty-two percent of the full sample (n=87) was currently incarcerated at the time of the record review; the majority of these individuals (n=78) remained incarcerated for the duration of the study, while the remaining subjects (n=9) were released from HCCC during the study and were re-incarcerated.

Attrition

Longitudinal studies, especially those with high-risk participants, are subject to participant attrition. To address the likely attrition in my study, I incorporated a number of design features:

- First, I conducted a power analysis and created my sample size with significant attrition in mind. In an effort to be conservative, I recruited a total of 402 inmates for the study, with the goal of ascertaining a minimum final sample of 200. My prior studies investigating similar issues in offender populations suggest effect sizes in the medium to large range (i.e., d = .5 - 1.0), but given the novelty of this type of work, I projected medium effect sizes (i.e., d = .5 - .8; Cohen, 1992). Per Cohen (1992), to achieve power of .80 (i.e., greater than 80% probability of detecting an effect if one is present or less than 20% probability of making a Type II error) for medium effects at α = .05, the minimum sample size is 67. My estimation of a final sample of 200 participants meets this criterion and allows for adequate power to detect differences.

- Second, I created an incentive structure (explained in the procedures section below) and offered a small retention bonus as yet another method for reducing attrition.

- Third, I worked with a program staff member at the jail to recruit participants. This individual filtered out any inmates who were currently experiencing impaired competency due to drug/alcohol problems, as well as participants suffering from psychotic episodes. The staff member also identified inmates who were in jail longer than 24 hours, which further prevented attrition as 25% of new commitments are released within the first day (per data received from the jail).

- Finally, I utilized statistical tests robust to missingness and employed
  statistical procedures that impute missing data.

As detailed further below and in the discussion, I encountered a number of
difficulties locating subjects after release for W4. However, I was able to obtain
recidivism data on 400 participants (I could not verify identification information on
two individuals; thus, I could not obtain their records), which gave an indication of
the success or failure of a participant after release. Table 10 (pg. 137) provides
information on the number of participants in all combinations of waves and the
retention rates.

Research Site

The majority of the study took place inside a jail, Hudson County Correctional
Facility, located in northern New Jersey. HCCC is one of the largest county adult
correctional centers in the state of NJ. Per data I received from HCCC, approximately
2,000 inmates are housed in the jail on an average day. In 2011, HCCC had 12,308
new commitments. The population at HCCC encompasses all types of offenders
including violent and non-violent, federal offenders, and those arrested by the U.S.
Immigration and Customs Enforcement.

Procedures

Procedures were reviewed and approved by the university institutional
review board supervising the investigation, as well as the warden of the jail. In order
to recruit participants, a Community Reintegration Program staff member at HCCC
provided a list of newly admitted inmates each week. Inmates on this list were
called to the gymnasium where the Principal Investigator and one undergraduate

research assistant explained the study and provided consent forms to those willing

to participate. Recruitment took place twice a week during week 1 of a new panel. I

aimed for 50 participants per panel; however, the maximum number of participants

I was able to recruit for a panel was 35. The correctional officers often put a cap on

the number of inmates allowed in the gymnasium, which interfered with reaching

this goal and I had difficulty obtaining a sizeable list of inmates that the staff deemed

eligible. The average number of participants in a panel was 13. Participants within a

cohort were interviewed the same week for Waves 2-3. Wave 4 took place

individually based on the participant's date of release. Finally, the criminal records

review was conducted on December 30, 2014.

Fifty-seven individuals came to the gymnasium to learn more about the

study, but declined to participate. The majority of these individuals (n=44) were

approached at the beginning of the study during which I did not have permission to

pay participants while they were incarcerated. When I discovered the deferred

payment was discouraging participants from joining the study, I requested approval

from the warden and the university institutional review board to pay participants

immediately following completion of an assessment on their commissary account

(see below for more details regarding this). Due to the special protections of this

vulnerable population (i.e., inmates), the jail would not provide any information on

individuals that declined to participate. My overall participation rate was 87.6%.

HCCC provided security staff and space in the jail gym to conduct the study.

Assessments completed in the community (W4) took place in either neutral

community locations such as public libraries or in private lab space at Rutgers

University (easily accessible via public transportation). All assessments were completed with pencil and paper. Spanish versions were offered to accommodate the large Hispanic/Latino population, and one of the research assistants was a fluent Spanish speaker. The PI and one research assistant were present during the assessments, but only assisted subjects if there were questions about the assessments or a subject had difficulty comprehending a question.

At initial recruitment, I asked participants to provide contact information for four additional people who know them well and who would know of their whereabouts upon release; I also provided all participants with a business card with my contact information so they could contact me after release. I believed this would aid in locating subjects during W4. I requested dates of release from the jail staff on a weekly basis and used the contact information participants provided to attempt to locate them in the community shortly after release. However, I found this extremely challenging. The contact information often contained disconnected phone numbers, invalid addresses, or participant's family or friends were too suspicious to provide information on a participant's whereabouts. I sent letters and emails, left messages, and even made appointments to meet participants in which they did not show up. After exhausting all options and contacting all individuals listed, I considered a participant unreachable. This is not uncommon for a high-risk population (Schubert, Mulvey, Lidz, Gardner, & Skeem, 2005; Schubert et al., 2004); I elaborate on this topic and provide suggestions for future research in the discussion section. Despite these problems, I was able to obtain a measure of success or failure in the community with the criminal justice records review.

The original payment plan specified payment up to $25, to be paid at the final assessment if the subject was released. Subjects earned $5 for each assessment completed (to be paid in full at the final assessment) and a $5 bonus at the final assessment for remaining in the study and completing all four assessments. However, I was unable to compensate participants if they were still incarcerated at the end of the study. Within the first two weeks of recruitment, I noticed a number of eligible inmates declining to participate. After discussing this with participants, I discovered that inmates were uncertain when they would be released; thus, they did not feel confident they would be able to complete the final assessment and receive payment for their time. As a result, I sought approval from both the warden of the jail and the institutional review board to change this protocol and pay subjects on their commissary account within a week of completing an assessment. The payment structure remained the same, and participants still received the $5 bonus at the final assessment if they completed all four assessments. All compensation in the community was in the form a US Postal Service Money Order. Fifty-eight participants entered the study under the old payment plan. Once the new plan was approved, I approached all participants under the old payment plan that were still incarcerated (n=9) and switched them over to the new payment plan. Each assessment took approximately 50-60 minutes each, but the first assessment was slightly longer (i.e., 80 minutes).

Measures

All instruments were self-report, and administered during each of the four waves unless otherwise noted (see Table 11 for descriptive statistics, pg. 138). I

chose self-report because with respect to mental health, the selected measures have high concurrent and convergent validity with clinician-administered measures. They can also be completed in a shorter time frame and require less resources. As for the violence exposure measure, I chose self-report because I wanted to measure exposure to violence inside and outside incarceration. Official jail reports would provide an estimate of violence exposure in the facility, but these reports generally under-report incidents of violence (Wolff et al., 2007) and cannot be linked to individual inmate experiences. The jail facility specifically requested to keep staff uninvolved in the project; therefore, I could not ask them to report on these issues.

Although I included self-report recidivism questions in the Wave 4 assessment, my primary measure of recidivism was the records review. The small n at Wave 4 did not allow me to obtain a meaningful sample of participants who could provide me with information regarding their success or failure in the community. I did crosscheck information on individuals that completed Wave 4 with the information from the records review. However, it should be noted that there are drawbacks to using official records as a guaranteed measure of recidivism. These issues, and other related problems, are discussed at length in the discussion section, but the primary concern with this information is that it only reports recidivism for crimes that happened in the state of New Jersey. The close physical proximity of New York and Connecticut provide sufficient opportunity to cross the state border and commit a crime in another state.

Demographics. Basic demographics were collected during W1 including gender, age, income, race (Caucasian; African American; Hispanic/Latino; Other),

marital status (single; married/living with spouse; separated; divorced; widowed; married/living apart from spouse; other), education (less than high school; high school graduate or equivalent or more than high school), current offense type (violent; nonviolent), and veteran status. I also asked a number of questions regarding criminal history/prior incarcerations including: number of prior jail and prison incarcerations, juvenile incarceration, prior HCCC incarcerations, and total amount of time served in jail and/or prison. These control variables were dummy-coded with the exception of age, number of prior jail and prison incarcerations, and total amount of time served jail and/or prison.

　　Mental and behavioral health. Participants completed a variety of measures assessing their current mental and behavioral health:

　　1) *Anxiety*. The Spielberger-State Trait Anxiety Inventory, Short-Form (Marteau & Bekker, 1992) was used to measure anxiety symptoms. This six item short-form measures state anxiety and can detect change in symptom levels in relatively short periods of time. Respondents used a 5-point scale (0=never, 1=almost never, 2=sometimes, 3=fairly often, 4=very often) to describe how often they felt each statement described them in the past month (e.g., "I feel nervous."). Scores were calculated as the mean of all six items. Higher scores represent greater levels of anxiety (α = .52 Wave 1; α = .62 Wave 2; α = .77 Wave 3; α = .84 Wave 4).

　　2) *Depression.* I measured depressive symptoms using the Center for Epidemiologic Studies Depression Scale, Shortened Iowa Form (Kohout, Berkman, Evans, & Cornoni-Huntley, 1993), which assesses the major dimensions of depression. Participants used a 3-point scale (0=rarely or none of the time, 1=some

or a little of the time, 2=occasionally or most of the days) to state how often they felt

or behaved a certain way (e.g., poor appetite, feeling lonely; 11 items) in the past

week. Scores were calculated as the mean of all 11 items; higher scores represent

greater levels of depression (α = .73 Wave 1; α = .77 Wave 2; α = .78 Wave 3; α = .81

Wave 4).

3) *Post-traumatic stress*. The PCL utilized in the 2nd and 3rd studies was

administered (Weathers et al., 1993); this 17-item checklist has been used to

monitor change in symptoms. Scores were computed as the mean of all 17 items,

with higher scores indicating greater post-traumatic stress (α = .96 Wave 1; α = .96

Wave 2; α = .96 Wave 3; α = .98 Wave 4).

4) *Antisocial behavior.* I calculated a composite score for antisocial behavior

using the antisocial behavioral tendencies subscale of the ASR (Achenbach &

Rescorla, 2003), the physical aggression subscale of the Buss-Perry Aggression

Questionnaire (Buss & Perry, 1992), and a 10-item aggression checklist. This

composite score was utilized in the third study. Respondents used a 3-point scale

for the ASR (0=not true, 1=somewhat true, 2=very true) to rate the degree to which

20 antisocial statements described them over the past 6 months (e.g., hot temper,

threatening others, lie or cheat; Achebach & Rescolra, 2003; α = .92 Wave 1; α = .92

Wave 2; α = .91 Wave 3; α = .88 Wave 4). The physical aggression subscale of the

Buss-Perry includes 9 questions that measure the instrumental component of an

aggressive personality (e.g., "I have become so mad I have broken things."; 0 = *not at

all like me* to 4 = *exactly like me*; Buss & Perry, 1992; α = .82 Wave 1; α = .82 Wave 2;

α = .82 Wave 3; α = .80 Wave 4). The 10-item checklist asks participants to report on

aggressive experiences in the past month (e.g., "How many times did you hit or push someone?"; Boxer et al., 2009; α = .83 Wave 1; α = .87 Wave 2; α = .82 Wave 3; α = .91 Wave 4) using a 6-point scale (0 = *not at all* to 5 = *five or more times*). I calculated the composite score by summing the standardized scores for all three scales (α = .90 Wave 1; α = .90 Wave 2; α = .89 Wave 3; α = .88 Wave 4). This composite was also used in a prior study examining similar issues (Boxer et al., 2009).

5) *Substance use*. The World Health Organization Alcohol, Smoking, and Substance Involvement Screening Test (WHO ASSIST Working Group, 2002) contains 71 questions on the frequency of substance use and the associated problems for each substance use. I summed the 10 questions that ask about lifetime use of: tobacco, alcohol, cannabis, cocaine, amphetamine-type stimulants, inhalants, sedatives or sleeping pills, hallucinogens, opiates, and "other drugs." Participants responded yes/no (yes=1; no=0) to all 10 items; higher scores indicate a greater number of substances used (KR20 = .71 Wave 1; KR20 = .75 Wave 2; KR20 = .75 Wave 3; KR20 = .83 Wave 4).

Recidivism. Three questions on recidivism were included in the W4 assessment: re-arrest, re-incarceration, and conviction on new charges. Additionally, if I was unable to reach the participant and a collateral contact informed me that the subject is incarcerated, I considered this a positive indication of recidivism. However, due to the extremely small sample of participants I successfully made contact with at W4, I decided to use the state-wide criminal records as the official recidivism measure. I accessed participants' records via the Computerized Criminal History system. This data, which I obtained from the NJ

State Parole Board, provided information on arrests, convictions, and sentences, as well as any parole violations as of 12/30/14. A record of a new arrest, new conviction, new sentence, or parole violation occurring three months after the participant's date of release from Hudson County, was coded as a positive indication of recidivism.

Trauma and violence exposure. Participants completed a variety of measures assessing their experiences with violence and trauma inside and outside of the jail environment:

1) *Trauma history*. At W1, I administered the Trauma History Screen (Carlson et al., 1996), which was included as a control variable in the Prison Experience Project, the 2nd study. Participants answered yes/no to experiencing 14 traumatic events (e.g., "Has this event ever happened to you: A really bad car, boat, train, or airplane accident?"). Scores were computed as the sum of all 14 items with higher scores denoting exposure to more traumatic events (α = .82).

2) *Jail violence*. The National Violence Against Women and Men Survey (88 items; adapted from Tjaden & Thoennes, 2000; Wolff & Shi, 2011) examines feelings of safety during incarceration, witnessing/victimization during incarceration by staff or inmates, and the frequency of these events. A subset of this measure was used in the Community Return Study, the 3rd study. The present study utilized the 36 yes/no questions pertaining to witnessing violence or being the victim of violence during incarceration by staff or inmates (e.g., "During your incarceration: Were you ever physically assaulted by an inmate?"; "During your incarceration: Did you witness a physical assault by an inmate?"; "During your incarceration: Were you

physically assaulted by a staff member?"; "During your incarceration: Did you

witness a physical assault by a staff member?"). Scores were computed as the mean

of all 36 items with higher scores denoting exposure to more jail violence (KR20 =

.91 Wave 1; KR20 = .89 Wave 2; KR20 = .91 Wave 3; KR20 = .82 Wave 4).

3) *Community violence.* This 17-item Survey of Exposure to Community

Violence (modified from Richters & Saltzman, 1990) was employed in the 1st study

and includes witnessing and victimization questions; this measure was included in

Waves 1 and 4 (α = .91 Wave 1; α = .78 Wave 4). Participants responded yes/no to

each question pertaining to exposure in the past year (e.g., "In the last year: Have

you heard guns being shot?"); individuals who indicated yes gave an approximate

frequency of exposure (e.g., once or twice; a few times; many times). Two items

asked about helping behavior (i.e., "In the last year: Have you seen people helping

each other with house work, yard work, or with their cars?"; "In the last year: Have

other people helped you with something?") and were excluded from the composite

score. Scores were computed as the mean of all 15 items, with higher scores

denoting greater community violence exposure.

4) *Segregation.* At each wave, I asked subjects if they spent time in

segregation during incarceration. At the first wave, I asked subjects to think about

the time period since being incarcerated; at all other waves, I asked subjects to

report on the time period since the last assessment. Subjects responded yes/no

(yes=1; no=0).

Moderators. Several moderating variables were measured:

1) *Expectations*. I developed a new measure of jail expectations that focuses on violence expectations. It was measured at W1 and asks participants to think about what jail will be like. Participants used a 4-point scale (0 = disagree, 1 = somewhat disagree, 2 = somewhat agree, 3 = agree) to rate the extent to which they agreed or disagreed with five statements (i.e., "While in jail: I think someone will hurt me."; "While in jail: I expect to see someone hurt someone else while I am here."; "While in jail: I will be exposed to more violence than in my community."; "While in jail: I will do whatever it takes to stay safe and protect myself, including physically."; "While in jail: No one will mess with me."). The last item was reversed scored. Scores were computed as the mean of all five items with higher scores denoting greater expectations of being exposed to jail violence (α = .60).

2) *Social support*. The Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1998) assesses social support from family, friends/other inmates, and significant others. Participants used a 7-point scale (0 = *very strongly disagree* to 5 = *very strongly agree*) to their rate agreement to 12 statements (e.g., "I get the emotional help and support I need from my family."; α = .92 Wave 1; α = .92 Wave 2; α = .94 Wave 3; α = .98 Wave 4). Mean scores were computed; greater scores indicate a greater amount of social support.

3) *Locus of control*. The Revised Prison Locus of Control Scale (Pugh, 1994) has been validated in the correctional setting and was administered at W2. Participants used a scale from 1 (agree) to 10 (disagree) to rate the degree to which they agree or disagree with 25 items (e.g., "An inmate is really in charge of his own fate."; "I have the power to make this bit useful."). Scale scores were computed

following the author's instructions (Pugh, 1994), which include reverse scoring 13

items and taking the sum of 20 items (α = .74). The range of possible scores is 20 to

200; lower scores represent a higher internal locus of control.

The three moderating variables above and two additional demographic

variables (i.e., gender and race) were then used to create a risk score (0-5), which

provides the level of risk a participant has for mental and behavioral health

problems. Each variable represents a risk factor, or a characteristic that increases

the chance of a negative outcome (i.e., psychosocial difficulty; Institute of Medicine,

1994). The concept of cumulative risk postulates that when risk factors accumulate,

they adversely impact developmental outcomes, independent of the specific type of

risk factors experienced (Rutter, 1979; Sameroff, 2000).

Generating a cumulative risk score is a common approach to measuring

developmental risk (Boxer, Huesmann, Bushman, O'Briend, & Moceri, 2008);

therefore, I dichotomized the risk variables and gave participants one point for each

item that deemed them a risk. Females were given a point because females are twice

as likely to suffer from a serious mental illness than males (Richie, 2000; Steadman

et al., 2009). Additionally, t-tests revealed females were significantly more likely to

suffer from post-traumatic stress symptoms than males, $t(267)$ = -2.37, p=.02, Wave

2; $t(181)$ = -2.12, p=.04, Wave 3. Minority participants received a point because,

compared to Caucasian participants at Wave 1, they reported significantly more

anxiety, $t(384)$ = 4.28, p=.00, depression, $t(384)$ = 2.81, p=.01, PTS, $t(259)$ = 1.99,

p=.05, substance use, $t(386)$ = 5.37, p=.00, and antisocial behavior, $t(387)$ = 2.11,

p=.04. Participants scoring one standard deviation below the mean for social

support received a point, as well as participants one standard deviation below the mean for expectations. Locus of control was scored such that lower scores represent higher internal locus of control; thus, a participant received a point on the risk score if he or she scored one standard deviation above the mean. Most participants fell within the 0-1 range of the risk score (0, n=156; 1, n=150), but there some that exceeded this (2, n=80; 3, n=12; 4, n=4). Zero participants received a 5 on the risk score.

Mediators. I also included several mediators in two domains:

1) *Coping behaviors*. The Brief COPE (28 items; Carver, 1997) assesses how the subject handles stressors in life. Participants responded using a 4-point scale (1 = *I haven't been doing this at all* to 4 = *I've been doing this a lot)*. Maladaptive coping was of particular interest, so scores were computed as the mean of 12 items identified as the examples of the following maladaptive coping styles: self-distraction, denial, venting, substance use, behavioral disengagement, and self-blame (e.g., "I've been giving up at the attempt to cope."; Carver, 1997; α = .82 Wave 1; α = .76 Wave 2; α = .83 Wave 3; α = .75 Wave 4).

2) *Cognitive beliefs*. Participants completed the Normative Beliefs About Aggression Scale (NOBAGS; Huesmann & Guerra, 1997), which measures beliefs about the appropriateness of aggressive responding. This measure was included in the Community Violence Project (Study 1) and contains 20 short aggressive scenarios (e.g., "In general, it is wrong to hit other people.") in which participants must rate the appropriateness of the response using a four-point scale (It's really OK… It's really wrong). Scores were computed as the mean of all items with higher

scores denoting greater endorsement of aggression (α = .86 Wave 1; α = .82 Wave 2;

α = .81 Wave 3; α = .79 Wave 4).

Analytic approach

The empirical work in this area has been scarce. When conducting research

with a high-risk population in a novel line of inquiry with substantive implications

for policy, practice, and future research, it is important to ensure that potentially

meaningful findings are not disregarded. Thus, to protect against Type II error (i.e.,

retaining the null hypothesis when it is false; Keppel, 1991), I applied an alpha level

of p < .10 for accepting statistically significant effects. All results at p < .10 are

described in detail. This is a generally acceptable approach in a relatively new line of

inquiry (see Keppel, 1991). Interactions were probed if p ≤ .05.

<u>Objective 1.</u> To examine change in mental health and behavioral functioning

over the course of a jail stay and shortly after release.

I used group-based trajectory modeling developed by Nagin and Land to

analyze this objective (1993; see also, Nagin, 1999; Nagin & Tremblay, 1999). This

form of finite mixture modeling identifies clusters of individuals that follow similar

mental and behavioral trajectories over time. One advantage of group-based

trajectory modeling is the way in which missing data are handled. Participants with

at least one data point were used in the analysis because trajectory modeling adjusts

for missing data through maximum likelihood estimation (Marmorstein et al. 2010;

Mazza, Fleming, Abbott, Haggerty, & Catalano, 2010). Trajectory models are

identified through a two-part process that involves determining the optimal number

of groups and then deciding the trajectory shape for each group. It is also important

to consider parsimony when selecting a model.

Model selection is conducted using the Bayesian Information Criterion (BIC);

the BIC score closest to zero indicates the best fitting model. Using a censored

normal distribution, I first tested models between one and six trajectory groups

with quadratic trends. After selecting the optimal number of groups, or the model

with the BIC closest to zero, I then used backward removal of nonsignificant higher-

order trends to estimate quadratic, linear, and zero-order trends, if needed. The

most parsimonious model was retained when the growth coefficient reached

statistical significance and the BIC value decreased (Brendgen, Wanner, Morin, &

Vitaro, 2005). Posterior probabilities, or the probability that an individual belongs

to the trajectory group assigned during model estimation, were examined for all

identified groups. Posterior probabilities greater than .70-.80 indicate that a model

sufficiently identified and grouped homogenous individuals together (Nagin, 1999).

Typically, trajectory groups should contain no fewer than 5% of the sample

(Andruff, Carraro, Thompson, & Gaudreau, 2009); others warn against using groups

of less than 20 individuals, as they can be problematic (D. Nagin, personal

communication, June 2, 2014).

Trajectories were conducted using the TRAJ (Jones, Nagin, & Roeder, 2001)

STATA (version 13) plugin. I estimated five separate models using the following

self-report outcome measures across Waves 1-3: anxiety, depression, PTS, antisocial

behavior composite, and substance use. As noted above, once subgroups were

identified, I then linked these trajectory groups to a later outcome, recidivism, using

a multinomial logit model to create a multivariate probabilistic linkage (Nagin, 2005). This distinguished which developmental trajectories were most at-risk for recidivating while taking into account the error associated with group-based modeling (Nagin, 2005). I also used this method to evaluate gender and race as covariates.

Objective 2. To evaluate the causal link between adverse pre-incarceration experiences, or those that were imported into jail, on mental and behavioral outcomes both during and after incarceration.

I used hierarchical linear modeling, growth curve modeling, and logistic regression techniques to achieve this research objective. Prior to these analyses, I performed multiple imputation using chained equations (MICE; Raghunathan, Lepkowski, Hoewyk, & Solenberger, 2001; van Buuren, 2007). Multiple imputation is a solution for analyzing incomplete data in which all available information from the sample is utilized to replace missing values with multiple sets of simulated values (Rubin, 1987). One advantage of multiple imputation is that it accounts for missing data uncertainty and adjusts the variance estimates accordingly (Rubin, 1987). MICE imputes data sequentially so that variables with the least amount of missing data are imputed first. White and colleagues (White, Royston, & Wood, 2011) recommend multiplying the largest fraction of missing information (FMI) by 100 to obtain the ideal number of imputations; thus, I conducted 50 imputations, a conservative calculation.

After imputing the data, I modeled this prediction as a random-coefficient model. I wished to examine time-invariant covariates (i.e., trauma history at Wave 1

and pre-jail community violence exposure at Wave 1), which cannot be examined in a fixed-effects model; therefore, a random-effects model was selected (Raudenbush & Bryk, 2002; Singer & Willett, 2003). Time-invariant covariates predict differences in starting points and the rate of growth while remaining constant over time (Curran, Bauer, & Willoughby, 2004). I used the default constrained model because the unconstrained model had difficulty converging. A constrained model restricts the correlation between the random slope and random intercept to zero. Quadratic models were tested, but were not significant; therefore, the results employ linear models. Models were estimated using the xtmixed command in STATA (version 13) and examined the growth of all outcome variables across Waves 1-3.

Two separate logistic regression models were conducted in order to predict recidivism using pre-incarceration trauma history and exposure to community violence. A chi-square test is not produced when using imputed data; thus, there is no test of the full model against a constant-only model. However, an F-test is conducted. Typically, predictors in a logistic regression model are tested using a z-test; however, when multiple imputation is employed, predictors included in the model are tested via a t-test. This adjustment is made because multiple imputation is based on the repeated-imputation reference and relies on a t distribution (Rubin, 1987). Consequently, F- and t-tests are reported below in the results section for each model.

Objective 3. To determine the role of coercive jail experiences, or those originating from the jail environment, on psychosocial maladjustment in jail and the community, as well as recidivism.

Similar to the second objective, I imputed data and then used growth curve modeling to examine the deprivation model. However, this objective utilized time-varying covariates, exposure to violence in jail and segregation (Waves 1-3), to predict the growth of anxiety, depression, PTS, aggression, antisocial behavior, and substance use (across Waves 1-3). In order to determine how the deprivation model relates to recidivism, I then used a logistic model to examine the relation between exposure to jail violence and recidivism. Next, I created an interaction of the importation and deprivation models using pre-jail community violence exposure and jail violence exposure because I was particularly interested in the effect of violence exposure and wish to determine if the context of this exposure influences outcomes.

As noted in the prior objective, I performed multiple imputation using chained equations (MICE; Raghunathan, Lepkowski, Hoewyk, & Solenberger, 2001; van Buuren, 2007) and conducted 50 imputations. However, in this objective, I examined time-variant covariates, exposure to violence in jail and segregation, which have values that change over time (Singer & Willett, 2003). Including time-variant covariates in the model required further consideration as to which participants had data Missing at Random (MAR) and should therefore be imputed, and which participants had data Not Missing at Random (NMAR) and should not be imputed (see Little & Rubin, 2002; Rubin, 1987; Schafer, 1997). If a subject was no longer incarcerated at a wave, then I did not impute his/her data for that time point because the data was considered Not Missing at Random (Rubin, 1987).

I continued using random-coefficient models in this objective because the models include the same set of time-invariant control variables as Objective 2 that can only be examined with a random effects model. Additionally, I selected a random-effects model over a fixed-effects model because the estimates in a fixed-effects model are highly inefficient if there is little within-unit variability (Singer & Willett, 2003), which was confirmed in Objective 1 for most of the outcome variables. Again, I used the default constrained model because the unconstrained model had difficulty converging. Quadratic models were tested, but were not significant; therefore, the results employ linear models. Models were estimated using the xtmixed command in STATA (version 13).

A separate random-effects logistic regression model was conducted in order to predict recidivism using exposure to jail violence, as well as the interaction of community violence exposure and jail violence exposure. This method was selected over generalized estimating equations (GEE) because random effects produce subject-specific coefficients, which depicts what happens to a single person when the covariate is increased by one unit, as compared to population-averaged coefficients (Allison, 2009; Lalonde, Nguyen, Yin, Irimata, & Wilson, 2013). This model was estimated using the xtlogit command with the re (i.e., random effects) option in STATA (version 13).

Objective 4. To assess whether experiences post-release account for the variation in re-entry success, as measured by psychosocial outcomes and recidivism.

As noted in the results section, the extremely small sample size at W4 (n=11)

did not provide enough power to provide reliable results. However, I offer

descriptive information on the small number of subjects that completed Wave 4.

Objective 5. To study the potential moderating role of gender, race,

expectations, social support, and locus of control in the relation between negative

experiences with violence pre-incarceration, during jail, and post-release on mental

health and recidivism; to measure the mediating role of coping behaviors and

cognitive beliefs in the relation between violence experiences during jail on

recidivism and the development of psychopathology.

I continued using random-coefficient models, as outlined in Objective 3, to

test these moderator hypotheses. Individual random-effects logistic regression

models were conducted in order to predict recidivism using the interaction of the

risk score and community violence exposure (Wave 1), as well as jail violence

exposure (across Waves 1-3). Logistic regression models were also utilized to test

the interactions of substance use (Waves 1-3) and mental and behavioral health

variables (across Waves 1-3). Mediator analyses were conducted using an

autoregressive model (Cole & Maxwell, 2003; Gollob & Reichardt, 1991) and the

SEM command in STATA (version 13). In the first mediation model, I utilized

exposure to jail violence at Wave 1, coping at Wave 2, and psychosocial symptoms at

Wave 3. Additionally, I controlled for psychosocial symptoms at Wave 1, as well as

coping at Wave 1. The second mediation model was exactly the same as the first

mediation model, except I examined cognitive beliefs instead of coping as a potential

mediator, and controlled for Wave 1 cognitive beliefs.

<div align="center">Results</div>

Objective 1. To examine change in mental health and behavioral functioning over the course of a jail stay and shortly after release. I will also test whether these trajectories are different in men and women, as well as different racial groups.

Anxiety. Results suggest a three-group model was the best fit for the data (BIC = -863.98) compared to a model with one group (BIC = -916.82), two groups (BIC = -883.09), four groups (BIC = -867.70), five groups (BIC = -875.79), and six groups (BIC = -882.79). The final model with three groups was reduced to the combination of: zero-order, linear, and zero-order again (BIC = -848.68) and fit the data better than the original three group model with quadratic trends (BIC = -863.98) and all linear trends (BIC = -854.47). Average posterior probabilities for all three groups met the suggested 0.70-0.80 criteria. Figure 7 (pg. 160) illustrates the trajectories using the final model.

As depicted in Figure 7 (pg. 160), Group 1 (20%, n=79, PP=.82, constant=1.26, *SE*=.08, *p*=.00) includes offenders who entered jail with very low levels of anxiety and did not experience any increase in symptoms over time. The second trajectory, Group 2 (73%, n=292, PP=.87, constant=2.14, *SE*=0.07, *p*=.00, linear β=-.06, *SE*=.03, *p*=.05), includes offenders who began their jail experience with medium levels of anxiety and then showed a slight decrease in symptoms over time. Group 3 (8%, n=31, PP=.82, constant=3.05, *SE*=0.10, *p*=.00), the final trajectory of anxiety, includes offenders who began their jail experience with high levels of anxiety that remained elevated over time. The 95% confidence intervals do not overlap, which suggests that the trajectories are separate and distinct (Jones & Nagin, 2007).

No differences exist in the trajectories between men and women (Group 2 compared to Group 1, β=.19, *SE*=.44 *p*=.66; Group 3 compared to Group 1, β=-.46, *SE*=.72 *p*=.53; Group 2 compared to Group 3, β=-.65, *SE*=.68 *p*=.34). However, there were differences among participants of different racial groups. White participants were significantly more likely than nonwhite participants to be in Group 3 than in Group1 (β=2.52, *SE*=.81 *p*=.00), they were also significantly more likely to be in Group 3 than Group 2 (β=1.10, *SE*=.49 *p*=.03). Additionally, African Americans were significantly less likely to be in Group 3 than in Group1 (β=-1.61, *SE*=.58 *p*=.01), they were also significantly less likely to be in Group 3 than Group 2 (β=-1.19, *SE*=.55 *p*=.03).

Depression. Results suggest a three-group model was the best fit for the data (BIC = -497.66) compared to a model with one group (BIC = -553.53), two groups (BIC = -510.57), four groups (BIC = -499.29), five groups (BIC = -505.43), and six groups (BIC = -514.24). The final model with three groups was reduced to the combination of zero-order, quadratic, and zero-order again (BIC = -485.33) and fit the data better than the original three group model with all quadratic trends (BIC = -497.66). Average posterior probabilities met the suggested 0.70-0.80 criteria. Figure 8 (pg. 161) illustrates the trajectories using the final model.

As depicted in Figure 8 (pg. 161), Group 1 (30%, n=122, PP=.77, constant=.44, *SE*=.04, *p*=.00) includes offenders who began their jail experience with low levels of depression that remained low over time. The second trajectory, Group 2 (61%, n=246, PP=.84, constant=.84, *SE*=.12, *p*=.00, linear β=.17, *SE*=.14, *p*=.23, quadratic β=-.07, *SE*=.03, *p*=.05), includes offenders who began their jail experience

with medium levels of depression that remained constant until Wave 2, when they

began to show a slight decrease in symptoms over time. Group 3 (8%, n=34, PP=.80,

constant=1.54, *SE*=.06, *p*=.00), the final trajectory of depression, includes offenders

who began their jail experience with high levels of depression and remained high

over time. The 95% confidence intervals do not overlap, which suggests that the

trajectories are separate and distinct (Jones & Nagin, 2007).

No differences exist in the trajectories between men and women (Group 2

compared to Group 1, β=-.02, *SE*=.40 *p*=.97; Group 3 compared to Group 1, β=.12,

SE=.57 *p*=.83; Group 2 compared to Group 3, β=.14, *SE*=.59 *p*=.82). However, there

were differences among participants of different racial groups. White participants

were significantly more likely than nonwhite participants to be in Group 3 than in

Group 1 (β=1.47, *SE*=.58 *p*=.01), they were also significantly more likely to be in

Group 3 than Group 2 (β=1.10, *SE*=.50 *p*=.03). Additionally, African Americans were

significantly less likely than non-African Americans to be in Group 3 than in Group1

(β=-1.77, *SE*=.64 *p*=.01), they were also significantly less likely to be in Group 3 than

Group 2 (β=-1.54, *SE*=.62 *p*=.01).

Post-traumatic stress. Results suggest a three-group model was the best fit for

the data (BIC = -1242.44) compared to a model with one group (BIC = -1278.43),

two groups (BIC = -1242.85), four groups (BIC = -1246.35), five groups (BIC = -

1256.33), and six groups (BIC = -1257.50). The final model with three groups was

reduced to three linear trends (BIC = -1233.92) and fit the data better than the

original three group model with quadratic trends (BIC = -1242.44). Average

posterior probabilities for all three groups met the suggested 0.70-0.80 criteria.

Figure 9 (pg. 162) illustrates the trajectories using the final model.

As depicted in Figure 9 (pg. 162), Group 1 (43%, n=172, PP=.81,

constant=.59, *SE*=.19, *p*=.00, linear β=-.28, *SE*=.09, *p*=.00) includes offenders who

began their jail experience with low levels of PTS and then showed a slight decrease

in symptoms over time. The second trajectory, Group 2 (51%, n=205, PP=.78,

constant=1.79, *SE*=.27, *p*=.00, linear β=-.27, *SE*=.08, *p*=.00), includes offenders who

began their jail experience with medium levels of PTS that decreased over time.

Group 3 (6%, n=25, PP=.80, constant=3.81, *SE*=.50, *p*=.00, linear β=-.61, *SE*=.18,

p=.00), the final trajectory of PTS, includes offenders who began their jail experience

with high levels of PTS which declined over time. The 95% confidence intervals do

not overlap, with one exception, suggesting the trajectories are separate and distinct

(Jones & Nagin, 2007). The upper confidence interval for Group 2 and the lower

confidence interval for Group 3 briefly converge. This, in combination with the low n

for Group 3 (n=25), signifies caution should be used when interpreting the results.

Gender differences exist in the trajectories for PTS such that women were

significantly more likely to be in Group 2 than Group 1 (β=.88, *SE*=.41 *p*=.03; Group

3 compared to Group 1, β=-.18, *SE*=1.03 *p*=.86; Group 3 compared to Group 2, β=-

1.07, *SE*=1.04 *p*=.31). Additionally, there were differences among participants of

different racial groups. White participants were significantly more likely than

nonwhite participants to be in Group 3 than in Group1 (β=1.74, *SE*=.67 *p*=.01) and

Group 2 than Group 1 (β=1.14, *SE*=.54 *p*=.04). Additionally, African Americans were

significantly less likely to be in Group 3 than in Group1 (β=-2.55, *SE*=1.07 *p*=.02).

They were also significantly less likely to be in Group 3 than Group 2 (β=-2.07,

SE=1.08 *p*=.05).

Antisocial behavior composite. Results suggest a three-group model was the

best fit for the data (BIC = -1801.92) compared to a model with one group (BIC = -

1920.06), two groups (BIC = -1827.48), four groups (BIC = -1801.69), five groups

(BIC = -1802.31), and six groups (BIC = -1802.43). The final model with three

groups was reduced to three zero-order trends (BIC = -1784.89) and fit the data

better than the original three group model with quadratic trends (BIC = -1801.92).

Average posterior probabilities for all groups met the suggested 0.70-0.80 criteria.

Figure 10 (pg. 163) illustrates the trajectories using the final model.

As depicted in Figure 10 (pg. 163), Group 1 (61%, n=246, PP=.91, constant=-

1.22, *SE*=.11, *p*=.00) includes offenders who began their jail experience with low

levels of antisocial behavior that remained low over time. The second trajectory,

Group 2 (33%, n=131, PP=.81, constant=1.35, *SE*=.24, *p*=.00), includes offenders

who began their jail experience with moderate levels of antisocial behavior and

persisted over time. Group 3 (7%, n=25, PP=.85, constant=4.76, *SE*=.39, *p*=.00), the

final trajectory of antisocial behavior, includes offenders who began their jail

experience with high levels of antisocial behavior that stayed constant over time.

The 95% confidence intervals do not overlap, which suggests that the trajectories

are separate and distinct (Jones & Nagin, 2007).

No gender differences exist in the trajectories (Group 2 compared to Group 1,

β=-.53, *SE*=.39 *p*=.18; Group 3 compared to Group 1, β=.08, *SE*=.55 *p*=.89; Group 2

compared to Group 3, β=.60, *SE*=.67 *p*=.37). However, there were differences among

participants of different racial groups. African American participants were significantly less likely to be in Group 3 than Group 2 (β=-1.15, *SE*=.56 *p*=.04); there were also less likely to be in Group 3 than Group 1 (β=-.94, *SE*=.54 *p*=.08).

Substance use. Results suggest a six-group model was the best fit for the data (BIC = -1721.52) compared to a model with one group (BIC = -1914.85), two groups (BIC = -1793.56), three groups (BIC = -1750.29), four groups (BIC = -1738.58), and five groups (BIC = -1730.22). The final model with six groups was reduced to the combination of zero-order, linear, quadratic, zero-order, quadratic, and zero-order again (BIC = -1699.97). This model fit the data better than the original six-group model with all quadratic trends (BIC = -1721.52). Average posterior probabilities for all groups met the suggested 0.70-0.80 criteria. Figure 11 (pg. 164) illustrates the trajectories using the final model.

As depicted in Figure 11 (pg. 164), Group 1 (12%, n=50, PP=.87, constant=.93, *SE*=.15, *p*=.00) includes offenders who began their jail experience using a small number of substances. This group remained low over time. The second trajectory, Group 2 (39%, n=157, PP=.78, constant=3.20, *SE*=.28, *p*=.00, linear β=.25, *SE*=.10, *p*=.01), includes offenders who began their jail experience using a moderate number of substances and then reported a slight increase in number of substances used over time. Group 3 (6%, n=26, PP=.84, constant=.87, *SE*=.77, *p*=.26, linear β=4.04, *SE*=.99, *p*=.00, quadratic β=-1.32, *SE*=.28, *p*=.00), includes offenders who began their jail experience using a moderate number of substances that persisted to Wave 2, but decreased the number of substances used by Wave 3. Group 4 (27%, n=108, PP=.73, constant=5.92, *SE*=.23, *p*=.00), includes offenders who began their

jail experience using a moderate to high number of substances and continued at this

rate over time. Group 5 (5%, n=19, PP=.80, constant=3.53, *SE*=1.04, *p*=.00, linear

β=5.64, *SE*=1.26, *p*=.00, quadratic β=-1.89, *SE*=.33, *p*=.00), includes offenders who

began their jail experience using a high number of substances that continued to

Wave 2, but decreased by Wave 3. Group 6 (10%, n=42, PP=.80, constant=8.16,

SE=.23, *p*=.00) includes offenders who began their jail experience using a high

number of substances and remained high over time. As illustrated in Figure 11 (pg.

164), some of the 95% confidence intervals overlap. Group 5 is also rather small

(n=19), so caution should be used when interpreting the results. However, the

groups of concern (i.e., Groups 3 and 5) are small subsets of larger groups that

reveal unique trajectories.

Gender differences exist in the trajectories such that women were

significantly more likely to be in Group 4 than Group 2 (Group 2 compared to Group

1, β=-.21, *SE*=.56 *p*=.71; Group 3 compared to Group 1, β=.47, *SE*=.69 *p*=.50; Group 4

compared to Group 1, β=.70, *SE*=.51 *p*=.17; Group 5 compared to Group 1, β=.47,

SE=.76 *p*=.54; Group 6 compared to Group 1, β=-.81, *SE*=.92 *p*=.38; Group 3

compared to Group 2, β=.67, *SE*=.74 *p*=.36; Group 4 compared to Group 2, β=.91,

SE=.45 *p*=.04; Group 5 compared to Group 2, β=.68, *SE*=.72 *p*=.35; Group 6 compared

to Group 2, β=-.60, *SE*=.88 *p*=.50; Group 4 compared to Group 3, β=.23, *SE*=.63 *p*=.71;

Group 5 compared to Group 3, β=.00, *SE*=.82 *p*=1.00; Group 6 compared to Group 3,

β=-1.27, *SE*=.98 *p*=.19; Group 5 compared to Group 4, β=-.23, *SE*=.75 *p*=.76; Group 6

compared to Group 4, β=-1.51, *SE*=.87 *p*=.08; Group 6 compared to Group 5, β=-1.27,

SE=1.18 *p*=.28). Additionally, there were differences between participants of

different races. White participants were significantly more likely than non-white

participants to be in Group 5 than Group 1 (β=2.20, *SE*=.93 *p*=.02), Group 6 than

Group 1 (β=2.59, *SE*=.84 *p*=.00), Group 5 than Group 2 (β=1.37, *SE*=.67 *p*=.04),

Group 6 than to Group 2 (β=1.76, *SE*=.54 *p*=.00), Group 6 than Group 3, (β=2.74,

SE=1.22 *p*=.03), and Group 6 than Group 4 (β=1.23, *SE*=.55 *p*=.03). African American

participants were also significantly less likely to be in Group 6 than Group 2 (β=-

1.23, *SE*=.46 *p*=.01).

Recidivism. Recidivism did not vary by trajectory groups for anxiety,

depression, post-traumatic stress, or substance use. However, it did vary for the

antisocial behavior composite. Those who recidivated were significantly more likely

to be in Group 3 than Group 1 (β=1.14, *SE*=.54 *p*=.03) and Group 3 than Group 2

(β=1.65, *SE*=.78 *p*=.04).

Objective 2. To evaluate the causal link between adverse pre-incarceration

experiences, or those that were imported into jail, on mental and behavioral

outcomes both during and after incarceration.

Table 12 (pg. 140) summarizes the results of the models estimated using

random-effects models, separated by outcome variable. This set of models examines

the impact of pre-incarceration trauma, or trauma history, on mental and behavioral

health. Table 13 (pg. 142) summarizes the results of the models that assess the

impact of pre-incarceration exposure to community violence on mental and

behavioral health. All outcome variables are continuous, with the exception of

recidivism; thus, for all continuous outcome variables, I used linear models for

quantitative response variables, and for recidivism, I used a logistic model for

binary response variables. Each model controls for the effects of sex, age, race, education, and violent offender status.

Anxiety. Results show that for a typical subject, each additional trauma experienced pre-incarceration results in a significant increase in anxiety per wave by .04 units, controlling for sex, age, race, education, and violent offender status. However, exposure to community violence pre-incarceration did not significantly affect anxiety symptoms during incarceration.

Depression. Results show that for each additional trauma experienced pre-incarceration, there is a significant increase in depression over time, during incarceration, by .02 units, controlling for sex, age, race, education, and violent offender status. However, exposure to community violence pre-incarceration did not significantly impact depressive symptoms during incarceration.

Post-traumatic stress. Results show that for an average subject, each additional trauma experienced pre-incarceration results in a significant increase in post-traumatic stress symptoms per wave, during incarceration, by .09 units. Additionally, a one-unit increase in exposure to community violence pre-incarceration significantly increases post-traumatic stress symptoms over time by .20 units, controlling for sex, age, race, education, and violent offender status.

Antisocial behavior composite. The results for the antisocial behavior composite model show that for an average subject, each additional trauma experienced pre-incarceration significantly affects the rate of growth for antisocial behavior per wave, during incarceration, by .15 units. Additionally, a one-unit increase in exposure to community violence pre-incarceration significantly

increases antisocial behavior over time by .96 units, controlling for sex, age, race, education, and violent offender status.

Substance use. The results for the substance use model show that for a typical subject, each additional trauma experienced pre-incarceration results in a significant increase in substance use per wave by .15 substances, controlling for sex, age, race, education, and violent offender status. Additionally, a one-unit increase in exposure to community violence pre-incarceration significantly increases substance use per wave, during incarceration, by .47 units, controlling for sex, age, race, education, and violent offender status.

Recidivism. The *F*-test for the trauma history model was significant, $F(16, 839) = 2.93$, $p = .001$; however, the *t*-test for pre-incarceration trauma history was not significant, $t(841) = -.89$, $p=.38$, controlling for sex, age, race, education, and violent offender status. This suggests that traumatic events before incarceration do not predict recidivism. When the overall *F*-test is significant, but the *t*-test for a specific predictor is not significant, this indicates that the model explains a significant amount of the variance in the outcome variable, but the particular predictor variable is unrelated to, or does not predict, the outcome variable. Categories within race, education, and violent offender status were significant. The exponentiated coefficient, or odds ratio, indicates Hispanic subjects are 1.78 times more likely to recidivate than African American subjects, $t(841) = 2.06$, $p=.04$. Subjects of 'other' race are 3.21 times more likely to recidivate, compared to African American subjects, $t(841) = 2.24$, $p=.03$. With respect to education, subjects with a high school diploma or GED versus those with grade school are significantly less

likely to recidivate, *OR* = .45, *t*(841) = -2.08, *p*=.04. Similarly, those with some college education compared to those with grade school are less likely to recidivate, *OR* = .24, *t*(841) = -2.79, *p*=.01. Finally, non-violent offenders, compared to violent offenders, are also less likely to recidivate, *OR* = .51, *t*(841) = -2.45, *p*=.01.

The *F*-test for the community violence model was significant, *F* (16, 839) = 2.94, *p* = .001; however, the *t*-test for exposure to community violence pre-incarceration was not significant, *t*(841) = .90, *p*=.37, controlling for sex, age, race, education, and violent offender status. This suggests that exposure to community violence before incarceration does not predict recidivism. Categories within race, education, and violent offender status were significant. The exponentiated coefficient, or odds ratio, indicates Hispanic subjects are 1.72 times more likely to recidivate than African American subjects, *t*(841) = 1.97, *p*=.05. Subjects of 'other' race are 3.20 times more likely to recidivate, compared to African American subjects, *t*(841) = 2.23, *p*=.03. With respect to education, subjects with a high school diploma or GED versus those with grade school are significantly less likely to recidivate, *OR* = .43, *t*(841) = -2.26, *p*=.02. Similarly, those with some college education compared to those with grade school are less likely to recidivate, *OR* = .33, *t*(841) = -2.83, *p*=.01. Lastly, non-violent offenders, compared to violent offenders, are also less likely to recidivate, *OR* = .52, *t*(841) = -2.36, *p*=.02.

Objective 3. To determine the role of coercive jail experiences, or those originating from the jail environment, on psychosocial maladjustment in jail and the community, as well as recidivism.

Table 14 (pg. 144) summarizes the results of the models estimated using random-effects models, separated by outcome variable. This set of models examines the impact of exposure to violence in jail on mental and behavioral health. Table 15 (pg. 146) summarizes the results of the models that assess the impact of segregation, or solitary confinement, on mental and behavioral health. All outcome variables are continuous, with the exception of recidivism; thus, for all continuous outcome variables, I used linear models for quantitative response variables, and for recidivism, I used a logistic model for binary response variables. Each model controls for the effects of sex, age, race, education, and violent offender status. Table 16 (pg. 148) displays the results of the model that examines the interaction of pre-jail community violence exposure and jail violence exposure. This model was specified the same way as the model described in Table 13 (pg. 142), except the interaction variable was added.

Anxiety. Results show that for a typical subject, being placed in segregation results in a significant increase in anxiety per wave by .17 units, controlling for sex, age, race, education, and violent offender status. However, exposure to violence during incarceration did not significantly affect anxiety symptoms during incarceration. The results for the final model showed the interaction of pre-jail community violence exposure and jail violence exposure was not significant.

Depression. Results show that being housed in segregation increases depression over time, during incarceration, by .11 units, controlling for sex, age, race, education, and violent offender status. Additionally, exposure to violence during incarceration also significantly increased depressive symptoms during

incarceration; as violence exposure increases by one unit, depressive symptoms increase by .79 units per wave, controlling for sex, age, race, education, and violent offender status.

The results for the model, which examines the interaction of pre-jail community violence exposure and jail violence exposure, show a significant interaction (β = -.17, p = .03). The main effect of exposure to community violence was significant such that a one-unit increase in exposure to community violence pre-incarceration significantly increases depressive symptoms over time by .06 units, controlling for the effects of the background variables. The other main effect, exposure to violence during incarceration, also significantly increased depressive symptoms during incarceration; as violence exposure increases by one unit, depressive symptoms increase by .80 units per wave, controlling for all other variables. I probed the significant interaction in this model and found that in those with low levels of exposure to community violence, there was a significant, positive relation between exposure to violence during incarceration and depressive symptoms (β = 2.25, p = .00); similarly, the group with high levels of exposure to community violence also showed this significant relationship (β = 1.87, p = .00; see Figure 12, pg. 165).

Post-traumatic stress. Results show that for an average subject, segregation results in a significant increase in post-traumatic stress symptoms per wave, during incarceration, by .44 units. Additionally, a one-unit increase in exposure to violence during incarceration significantly increases post-traumatic stress symptoms over time by 3.07 units, controlling for sex, age, race, education, and violent offender

status. The results for the final model showed the interaction of pre-jail community violence exposure and jail violence exposure was not significant.

Antisocial behavior composite. The results for the antisocial behavior composite model show that for an average subject, segregation does not significantly affects the rate of growth for antisocial behavior per wave, during incarceration. However, a one-unit increase in exposure to jail violence significantly increases antisocial behavior over time by 1.25 units, controlling for sex, age, race, education, and violent offender status. The results for the final model showed the interaction of pre-jail community violence exposure and jail violence exposure was not significant.

Substance use. The results for the substance use model show that for a typical subject, segregation results in a significant increase in substance use per wave by .75 substances, controlling for sex, age, race, education, and violent offender status. Additionally, a one-unit increase in exposure to violence during incarceration significantly increases substance use per wave, during incarceration, by 5.17 units, controlling for sex, age, race, education, and violent offender status.

The results for the model, which examines the interaction of pre-jail community violence exposure and jail violence exposure, show a significant interaction ($\beta = -.97$, $p = .02$). The main effect of exposure to community violence was significant such that a one-unit increase in exposure to community violence pre-incarceration significantly increases the number of substances used over time by .43, controlling for the effects of the background variables. The other main effect, exposure to violence during incarceration, also significantly increased substance use

during incarceration; as violence exposure increases by one unit, substance increases by 4.73 substances per wave, controlling for all other variables. I probed the significant interaction in this model and found that in those with low levels of exposure to community violence, there was a significant, strong positive relation between exposure to violence during incarceration and substance use (β = 11.66, p = .00); similarly, the group with high levels of exposure to community violence also showed this significant relationship, but it was not as strong (β = 9.86, p = .00; see Figure 13, pg. 166).

Recidivism. The F-test for the jail violence model was not significant, F (17, 831) = 0.67, p = .77. The t-test for exposure to violence during incarceration was also not significant, t(833) = -.39, p=.69, controlling for sex, age, race, education, and violent offender status. Additionally, none of the aforementioned control variables were significant. This suggests that exposure to violence during incarceration does not predict recidivism.

The F-test for the model, which examines the interaction of pre-jail community violence exposure and jail violence exposure was not significant, F (19, 829) = 0.48, p = .94. The t-test for the interaction was also not significant, t(831) = .43, p=.67, controlling for sex, age, race, education, and violent offender status, and main effects of community violence and jail violence. Furthermore, none of the background variables were significant. This suggests that pre-jail community violence exposure does not moderate the relation between exposure to jail violence and recidivism.

Pathologic adaptation. In order to confirm that the pattern of results for exposure to jail violence follows the pathologic adaptation model, two conditions must occur. The first is a significant, positive linear function for antisocial behavior, and the second is a significant, quadratic function for emotional distress. The results for antisocial behavior followed this pattern; however, all possible variables representing emotional distress (i.e., anxiety, depression, or post-traumatic stress) were tested using a quadratic term, and all were not significant (t(1250) = .56, p=.58; t(1249) = 1.10, p=.27; t(1059) = .66, p=.51, respectively). This indicates that participants exposed to violence during incarceration do not follow a pathologic adaptation model because emotional distress does not stabilize in the face of exposure to jail violence.

Objective 4. To assess whether experiences post-release account for the variation in re-entry success, as measured by psychosocial outcomes and recidivism.

As a result of the extremely small sample size at W4 (n=11), I was unable to compute the analyses in this objective. In place of the proposed analyses, I offer descriptive information on this subsample.

The participants that completed W4 include eight males and three females. The mean age of this group was 35.55 years, (SD = 10.50, range = 19-52); five of the W4 participants were Black/African American, three identified as Hispanic/Latino, and the final three were White/Caucasian. Five of the participants had less than a high school diploma, another five had a high school diploma or GED and one participant had an associate degree. Exposure to community violence post-release

varied greatly in this sample (mean = .56, SD = .54, range = 0-1.86). Zero of the 11

participants who completed W4 recidivated within three months of release.

Objective 5: To study the potential moderating role of gender, race,

expectations, social support, and locus of control in the relation between negative

experiences with violence pre-incarceration, during jail, and post-release on mental

health and recidivism; to measure the mediating role of coping behaviors and

cognitive beliefs in the relation between violence experiences during jail on

recidivism and the development of psychopathology.

Table 17 (pg. 150) summarizes the results of the models that examine the

impact of the interaction of pre-incarceration community violence exposure and

risk status on mental and behavioral health. Table 18 (pg. 152) summarizes the

results of the models that assess the impact of the interaction of violence exposure

during incarceration and risk status on mental and behavioral health. All outcome

variables are continuous, with the exception of recidivism; thus, for all continuous

outcome variables, I used linear models for quantitative response variables, and for

recidivism, I used a logistic model for binary response variables. Each model

controls for the effects of sex, age, race, education, and violent offender status. As

mentioned in the analytic approach, interactions deemed significant at $p \leq .05$ were

probed and graphed. Additionally, in order to simply the interpretation of the

interactions, the risk status variable was condensed to three groups: low, medium,

and high. The low group includes individuals with a score of 0 on the risk variable

(39%; n=156), the medium group includes participants with a risk score of 1 (37%;

n=150), and the high group contains participants with risk scores from 2-5,

inclusive (24%; n=96).

Moderation results

1) *Anxiety*. The results for the model, which examines the interaction of risk

and pre-jail community violence exposure, show the interaction was significant for

anxiety symptoms (β = .15, *p* = .07). Additionally, the results for the model, which

includes the interaction of risk and jail violence exposure, were not significant.

2) *Depression.* The results for the model, which examines the interaction of

risk and pre-jail community violence exposure, show a significant interaction (β =

.07, *p* = .08). The results for the model, which includes the interaction of risk and jail

violence exposure, were not significant.

3) *Post-traumatic stress.* The results for the model, which examines the

interaction of risk and pre-jail community violence exposure, show a significant

interaction (β = .20, *p* = .01). The main effect of exposure to community violence was

significant such that a one-unit increase in exposure to community violence pre-

incarceration increased post-traumatic stress symptoms over time by .11,

controlling for the effects of the background variables. The other main effect, risk

status, was not significant. I probed the significant interaction in this model and

found that the low-risk status did not show a significant relation between exposure

to community violence and PTS symptoms (β = .13, *p* = .14); the high-risk status

group also showed a non-significant relationship (β = .11, *p* = .39). However, the

medium risk group showed a positive, significant relationship, (β = .38, *p* = .00; see

Figure 14, pg. 167). Finally, the results for the interaction of risk and jail violence

exposure were not significant.

       4) *Antisocial behavior composite.* The results for the model, which examines

the interaction of risk and pre-jail community violence exposure, were not

significant. However, the results for the model, which includes the interaction of risk

and jail violence exposure, show a significant interaction (β = 2.28, *p* = .01). The

main effect of risk status was significant such that those in group 2 had significantly

less antisocial behavior than those in group 0, controlling for the effects of the

background variables. The other main effect, exposure to violence during

incarceration, significantly increased antisocial behavior; as violence exposure

increases by one unit, antisocial behavior increases by 1.43 units per wave,

controlling for all other variables. I probed the significant interaction in this model

and found that the low-risk status did not show a significant relation between

exposure to violence during incarceration and antisocial behavior (β = .74, *p* = .30).

The medium risk group did show a strong, positive significant relationship, (β =

3.71, *p* = .00), as well as the high-risk status group (β = 3.11, *p* = .00; see Figure 15,

pg. 168).

       5) *Substance use.* The results for the model, which examines the interaction of

risk and pre-jail community violence exposure, were not significant. The results for

the model, which includes the interaction of risk and jail violence exposure, show a

significant interaction (β = 3.98, *p* = .01). The main effect of risk status was not

significant. However, the other main effect, exposure to violence during

incarceration, significantly increased substance use during incarceration; as

violence exposure increases by one unit, substance increases by 3.03 substances per wave, controlling for all other variables. I probed the significant interaction in this model and found that in those of low risk status, there was a significant, strong positive relation between exposure to violence during incarceration and substance use (β = 3.49, p = .00); similarly, the medium risk group also showed this significant relationship, but it was not as strong (β = 1.34, p = .04). The high-risk status group did not show a significant relation between jail violence and substance use (β = .88, p = .32; see Figure 16; pg. 169).

6) *Recidivism.* All models testing the interaction of substance use and mental and behavioral health variables were not significant for recidivism. The *F*-test for the model containing the substance use and anxiety interaction was not significant, F (17, 554) = 0.50, p = .90, and the interaction was not significant (β = .02, p = .79). The *F*-test for the model containing the substance use and PTS interaction was not significant, F (17, 555) = 0.56, p = .86, and the interaction was not significant (β = .01, p = .83). The *F*-test for the model containing the substance use and depression interaction was not significant, F (17, 555) = 0.52, p = .89, and the interaction was not significant (β = .03, p = .85). The *F*-test for the model containing the substance use and antisocial behavior interaction was not significant, F (17, 557) = 0.61, p = .82, and the interaction was not significant (β = .01, p = .72).

Furthermore, the models containing the interaction of exposure to jail violence and risk status, and exposure to community violence and risk status were also non-significant. The *F*-test for the model containing the interaction of exposure to jail violence and risk status was not significant, F (21, 553) = 0.49, p = .95, and the

interaction was also non-significant (β = -.22, p = .25). The F-test for the model

containing the interaction of exposure to community violence and risk status was

not significant, F (21, 836) = .37, p = .78, and the interaction was not significant (β =

-.02, p = .72).

Mediation results

1) *Anxiety*. The results for the model in which maladaptive coping styles were

tested as a mediator in the relation between violence exposure during incarceration

and anxiety were not significant. The second model, which includes normative

beliefs approving of aggression as a mediator, was not significant.

2) *Depression.* The results show that maladaptive coping styles do not

mediate the relation between violence exposure during incarceration and

depression. The second model, which includes normative beliefs approving of

aggression as a mediator, was not significant.

3) *Post-traumatic stress.* The results reveal maladaptive coping styles do not

mediate the relation between violence exposure during incarceration and PTS. The

second model, which tests normative beliefs approving of aggression as a mediator,

was also not significant.

4) *Antisocial behavior composite.* The results reveal maladaptive coping styles

do not mediate the relation between violence exposure during incarceration and

antisocial behavior. The second model, which examines normative beliefs approving

of aggression as a mediator, was also not significant.

5) *Substance use.* The results for the model in which maladaptive coping

styles were tested as a mediator in the relation between violence exposure during

incarceration and substance use were not significant. The second model, which includes normative beliefs approving of aggression as a mediator, was not significant.

6) *Recidivism.* The results show that maladaptive coping styles do not mediate the relation between violence exposure during incarceration and recidivism. The second model, which includes normative beliefs approving of aggression as a mediator, was not significant. Moreover, substance use did not mediate the link between violence exposure and recidivism.

Discussion

The present study causally links experiences before and during jail to developmental changes in mental and behavioral health. In Objective 1, I found that in all of the outcome variables, with the exception of substance use, a three-group model was the best fit for the data. Participants' mental and behavioral health symptoms were generally divided into low, medium, and high groups and remained constant during incarceration or decreased. Recidivism did not vary by trajectory groups, except for antisocial behavior in which Group 3, the high-stable group, was most likely to recidivate. I also found gender differences in post-traumatic stress symptoms and substance use, and racial differences in all psychosocial outcome variables. This objective was descriptive, so I did not have specific hypotheses about the results.

The results for Objective 2 show that mental and behavioral health symptoms decline over time (with the exception of antisocial behavior), but pre-incarceration trauma increases the starting point for these symptoms, and it slows

the decline of all psychosocial symptoms. Additionally, community violence exposure showed a similar relationship, but only for PTS, antisocial behavior, and substance use. Pre-incarceration trauma and community violence exposure were not related to recidivism. I hypothesized that trauma and community violence exposure would be significantly related to all psychosocial outcomes, as well as recidivism. The results provide partial support for the importation model.

In Objective 3, I found that being segregated during incarceration increases the starting point for all psychosocial problems, except antisocial behavior. Similar to Objective 2, participants who were segregated experienced slower declines of these psychosocial symptoms, compared to those not segregated. These results were replicated with exposure to violence during incarceration, except there were no significant effects for anxiety symptoms. Effects could not be detected for recidivism. My hypothesis for this objective, which focused on the deprivation model, was partially supported. I hypothesized that exposure to violence in jail, compared to pre-jail violence exposure, would serve as the strongest predictor of mental health and behavioral problems, as well as recidivism. I also expected the most problematic conditions when the importation and deprivation models interacted; however, I found that offenders exposed to high levels of community violence were not as affected by jail violence as those with low levels of community violence. This set of results suggests inmates entering jail with high levels of community violence may be emotionally desensitized, or show diminished response, to jail violence (Ng-Mak, Salzinger, Feldman, & Stueve, 2002). Generally, exposure to violence during incarceration in isolation produced the worst outcomes,

followed by the interaction of community violence and jail violence, and finally community violence exposure by itself.

Objective 4 could not be tested due to the extremely low sample size; thus, I am unable to test the re-entry model, which hypothesized that exposure to community violence post-release would predict greater levels of anxiety, depression, PTS, aggression, antisocial behavior, substance use, and increase recidivism. This objective also proposed to test the interaction of the importation, deprivation, and re-entry models.

Objective 5 examined moderators and mediators. The results revealed that, in general, risk scores did not moderate violence, in jail or in the community, with respect to mental and behavioral health. The exceptions to this set of results include the interaction of jail violence and risk scores in predicting substance use and antisocial behavior. After probing the interaction for substance use, I found that participants at low and medium levels of risk significantly increased the number of substances used when exposed to violence during incarceration. Further testing of the antisocial model showed that as exposure to violence during incarceration increased, medium and high-risk participants reported greater levels of antisocial behavior. The final significant interaction found that medium risk participants were the only participants to report greater PTS when exposed to community violence. I did not detect any moderating results for recidivism. Additionally, Objective 5 found that maladaptive coping styles and endorsement of aggressive beliefs did not mediate the relation between violence exposure and mental and behavioral health problems.

The first hypothesis for Objective 5 postulated that lower risk participants would report fewer mental and behavioral problems. This hypothesis was partially supported in the model predicting antisocial behavior, but this hypothesis was rejected when I tested the model in relation to substance use. Additionally, I predicted a significant interaction between substance use and mental functioning (i.e., anxiety, depression, and PTS) with respect to recidivism, and I did not find support for this hypothesis. Finally, I hypothesized that maladaptive coping styles and endorsement of cognitive beliefs or attitudes that support aggressive and criminal behavior would mediate the relation between violence exposure and increased mental/behavioral problems, as well as recidivism. I was unable to confirm this prediction.

Overall, the results of this study align with studies 1-3 in this dissertation and prior research, which supports an integrated importation-deprivation model for understanding offender adjustment (Hochstetler & DeLisi, 2005). Victimization during incarceration has been associated with hostility and depression post-release, which leads to increased violent criminal behavior and substance use (Zweig, Yahner, Visher, & Lattimore, 2015). Other traumatic experiences during incarceration, such as solitary confinement, have been linked to severe psychological effects including psychosis, hallucinations, incoherence, and paranoia (see Grassian, 2006). It is ordinary for psychosocial symptoms to oscillate during incarceration, particularly just prior to release (Cormier, Kennedy, & Sendbuehler, 1967). Gate fever is a term used to describe inmates who are agitated, anxious and/or depressed at the rapid change of being deprived freedoms and forced to

depend on the system to complete freedom and facing the demands of society upon release (Cormier et al., 1967). However, when these psychological symptoms persist after release, they place the offender at-risk for returning to the incarceration environment.

During incarceration, inmates with a mental illness generate additional healthcare costs and pose further risks. These inmates have higher rates of misconduct and are disciplined more often than other inmates (Fellner, 2006; Human Rights Watch, 2015; Toch & Adams, 2002). Consequently, correctional staff, who typically lack mental health training, respond to this misbehavior with violence. Frequently, the inmate's misconduct stems from their mental illness, which renders them unable to properly respond to staff orders. Mentally ill inmates have longer length of stays in jail, are more likely to be sent to solitary confinement, and have higher rates of injury while incarcerated (Kaba et al., 2015). While most mentally ill inmates receive their mental health diagnosis within the first seven days of admission, 65.5% of inmates sent to solitary confinement are identified as mentally ill later in their jail stay (Kaba et al., 2015). This suggests that inmates receiving a mentally ill diagnosis after seven days of confinement are experiencing mental health symptoms because of adverse jail conditions (Kaba et al., 2015). Jails experience high volumes of inmates at intake and despite an intake screening, many inmates do not receive adequate mental health treatment. A Bureau of Justice Statistics report (2006) found that only one in six inmates received mental health treatment since being admitted to jail. With the rate of suicides in jail 46 per 100,000 inmates, a number much larger than the rate of suicides in prison (i.e., 15

per 100,000 inmates), inmates experiencing the initial shock of confinement need access to proper mental health care (BJS, 2015).

This study, despite the comprehensive nature, is still subject to limitations. As previously mentioned in the method section, I had difficulty locating subjects in the community at Wave 4. High-risk populations such as the mentally ill or those engaged in criminal behavior are difficult to track because they are often unstable, transitory, potentially violent, and may use drugs (Schubert et al., 2004; Schubert et al., 2005). Future research that attempts to follow-up with subjects involved in the justice system should consider increasing the retention bonus associated with follow-up sessions. Another more promising method is to establish a relationship with probation or parole officers that could assist with the follow-up sessions. If a subject is legally required to meet with a probation or parole officer, or perhaps even a counselor, the subject is more inclined to stay in touch. Unfortunately, despite the increased sample size, I did not anticipate a 97% attrition rate from Wave 1 to Wave 4 and lost the opportunity to obtain information about how offenders adjust in the community.

The present study aimed to examine mental and behavioral health during incarceration and after release; however, the small sample size at Wave 4 prevented me from learning how offenders adapt post-release and how coercive experiences during incarceration might affect adjustment after release. Nonetheless, I was able to obtain a measure of recidivism, which allowed me to assess post-release success or failure. The recidivism check has its own limitations that should be noted. As previously discussed, the recidivism records I obtained from the New Jersey State

Parole Board only report crimes that happened in the state of New Jersey. As part of the tri-state area, New Jersey is located is in close proximity to New York, Connecticut, and even Pennsylvania. If a subject from my study committed a crime in another state, regardless of the distance from New Jersey, the recidivism check would not capture this.

The amount of time in the community post-release is another important consideration when measuring recidivism. The recidivism rate three months after release for this sample was 10%. National rates of recidivism typically focus on prison populations and examine longer time periods post-release. For instance, a Bureau of Justice Statistics report found that 28% of prisoners are rearrested within six months of release (BJS, 2014). After one year, the recidivism rate increased to 43%; after three years, it reached 68%; after five years, 77% of prisoners were arrested again (BJS, 2014). This report examined recidivism rates for over 400,000 individuals released in 2005 from state prisons in 30 states. When compared to national rates, my recidivism measure examined a very short time post-release. Given the large, national recidivism rates 1-5 years after release, it is plausible that my subjects would also have higher rates of recidivism if they had more "at-risk" time in the community.

Similar to the prior studies in this dissertation, the present study primarily utilizes self-report data. I asked participants to retroactively report on adverse experiences pre-incarceration and coercive events during incarceration. Some participants may have difficulty accurately remembering these potentially traumatic experiences. However, studies examining the impact of child abuse on psychological

functioning in adult life also rely on retroactive accounts (see Browne & Finklelhor, 1986), and this is a common approach to studying traumatic events (see Mueser, Rosenberg, Goodman, & Trumbetta, 2002). Finally, the study was conducted in an urban jail; thus, the results of this study may not be generalizable to jails in more rural areas.

In sum, this study provides evidence for a causal relation between exposure to violence pre-incarceration and during incarceration, and mental and behavioral health difficulties throughout incarceration. The study further validates the importance of both imported characteristics/experiences and those created by the incarceration environment. Offenders many enter jail with community violence exposure, but being exposed to violence during incarceration is unlike experiences with violence outside of jail walls. The resulting distress is likely to have profound consequences, including further engagement in criminal behavior. Future research should include an extended time period when assessing recidivism, as well as a stronger design and collaboration with community agencies in order to facilitate follow-ups post-release. Finally, a similar study conducted with prison inmates across a longer time frame would further our knowledge in this understudied area.

General Discussion

This dissertation presented evidence for the enduring impact of imported factors, or characteristics offenders bring into the incarceration environment and/or experiences occurring prior to incarceration, on adjustment during incarceration and after release. Adverse experiences can be extremely traumatic for some individuals, affecting mental health years after the event (Felitti et al., 1998).

Importation factors, like those examined in the present research, may occur early in life, or just prior to incarceration. For example, the Adverse Childhood Experiences (ACE; Felitti et al., 1998) study queried approximately 13,500 adults about seven adverse childhood experiences, including exposure to abuse and violence. The researchers found strong relationships between these early adverse experiences and adult diseases and health risks (e.g., alcoholism, drug abuse, depression, suicide attempt; Felitti et al., 1998). Early trauma may lead to maladjustment in childhood, and subsequent criminal behavior. Additionally, onset of mental health problems vary by illness (see Kessler et al., 2007) and may also differ for each individual; therefore, some individuals entering incarceration may be experiencing psychological symptoms for the first time, while others have been coping with these difficulties for an extended period of time. When multiple adverse experiences accumulate, prior to incarceration and/or during incarceration, the negative outcomes compound and persist as offenders attempt to adjust in the community post-release.

It is not uncommon for individuals with a mental illness to have problems with multiple psychological disorders, also known as comorbidity. For instance, the majority of people with PTSD meet criteria for at least one other mental disorder (Brady, Killeen, Brewerton, & Lucerini, 2000). Depressive disorders, substance use, and anxiety disorders are the three most common comorbid diagnoses (Brady et al., 2000). It is unclear if the negative psychosocial responses to violence presented in this dissertation are separate, or comorbid, disorders. Furthermore, it is unknown whether these psychological symptoms in response to traumatic events are

completely new to the affected individual or whether they are pre-existing symptoms exacerbated by the trauma. They may also be symptoms of a new psychological disorder in an individual with other diagnoses.

The issue of comorbidity is particularly important for the present research because of the lack of recidivism effects detected. It is possible that comorbid psychological disorders mediate the relation between exposure to violence and recidivism. Prior research has found that individuals with a severe mental illness who have co-occurring substance use problems are more likely to re-offend and be violent than those without a substance problem and/or less severe mental disorders (see Elbogen & Johnson, 2009; Markowitz, 2011). This dissertation research did not examine severe mental illnesses in which people are more likely to exhibit violence. However, future research that utilizes other data sources to measure recidivism, and expands the term recidivism to include psychiatric hospitalization or substance use relapse, may help overcome these limitations. National databases that capture Medicaid records provide this information. Finally, success after release could also be measured by learning about the offender's status in the workforce.

The majority of research in this area has focused on prison populations, but jail populations are also important to study because of the volume of people that cycle in and out of jail each year. Nearly 12 million people are admitted to jail annually (BJS, 2013). Jail is also the first point of entry to the criminal justice system, after arrest, so nearly everyone under correctional supervision will experience jail time. The high rates of violence inside jail and the associated negative sequelae affect a substantial portion of society. Additionally, first-time offenders may respond

differently to adverse experiences in jail than those with multiple incarcerations. The current research showed that in general, psychosocial symptoms declined or remained constant during incarceration. It is possible that mental and behavioral health symptoms increase over time for first-time offenders since they are not as familiar with the jail setting.

This research has important policy implications. Many offenders are released into high-crime, urban areas without any treatment for the underlying issues imported into prison and any new trauma that happened during prison. The dissertation studies presented here, along with others, provide support for the idea of reworking the re-entry model. As Travis (2000) noted, psychological treatment, drug treatment, education, job training, and other programs during incarceration should be linked to similar programs in the community. Re-entry should be a seamless transition for the offender, a continuation of services that were provided during incarceration. The results of this dissertation suggest that while correctional staff should focus on keeping all inmates safe, re-entry services should also include treatment to reduce mental and behavioral health problems associated with the damaging experience of exposure to violence, particularly violence encountered during incarceration.

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Table 1

Descriptive Statistics for all Variables (Study 1)

Variable	Mean	SD	Range
Aggression Preferences	.89	.24	.27-1.75
Endorsement of Aggressive Beliefs	.90	.43	0-2.35
General Aggressiveness	.18	.12	0-.5
Violence Exposure	.44	.42	0-2.53

Note. The numbers reported in the table for general aggressiveness take into account the transformation performed on this variable. The aggression preferences variable represents a ratio by which those with a score of >1 represent individuals with a preference for instrumental aggression and those scoring <1 indicate a preference for expressive aggression.

Table 2

Descriptive Statistics for Mental Health/Trauma Variables (Study 2)

Variable	Mean	SD	Range
Anxiety Raw Scores	5.81	2.75	0-11
T Scores	58.46	6.97	50-73
Percent meeting clinical criteria	21.7%		
Depression Raw Scores	4.28	4.34	0-20
T Scores	55.65	7.90	50-85
Percent meeting clinical criteria	14.5%		
PTSD Checklist	0.73	.72	0-3.82
Percent meeting clinical criteria	14.5%		
Trauma History Screen	4.46	2.61	0-11

Note. Percent meeting clinical criteria for anxiety and depression indicates the proportion of participants in the "clinical" range using raw *T* scores > 63 per Achenbach and Rescorla (2003). Percent meeting clinical criteria for PTSD are those participants exhibiting moderate to extreme symptoms in the designated clusters needed for a diagnosis per the DSM-IV.

Table 3

Mental Health Means for Prison Violence Exposure (Study 2)

	Exposure	No Exposure	t	df	Cohen's d
Anxiety Symptoms					
Murder During Prison	8.60 (2.51)	5.59 (2.66)	2.44**	67	.60
Sexual Assault During Prison	7.11 (2.89)	5.35 (2.57)	2.42**	67	.59
Depression Symptoms					
Murder During Prison	7.00 (4.63)	4.06 (4.28)	1.47	67	.36
Sexual Assault During Prison	5.00 (5.52)	4.02 (3.88)	.41	67	.10
Post-traumatic Stress Symptoms					
Murder During Prison	1.57 (1.34)	.66 (.62)	2.85***	67	.70
Sexual Assault During Prison	1.07 (.98)	.61 (.56)	2.41**	67	.59

Note. *= $p \leq .10$, **= $p \leq .05$, ***= $p \leq .01$. Standard Deviations appear in parentheses below means.

Table 4

Summary of MANCOVAs and Planned Comparisons (Study 2)

	Between-Subjects Results for Ordinal Variable	*Partial* η^2	*Significant Planned Comparisons*
Anxiety Symptoms			
Murder	$F(2, 65) = 1.10, p = .34$	.03	None
Sexual Assault	$F(2, 65) = 5.05, p = .01$	.13	Indirect > No Exposure* Direct > No Exposure***
Depression Symptoms			
Murder	$F(2, 65) = 1.02, p = .37$	.03	None
Sexual Assault	$F(2, 65) = 2.04, p = .14$	.06	Direct > No Exposure**
Post-traumatic Stress Symptoms			
Murder	$F(2, 65) = 2.10, p = .13$	.06	None
Sexual Assault	$F(2, 65) = 2.96, p = .06$	.08	Direct > No Exposure**

Note. All results in this table are after the control variable, pre-prison trauma history, was entered in the model. *= $p \leq .10$, **= $p \leq .05$, ***= $p \leq .01$. Standard Deviations appear in parentheses below means.

Table 5

Severe Violence During Incarceration: Victimization and Witnessing Rates (Study 3)

Specific Forms of Violence	Victim		Witness	
	Yes	No	Yes	No
Physically assaulted	20%	80%	78%	22%
Slapped, hit, kicked, or bitten	30%	70%	79%	21%
Hit with some object with the intent to harm	21%	79%	69%	31%
Beat up	15%	85%	--	--
Threatened or harmed with a knife or shank	19%	81%	60%	40%
A piece of property was stolen	35%	65%	66%	34%
A loved one was threatened with bodily harm	15%	85%	18%	82%
Mean Totals[1]	1.55	--	3.70[2]	--

Note. 1. Range = 0–7. 2. Range = 0-6. Data is not available for witnessing someone being beat up because this item was removed per the university's institutional review board.

Table 6

Descriptive Statistics for Psychosocial Adjustment Variables (Study 3)

Variable	Mean	SD	Range
Antisocial Behavior			
Antisocial personality problems	.24	.29	1.70
Aggressive personality	2.44	.79	3.44
Aggressive behavior	.90	1.06	4.67
Composite	0.00	2.38	11.65
Emotional Distress			
Depression	.38	.38	1.58
Anxiety	.64	.48	2.00
Emotional distress	2.38	1.50	5.00
Composite	0.00	2.48	11.26
Post-traumatic Stress Symptoms	.88	.87	3.12

Table 7

Summary of OLS Regression Results for Antisocial Behavior (Study 3)

Step/predictors	Step 1 β	Step 2 β	Step 3 β	Step 4 β
Step 1: Controls				
Age	-.29**	-.29**	-.29**	-.28**
Education	-.14	-.14	-.14	-.14
Witnessing violence during incarceration	.24*	.11	.12	.12
Race/ethnicity: African American	.10	.11	.12	.15
Race/ethnicity: Hispanic/Latino	-.13	-.12	-.09	-.07
Race/ethnicity: Other	.00	.04	.04	.06
Employment	-.06	-.07	-.07	-.06
Housing: Halfway house	-.25+	-.20	-.20	-.20
Housing: Family/spouse	-.20	-.10	-.06	-.05
R^2 change for step	.23**			
Step 2: Vulnerability variables				
Feelings of safety while incarcerated		.18+	.16	.14
Severe victimization during incarceration		.20+	.31*	.36*
Pre-incarceration mental health problems		.08	.11	.11
R^2 change for step	.08*			

Step 3: Two-way interactions

    Safety by victimization .12 .04

    Safety by pre-incarceration mental
    health .06 .07

    Victimization by pre-incarceration
    mental health -.28* -.37*

R^2 change for step .04

Step 4: Three-way interaction

    Safety by victimization by pre-
    incarceration mental health .14

R^2 change for step .01

Note. β = standardized beta. $^+p \leq .10$. $^*p \leq .05$. $^{**}p \leq .01$. $^{***}p \leq .001$.

Table 8

Summary of OLS Regression Results for Emotional Distress (Study 3)

Step/predictors	Step 1 β	Step 2 β	Step 3 β	Step 4 β
Step 1: Controls				
Age	-.16	-.18[+]	-.17[+]	-.18[+]
Education	-.20[+]	-.21*	-.21*	-.20*
Witnessing violence during incarceration	.21*	.05	.05	.06
Race/ethnicity: African American	-.03	-.03	-.03	-.08
Race/ethnicity: Hispanic/Latino	-.17	-.17	-.17	-.21
Race/ethnicity: Other	-.10	-.05	-.05	-.08
Employment	-.21*	-.21*	-.20*	-.21*
Housing: Halfway house	-.29*	-.24*	-.23[+]	-.24*
Housing: Family/spouse	-.26*	-.14	-.12	-.13
R^2 change for step	.23**			
Step 2: Vulnerability variables				
Feelings of safety while incarcerated		.31**	.28*	.31*
Severe victimization during incarceration		.22*	.26[+]	.19
Pre-incarceration mental health problems		.10	.11	.12
R^2 change for step	.15***			

Step 3: Two-way interactions

    Safety by victimization   .04   .16

    Safety by pre-incarceration mental
health   .06   .04

    Victimization by pre-incarceration
mental health   -.10   .04

R^2 change for step   .01

Step 4: Three-way interaction

    Safety by victimization by pre-
incarceration mental health   -.23

R^2 change for step   .01

Note. β = standardized beta. [+]$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Table 9

Summary of OLS Regression Results for Post-traumatic Stress Symptoms (Study 3)

Step/predictors	Step 1 β	Step 2 β	Step 3 β	Step 4 β
Step 1: Controls				
Age	-.17	-.18+	-.15	-.15
Education	-.11	-.12	-.11	-.11
Witnessing violence during incarceration	.18+	.00	.00	.00
Race/ethnicity: African American	.07	.10	.08	.07
Race/ethnicity: Hispanic/Latino	.05	.07	.08	.07
Race/ethnicity: Other	-.06	-.01	.01	.00
Employment	-.17+	-.17+	-.14	-.14
Housing: Halfway house	-.32*	-.26*	-.29*	-.29*
Housing: Family/spouse	-.39**	-.25*	-.22+	-.22+
R^2 change for step	.20*			
Step 2: Vulnerability variables				
Feelings of safety while incarcerated		.31**	.18	.20
Severe victimization during incarceration		.24*	.47**	.44**
Pre-incarceration mental health problems		.16	.18+	.18+
R^2 change for step	.19***			

Step 3: Two-way interactions

    Safety by victimization   -.04   .00

    Safety by pre-incarceration mental health   .20$^+$ .20$^+$

    Victimization by pre-incarceration mental health   -.31*   -.26

R^2 change for step   .06*

Step 4: Three-way interaction

    Safety by victimization by pre-incarceration mental health   -.07

R^2 change for step   .00

Note. β = standardized beta. $^+p \leq .10$. $*p \leq .05$. $**p \leq .01$. $***p \leq .001$.

Table 10

Summary of Participants in all Possible Wave Combinations and Retention Rates (Study 4)

Wave Combination	Respondents (n)	Retention Rate
Wave 1	402	100%
Wave 2	269	66.92%
Wave 3	184	45.77%
Wave 4	11	2.74%
Waves 1-2	269	66.92%
Waves 1-3	178	44.28%
Wave 1-4	5	1.24%
Wave 1; Wave 3	3	0.75%
Wave 1; Wave 4	4	1.00%
Wave 1; Wave 2: Wave 4	2	0.50%
Wave 1; Wave 3; Wave 4	0	0%
Recidivism Review	400	99.50%

Note. The two participants missing recidivism data had the following wave combinations: Waves 1-3, Waves 1-2.

Table 11

Descriptive Statistics for all Outcome Variables for all Waves (Study 4)

Variable	Wave 1 Mean SD Range	Wave 2 Mean SD Range	Wave 3 Mean SD Range	Wave 4 Mean SD Range
Mental and Behavioral Health				
Anxiety	1.97 .71 4.00	1.94 .67 4.00	1.96 .66 4.00	1.61 .55 1.83
Depression	.85 .45 2.00	.83 .42 1.90	.73 .42 2.00	.82 .39 1.18
Post-traumatic stress	1.24 1.07 4.00	.97 .96 4.00	.86 .91 4.00	1.20 1.05 3.06
Aggression: Buss-Perry	1.27 .84 4.00	1.14 .78 4.11	1.21 .83 4.00	1.27 .82 2.89
Aggression: 10-item checklist	1.33 1.01 5.10	1.09 .99 5.00	1.02 .88 5.10	1.29 1.06 4.00
Antisocial behavior	.46 .41 2.00	.39 .40 2.00	.37 .41 2.00	.33 .31 .90
Substance use	4.47 2.26 10.00	4.40 2.35 10.00	4.11 2.37 10.00	4.82 2.89 10.00
Recidivism	--	--	--	10%
Trauma and Violence Exposure				
Trauma history	5.21	--	--	--

	3.43			
	14.00			
Jail violence	.18	.12	.13	.14
	.17	.14	.17	.11
	1.00	.88	.97	.33
Community violence	1.34	--	--	.56
	.77			.54
	3.00			1.86
Segregation	31%	14%	10%	1%
Moderators				
Expectations	2.35	--	--	--
	.73			
	3.00			
Social support	4.56	4.55	4.59	4.35
	1.47	1.42	1.64	2.15
	6.00	6.00	6.00	6.00
Locus of control	--	94.24	--	--
		27.82		
		146.00		
Mediators				
Coping behaviors	2.17	4.08	1.95	2.08
	.68	.64	.64	.53
	3.00	3.08	3.00	1.42
Cognitive beliefs	1.84	1.84	1.84	1.69
	.48	.54	.55	.72
	2.30	2.40	2.40	1.70

Note. Percentages are of the entire sample, n=402.

Table 12

Random-Effects Models of the Impact of Pre-Incarceration Trauma on Mental and Behavioral Health (Study 4)

Predictors	Outcome Variables				
	Anxiety b (SE)	Depression b (SE)	Post-Traumatic Stress b (SE)	Antisocial Behavior Composite b (SE)	Substance Use b (SE)
Wave	-.04* (.02)	-.07*** (.01)	-.22*** (.04)	.02 (.07)	-.28 ** (.09)
Female	-.08 (.09)	.05 (.06)	.25* (.11)	-.09 (.29)	.15 (.31)
Age	.00 (.00)	.00 (.00)	-.01+ (.00)	-.03** (.01)	.04*** (.01)
Race (ref African American)					
Hispanic/Latino	.04 (.08)	.09 + (.05)	.09 (.10)	-.17 (.25)	.25 (.28)
White/Caucasian	.32*** (.09)	.19** (.06)	.38** (.12)	.51 (.32)	1.50*** (.35)
Asian	-.25 (.30)	-.07 (.19)	.14 (.40)	-.61 (1.02)	-.64 (1.00)
Native American	.12 (.39)	.02 (.25)	.40 (.48)	1.41 (1.29)	-1.47 (1.34)
Other	.20 (.15)	.14 (.10)	.16 (.20)	-.48 (.50)	-.18 (.62)
Education (ref grade school)					
Some high school	-.05	-.06 (.07)	-.06 (.15)	-.26 (.38)	.29 (.43)

	(.11)				
High school diploma or GED	-.05 (.12)	-.10 (.07)	-.14 (.15)	-.22 (.38)	.70 (.43)
Some college	-.10 (.13)	-.05 (.08)	.04 (.16)	.03 (.43)	.54 (.48)
Associate's degree	-.53* (.23)	-.36* (.15)	-.44 (.31)	-2.14** (.79)	-1.10 (.81)
Bachelor's degree	-.29 (.30)	-.17 (.19)	-.07 (.40)	-1.04 (.99)	.58 (.99)
Nonviolent Offender	-.08 (.08)	-.01 (.05)	-.03 (.10)	.06 (.25)	.56[+] (.30)
Pre-Incarceration Trauma History	.04*** (.01)	.02*** (.01)	.09*** (.01)	.15*** (.04)	.15*** (.04)
n	368	368	368	368	368
Total observations	1104	1104	1104	1104	1104

[+]$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Table 13

Random-Effects Models of the Impact of Exposure to Community Violence on Mental and Behavioral Health (Study 4)

	Outcome Variables				
Predictors	Anxiety b (SE)	Depression b (SE)	Post-Traumatic Stress b (SE)	Antisocial Behavior Composite b (SE)	Substance Use b (SE)
Wave	-.04+ (.02)	-.06*** (.01)	-.22*** (.03)	.02 (.06)	-.25** (.08)
Female	-.07 (.09)	.05 (.06)	.24* (.12)	-.06 (.27)	.12 (.30)
Age	.00 (.00)	.00 (.00)	-.01 (.00)	-.02* (.01)	.05*** (.01)
Race (ref African American)					
Hispanic/Latino	.08 (.08)	0.10* (.05)	.17+ (.10)	.02 (.24)	.48* (.25)
White/Caucasian	.35*** (.10)	.21*** (.06)	.46*** (.12)	.71* (.29)	1.66*** (.31)
Asian	-.20 (.30)	-.04 (.19)	.28 (.38)	-.11 (.87)	-.25 (.98)
Native American	-.01 (.41)	-.09 (.26)	.03 (.55)	.15 (1.31)	-1.90 (1.32)
Other	.22 (.15)	.16+ (.10)	.27 (.20)	.05 (.48)	-.16 (.49)
Education (ref grade school)					
Some high school	-.05	-.06 (.08)	-.06 (.15)	-.22 (.37)	.21 (.37)

	(.12)				
High school diploma or GED	.01 (.12)	-.08 (.09)	-.02 (.15)	-.11 (.37)	.72[+] (.38)
Some college	-.02 (.14)	-.01 (.09)	.24 (.17)	.32 (.41)	.78[+] (.42)
Associate's degree	-.36 (.23)	-.26[+] (.14)	-.04 (.30)	-1.28[+] (.70)	-.34 (.74)
Bachelor's degree	-.13 (.29)	-.09 (.19)	.36 (.38)	-.12 (.86)	1.44 (.93)
Nonviolent Offender	-.07 (.08)	.00 (.05)	.00 (.10)	.16 (.24)	.57* (.26)
Community Violence	.03 (.04)	.02 (.03)	.20*** (.06)	.96*** (.14)	.47*** (.15)
n	368	368	368	368	368
Total observations	1104	1104	1104	1104	1104

[+]$p \le .10$. *$p \le .05$. **$p \le .01$. ***$p \le .001$.

Table 14

Random-Effects Models of the Impact of Violence Exposure During Incarceration on Mental and Behavioral Health (Study 4)

	Outcome Variables				
Predictors	Anxiety b (SE)	Depression b (SE)	Post-Traumatic Stress b (SE)	Antisocial Behavior Composite b (SE)	Substance Use b (SE)
Wave	-.01* (.01)	-.01** (.00)	-.06*** (.02)	.03 (.03)	-.06+ (.04)
Female	-.29* (.15)	-.06 (.06)	.01 (.08)	-.01 (.17)	-.56+ (.32)
Age	.00 (.01)	.00 (.00)	.00 (.00)	-.02** (.01)	.03** (.01)
Race (ref African American)					
Hispanic/Latino	-.24+ (.14)	-.04 (.06)	-.05 (.08)	-.09 (.16)	-.37 (.29)
White/Caucasian	.06 (.18)	.06 (.07)	.16+ (.10)	.02 (.20)	.51 (.37)
Asian	.50 (.58)	.39 (.24)	.55+ (.34)	-.18 (.68)	1.26 (1.21)
Native American	1.08 (.78)	.33 (.32)	.55 (.43)	.08 (.89)	.08 (1.64)
Other	.30 (.28)	.22+ (.12)	.16 (.16)	-.24 (.33)	.23 (.60)
Education (ref grade school)					
Some high school	-.08	.00 (.09)	-.12 (.12)	-.27 (.25)	-.10 (.45)

	(.21)				
High school diploma or GED	-.04 (.21)	-.03 (.09)	-.07 (.12)	-.06 (.25)	.26 (.46)
Some college	.07 (.24)	.03 (.10)	.05 (.14)	.11 (.28)	.15 (.50)
Associate's degree	-.60 (.42)	-.30+ (.17)	-.46* (.24)	-.79+ (.48)	-.75 (.88)
Bachelor's degree	-.86 (.53)	-.35 (.22)	-.36 (.29)	.10 (.60)	-1.00 (1.11)
Nonviolent Offender	-.38** (.14)	-.11+ (.06)	-.13 (.08)	.16 (.17)	-.26 (.30)
Jail Violence	.23 (.32)	.79*** (.17)	3.07*** (.35)	1.25* (.61)	5.17*** (.71)
n	368	368	368	368	368
Total observations	1275	1275	1275	1275	1275

$+p \leq .10.$ $*p \leq .05.$ $**p \leq .01.$ $***p \leq .001.$

Table 15

Random-Effects Models of the Impact of Segregation on Mental and Behavioral Health (Study 4)

Predictors	Outcome Variables				
	Anxiety *b* (SE)	Depression *b* (SE)	Post-Traumatic Stress *b* (SE)	Antisocial Behavior Composite *b* (SE)	Substance Use *b* (SE)
Wave	-.02** (.01)	-.02*** (.00)	-.10*** (.02)	.02 (.03)	-.12** (.04)
Female	-.32* (.14)	-.08 (.06)	-.02 (.10)	.10 (.17)	-.70* (.34)
Age	.00 (.01)	.00 (.00)	-.01+ (.00)	-.02*** (.01)	.03* (.01)
Race (ref African American)					
Hispanic/Latino	-.24+ (.13)	-.08 (.06)	-.07 (.09)	-.09 (.16)	-.47 (.31)
White/Caucasian	.09 (.17)	.07 (.07)	.17+ (.12)	.01 (.20)	.62 (.40)
Asian	.56 (.54)	.30 (.24)	.70+ (.38)	-.60 (.64)	1.20 (1.29)
Native American	.99 (.74)	.34 (.33)	.80 (.51)	.47 (.87)	.11 (1.77)
Other	.26 (.27)	.18 (.12)	.17 (.19)	-.37 (.32)	.21 (.64)
Education (ref grade school)					
Some high school	-.06	-.02 (.09)	-.16 (.14)	-.30 (.25)	-.27 (.49)

	(.20)				
High school diploma or GED	.02 (.20)	-.02 (.09)	-.06 (.14)	-.08 (.25)	.23 (.49)
Some college	.04 (.23)	.02 (.10)	.12 (.16)	.15 (.27)	.16 (.54)
Associate's degree	-.54 (.40)	-.29 (.18)	-.50[+] (.28)	-.79[+] (.49)	-.99 (.96)
Bachelor's degree	-.74 (.50)	-.34 (.23)	-.33 (.35)	.12 (.60)	-1.34 (1.21)
Nonviolent Offender	-.37** (.14)	-.15** (.06)	-.21* (.10)	.06 (.16)	-.37 (.33)
Segregation	.17* (.09)	.11* (.05)	.44*** (.11)	.33 (.22)	.75*** (.22)
n	368	368	368	368	368
Total observations	1275	1275	1275	1275	1275

[+]$p \leq .10.$ *$p \leq .05.$ **$p \leq .01.$ ***$p \leq .001.$

Table 16

Random-Effects Models of the Impact of the Interaction of Violence Exposure During Incarceration and Pre-Incarceration Community Violence Exposure on Mental and Behavioral Health (Study 4)

Predictors	Anxiety b (SE)	Depression b (SE)	Post-Traumatic Stress b (SE)	Antisocial Behavior Composite b (SE)	Substance Use b (SE)
			Outcome Variables		
Wave	-.02* (.01)	-.02*** (.01)	-.07*** (.02)	.04 (.04)	-.09* (.04)
Female	-.32* (.14)	-.08 (.06)	.03 (.09)	.14 (.17)	-.62* (.32)
Age	.00 (.01)	.00 (.00)	-.01* (.00)	-.02** (.01)	.03** (.01)
Race (ref African American)					
Hispanic/Latino	-.22+ (.13)	-.04 (.06)	.01 (.08)	-.01 (.16)	-.34 (.29)
White/Caucasian	.13 (.17)	.10 (.07)	.23* (.10)	.16 (.20)	.76* (.37)
Asian	.61 (.54)	.33 (.23)	.65+ (.34)	-.32 (.66)	1.25 (1.22)
Native American	.93 (.75)	.32 (.32)	.66 (.46)	.26 (.89)	-.04 (1.67)
Other	.32 (.27)	.18 (.11)	.19 (.17)	-.32 (.32)	.34 (.60)
Education (ref grade school)					
Some high		-.04	-.13	-.36	-.21

school	-.10 (.20)	(.09)	(.13)	(.24)	(.45)
High school diploma or GED	-.03 (.20)	-.05 (.09)	-.08 (.13)	-.22 (.24)	.20 (.46)
Some college	.01 (.23)	.01 (.10)	.10 (.14)	.01 (.27)	.15 (.51)
Associate's degree	-.52 (.40)	-.28+ (.17)	-.40 (.25)	-.86+ (.48)	-.85 (.89)
Bachelor's degree	-.77 (.51)	-.33 (.21)	-.26 (.32)	.19 (.61)	-1.01 (1.13)
Nonviolent Offender	-.35** (.14)	-.13* (.06)	-.19* (.09)	.01 (.16)	-.35 (.30)
Community Violence	.13+ (.07)	.06+ (.03)	.09* (.05)	.47*** (.09)	.43** (.16)
Jail Violence	.17 (.22)	.80*** (.15)	1.86*** (.34)	1.67** (.65)	4.73*** (.80)
Community Violence X Jail Violence	-.03 (.12)	-.17* (.08)	.25 (.19)	-.12 (.35)	-.97* (.42)
n	368	368	368	368	368
Total observations	1275	1275	1275	1275	1275

$^+p \leq .10.$ $^*p \leq .05.$ $^{**}p \leq .01.$ $^{***}p \leq .001.$

Table 17

Random-Effects Models of the Impact of the Interaction of Pre-Incarceration Community Violence Exposure and Risk Status on Mental and Behavioral Health (Study 4)

|	Outcome Variables				
Predictors	Anxiety *b* (SE)	Depression *b* (SE)	Post-Traumatic Stress *b* (SE)	Antisocial Behavior Composite *b* (SE)	Substance Use *b* (SE)
Wave	-.04 (.03)	-.07*** (.02)	-.22*** (.04)	.02 (.09)	-.25** (.10)
Female	.01 (.08)	.06 (.06)	.24* (.12)	.30 (.24)	.34 (.27)
Age	.00 (.00)	.00 (.00)	-.01$^+$ (.00)	-.02** (.01)	.05*** (.01)
Race (ref African American)					
Hispanic/Latino	.08 (.06)	.11** (.04)	.17* (.09)	.05 (.19)	.54** (.19)
White/Caucasian	.41*** (.08)	.21*** (.05)	.45*** (.12)	1.05*** (.27)	1.90*** (.28)
Asian	-.20 (.22)	-.02 (.14)	.27 (.32)	-.26 (.69)	-.25 (.72)
Native American	.07 (.30)	-.06 (.19)	.21 (.42)	1.05 (.92)	-1.96* (.95)
Other	.22* (.12)	.16* (.07)	.25 (.16)	-.03 (.36)	-.11 (.36)
Education (ref grade school) Some high		-.07	-.11	-.26	.13

school	-.08 (.09)	(.06)	(.13)	(.28)	(.29)
High school diploma or GED	-.02 (.09)	-.08 (.06)	-.02 (.13)	-.18 (.27)	.59* (.29)
Some college	-.04 (.10)	-.01 (.06)	.21 (.14)	.29 (.30)	.72* (.31)
Associate's degree	-.36* (.17)	-.24* (.11)	-.05 (.24)	-1.48** (.55)	-.49 (.55)
Bachelor's degree	-.15 (.22)	-.04 (.14)	.26 (.33)	-.40 (.75)	1.30+ (.72)
Nonviolent Offender	-.08 (.06)	-.01 (.04)	-.01 (.08)	.03 (.18)	.55** (.19)
Community Violence	-.04 (.06)	-.02 (.03)	.11+ (.07)	.84*** (.14)	.41** (.16)
Risk Status (ref 0)					
1	-.24* (.11)	-.14+ (.07)	-.24 (.16)	-.32 (.37)	-.26 (.38)
2	-.24+ (.14)	-.14 (.09)	-.05 (.19)	-.70 (.43)	-.71 (.46)
3	.14 (.51)	.35 (.32)	1.01 (.68)	.96 (1.51)	-1.67 (1.56)
4	.07 (.47)	.11 (.29)	.13 (.69)	-1.12 (1.33)	-1.93 (1.48)
Community Violence X Risk Status	.15+ (.07)	.07+ (.04)	.20** (.09)	.16 (.22)	.03 (.23)
n	368	368	368	368	368
Total observations	1275	1104	1275	1275	1275

$^+p \leq .10.$ $^*p \leq .05.$ $^{**}p \leq .01.$ $^{***}p \leq .001.$

Table 18

Random-Effects Models of the Impact of the Interaction of Violence Exposure During Incarceration and Risk Status on Mental and Behavioral Health (Study 4)

	Outcome Variables				
Predictors	Anxiety b (SE)	Depression b (SE)	Post-Traumatic Stress b (SE)	Antisocial Behavior Composite b (SE)	Substance Use b (SE)
Wave	-.04[+] (.02)	-.07[+] (.03)	-.20*** (.03)	.06 (.08)	-.24** (.08)
Female	.01 (.12)	.07 (.06)	.27[+] (.15)	.40 (.33)	.23 (.38)
Age	.00 (.00)	.00 (.00)	-.01 (.00)	-.03** (.01)	.04*** (.01)
Race (ref African American)					
Hispanic/Latino	.10 (.07)	.12* (.05)	.19* (.10)	-.08 (.24)	.50* (.25)
White/Caucasian	.42*** (.12)	.24*** (.07)	.44** (.14)	.73* (.36)	1.77*** (.37)
Asian	-.22 (.30)	-.03 (.19)	.11 (.39)	-.48 (1.03)	-.26 (1.02)
Native American	.05 (.41)	-.02 (.26)	.22 (.54)	1.30 (1.33)	-1.50 (1.35)
Other	.20 (.15)	.13 (.10)	.20 (.20)	-.29 (.49)	-.25 (.50)
Education (ref grade school)					
Some high school	-.05	-.06 (.07)	-.06 (.16)	-.36 (.37)	.14 (.37)

	(.11)				
High school diploma or GED	-.01 (.12)	-.07 (.08)	-.01 (.15)	-.17 (.38)	.69+ (.37)
Some college	-.04 (.13)	-.02 (.08)	.20 (.17)	.14 (.41)	.76+ (.41)
Associate's degree	-.41+ (.23)	-.26 (.16)	-.10 (.34)	-1.76* (.75)	-.59 (.78)
Bachelor's degree	-.15 (.33)	-.06 (.19)	.23 (.40)	-.80 (.96)	1.33 (.99)
Nonviolent Offender	-.10 (.08)	-.02 (.05)	-.04 (.11)	.02 (.26)	.53* (.25)
Jail Violence	.02 (.24)	.10 (.18)	1.37*** (.33)	1.43* (.64)	3.03** (.85)
Risk Status (ref 0)					
1	-.03 (.09)	-.06 (.06)	.09 (.12)	-.44 (.30)	.10 (.32)
2	-.15 (.11)	-.09 (.08)	.02 (.16)	-.95** (.37)	.00 (.40)
3	-.04 (.26)	-.06 (.16)	-.04 (.38)	-.54 (.80)	-.69 (.86)
4	.02 (.46)	.11 (.28)	.43 (.70)	.13 (1.46)	-.60 (1.49)
Jail Violence X Risk Status	.07 (.34)	-.10 (.21)	-.24 (.58)	2.28** (.89)	3.98** (1.18)
n	368	368	368	368	368
Total observations	1275	1275	1275	1275	1275

+$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Figure 1

Representation of the Mediation Model for Exposure to Violence and Aggression (Study 1)
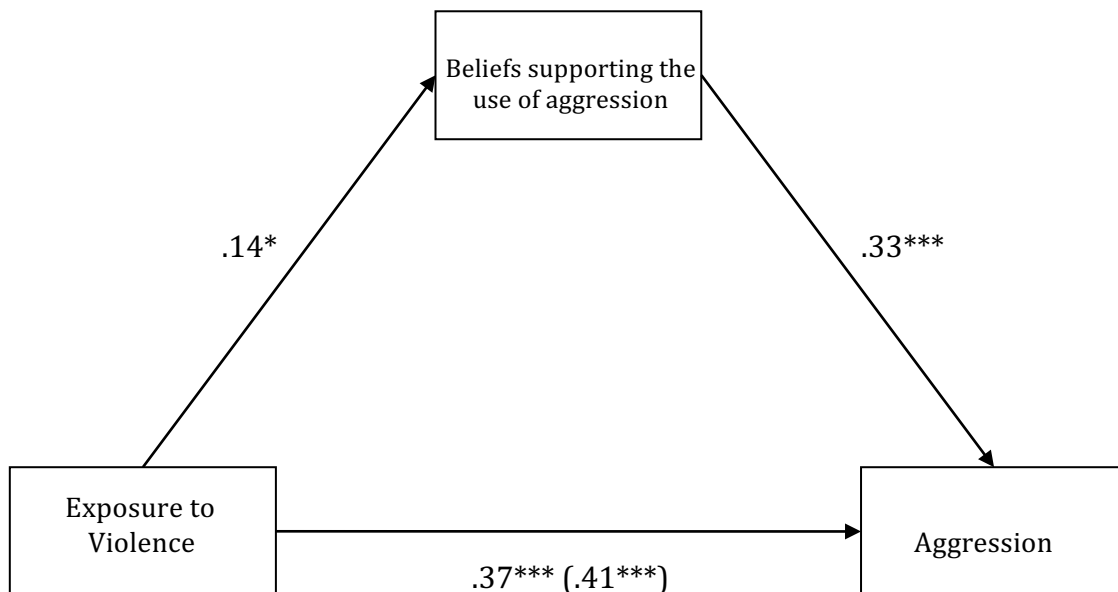
Note. * *p* < .05, ** *p* < .01, *** *p* < .001.

Figure 1. The effect of endorsing beliefs approving of aggression partially mediates the relationship between exposure to violence and aggression.

Figure 2

Representation of the Mediation Model for Preference for Instrumentality and Aggression (Study 1)
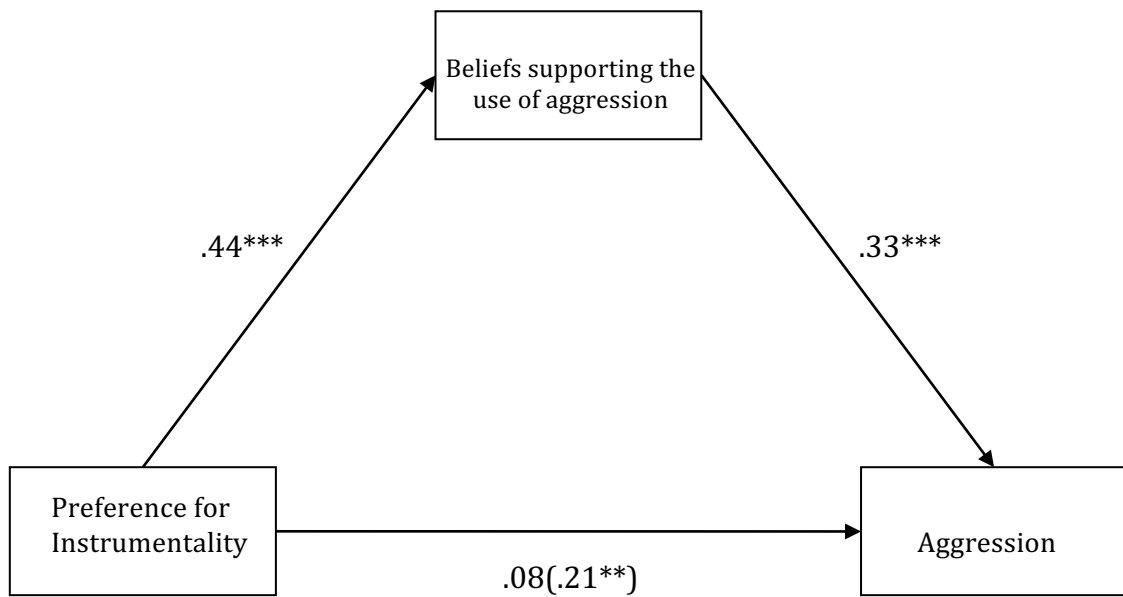
Note. * *p* < .05, ** *p* < .01, *** *p* < .001.

Figure 2. The effect of endorsing beliefs approving of aggression fully mediates the relationship between the preference for instrumentality and aggression.

Figure 3

Representation of the Severe Victimization During Incarceration by Pre-Incarceration Mental Health Problems Interaction (Study 3)

Figure 3. Estimated interaction effects between severe victimization during incarceration and pre-incarceration mental health problems on post-traumatic stress symptoms. No PIMH, no pre-incarceration mental health problems; PIMH, pre-incarceration mental health problems.

Figure 4

Representation of the Feelings of Safety While Incarcerated by Pre-Incarceration Mental Health Problems Interaction (Study 3)
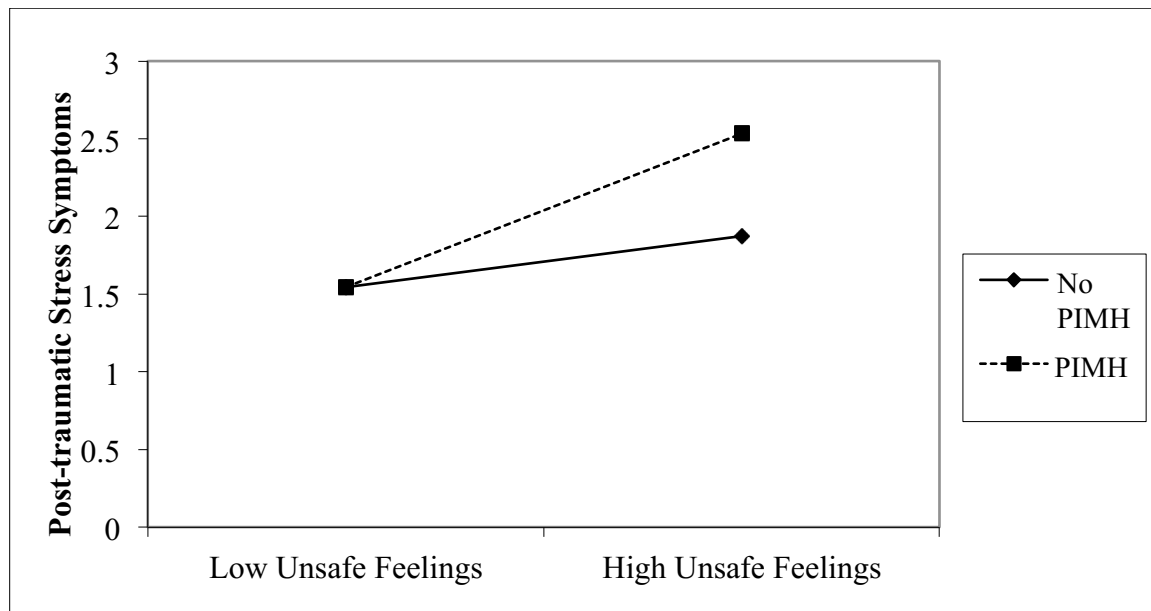
Figure 4. Estimated interaction effects between feelings of safety while incarcerated and pre-incarceration mental health problems on post-traumatic stress symptoms. No PIMH, no pre-incarceration mental health problems; PIMH, pre-incarceration mental health problems.

Figure 5

Representation of the Three Models Tested in The Jail Experience Project (Study 4)
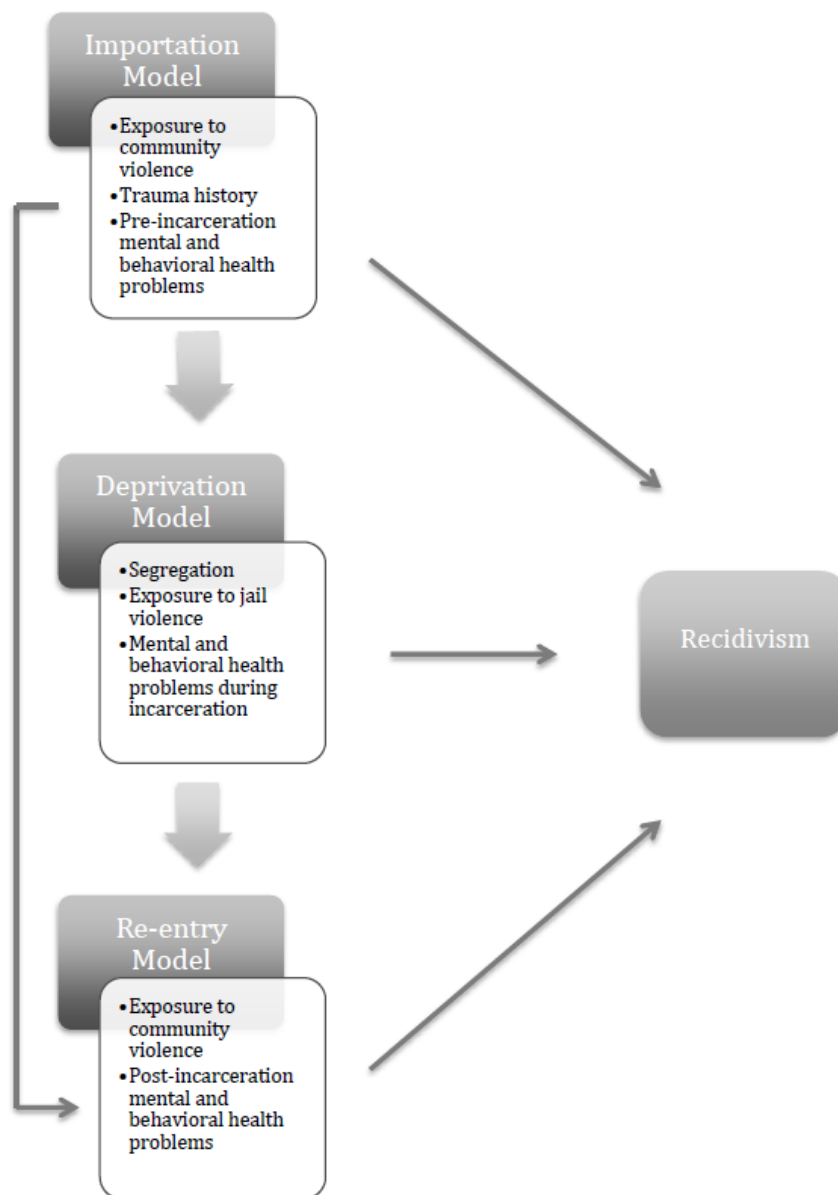
Figure 6

Representation of the Assessment Schedule for a Panel (Study 4)

Week	Panel 1	Panel 2	Panel 3	Panel 4
1	Wave 1			
2		Wave 1		
3			Wave 1	
4				Wave 1
5				
6	Wave 2			
7		Wave 2		
8			Wave 2	
9				Wave 2
10				
11				
12	Wave 3			
13		Wave 3		
14			Wave 3	
15				Wave 3
16	Wave 4			
17		Wave 4		
18			Wave 4	
19				Wave 4
20				
21				
22				
23				
24				
25	Recidivism Review			
26		Recidivism Review		
27			Recidivism Review	
28				Recidivism Review

Note. This depicts the planned assessment schedule for four panels. The schedule, with slight modifications, was repeated until all 30 panels were complete. The red line indicates the estimated point of release. In some instances, specifically if release was delayed, Wave 4 took place at a later time, up to 3 months after the 19th week. The recidivism review was conducted three months post-release.

Figure 7

Representation of the Trajectory Groups for Anxiety (Study 4)
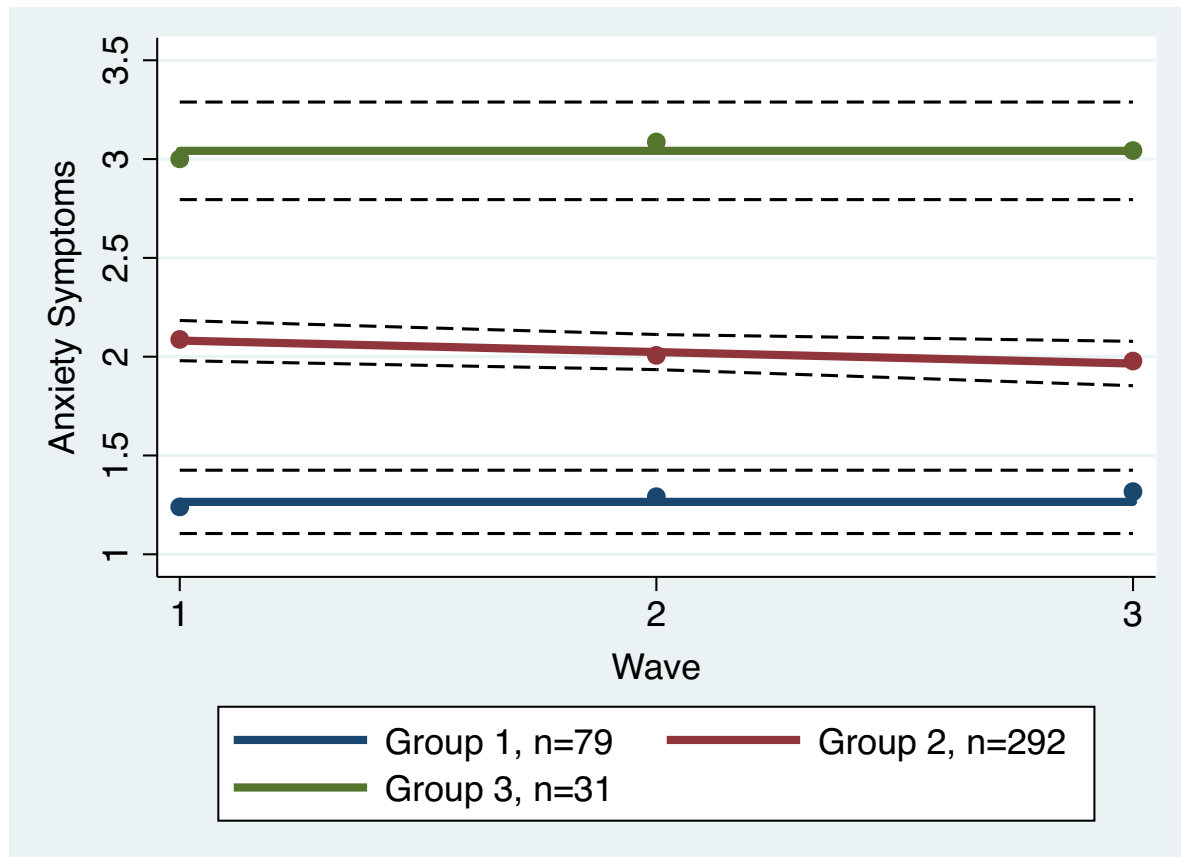
Figure 8

Representation of the Trajectory Groups for Depression (Study 4)
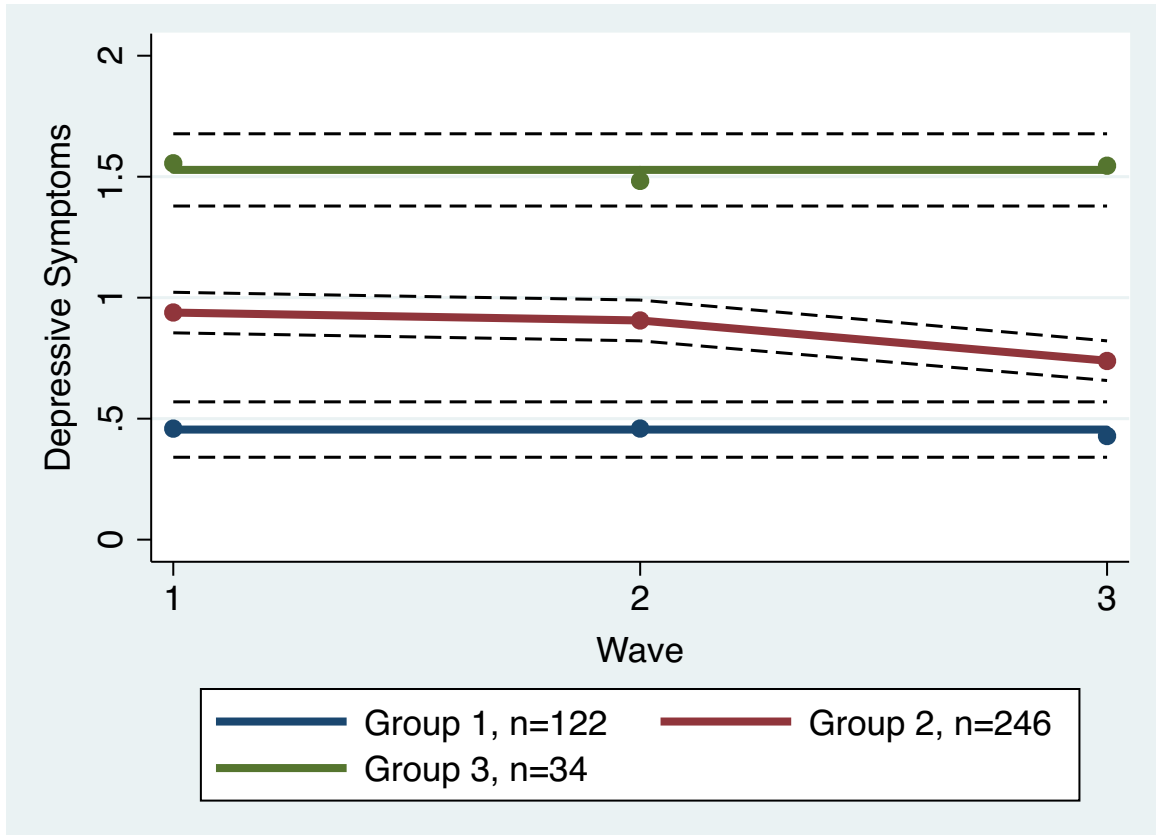
Figure 9

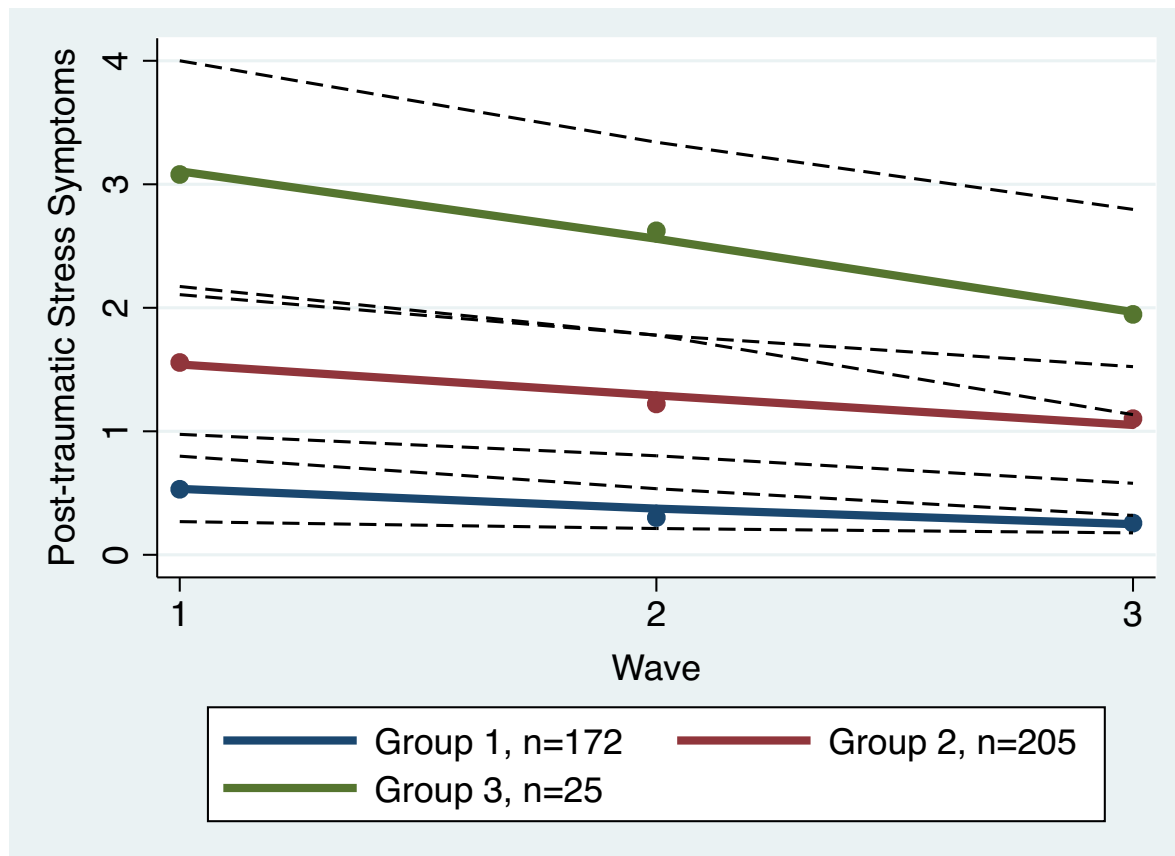*Representation of the Trajectory Groups for Post-Traumatic Stress (Study 4)*

Figure 10

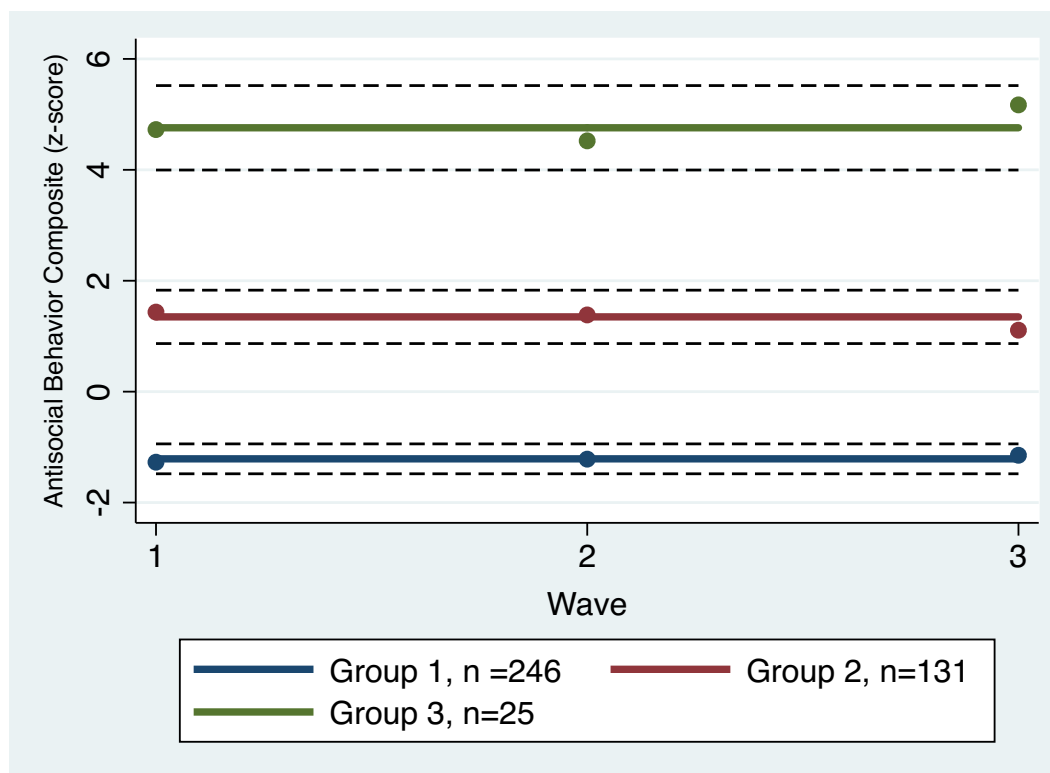*Representation of the Trajectory Groups for Antisocial Behavior Composite (Study 4)*

Figure 11

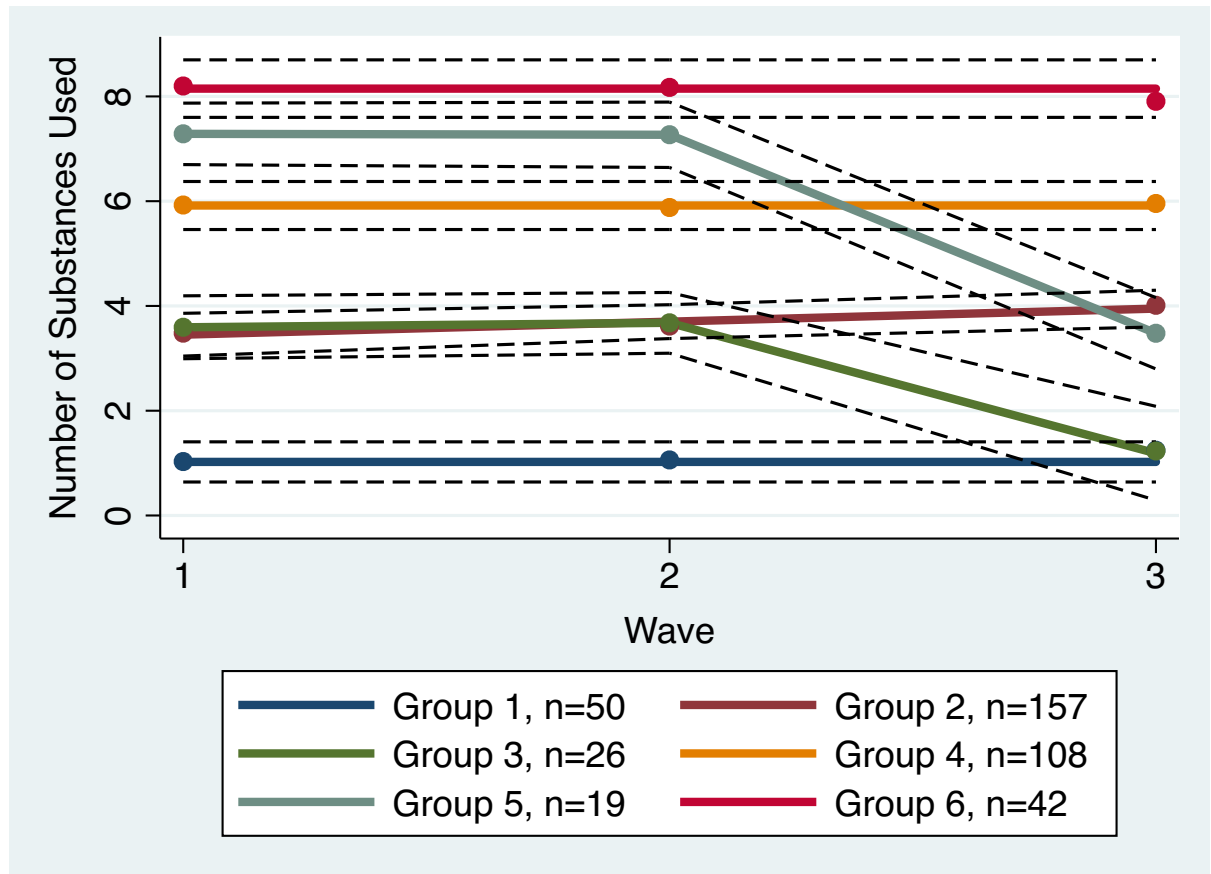*Representation of the Trajectory Groups for Substance use (Study 4)*

Figure 12

Representation of the Community Violence Exposure by Jail Violence Exposure Interaction for Depression (Study 4)
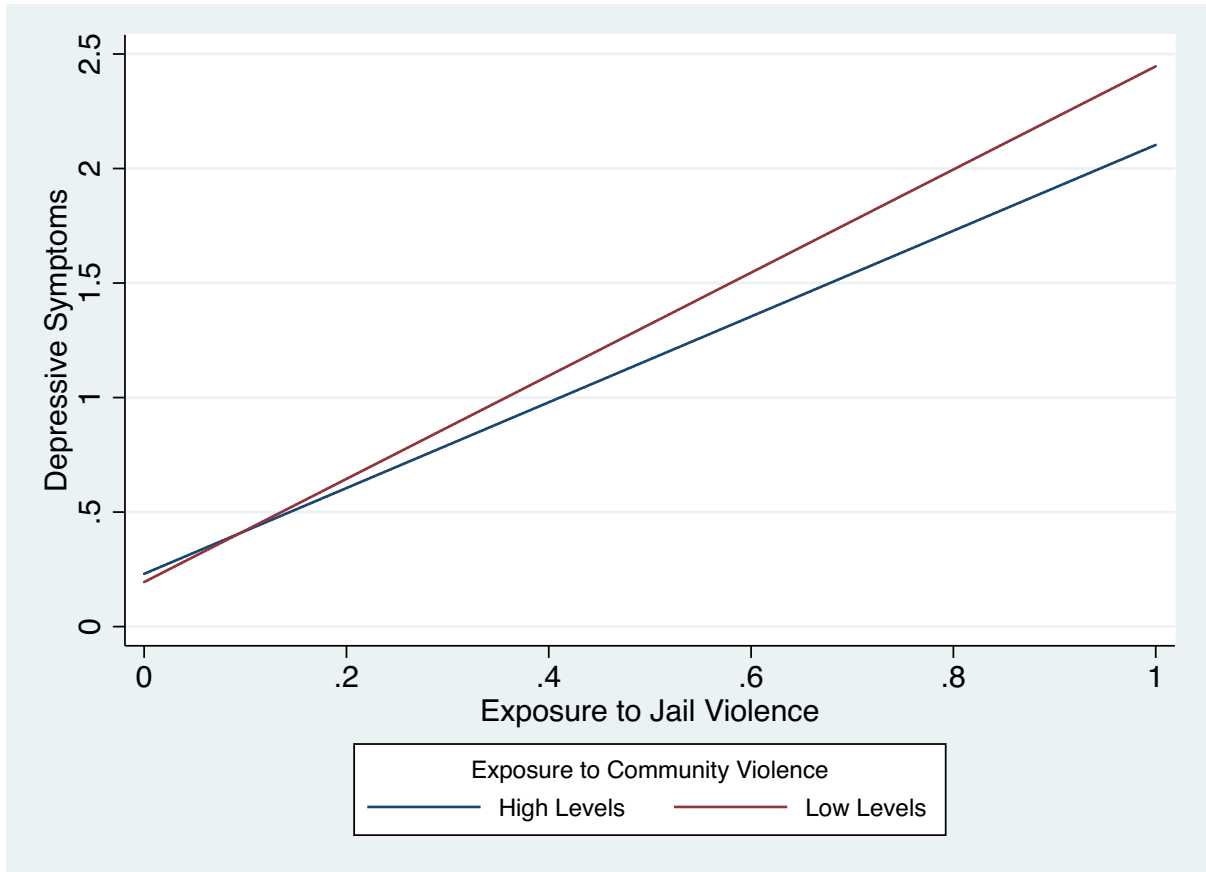
Figure 13

Representation of the Community Violence Exposure by Jail Violence Exposure Interaction for Substance use (Study 4)
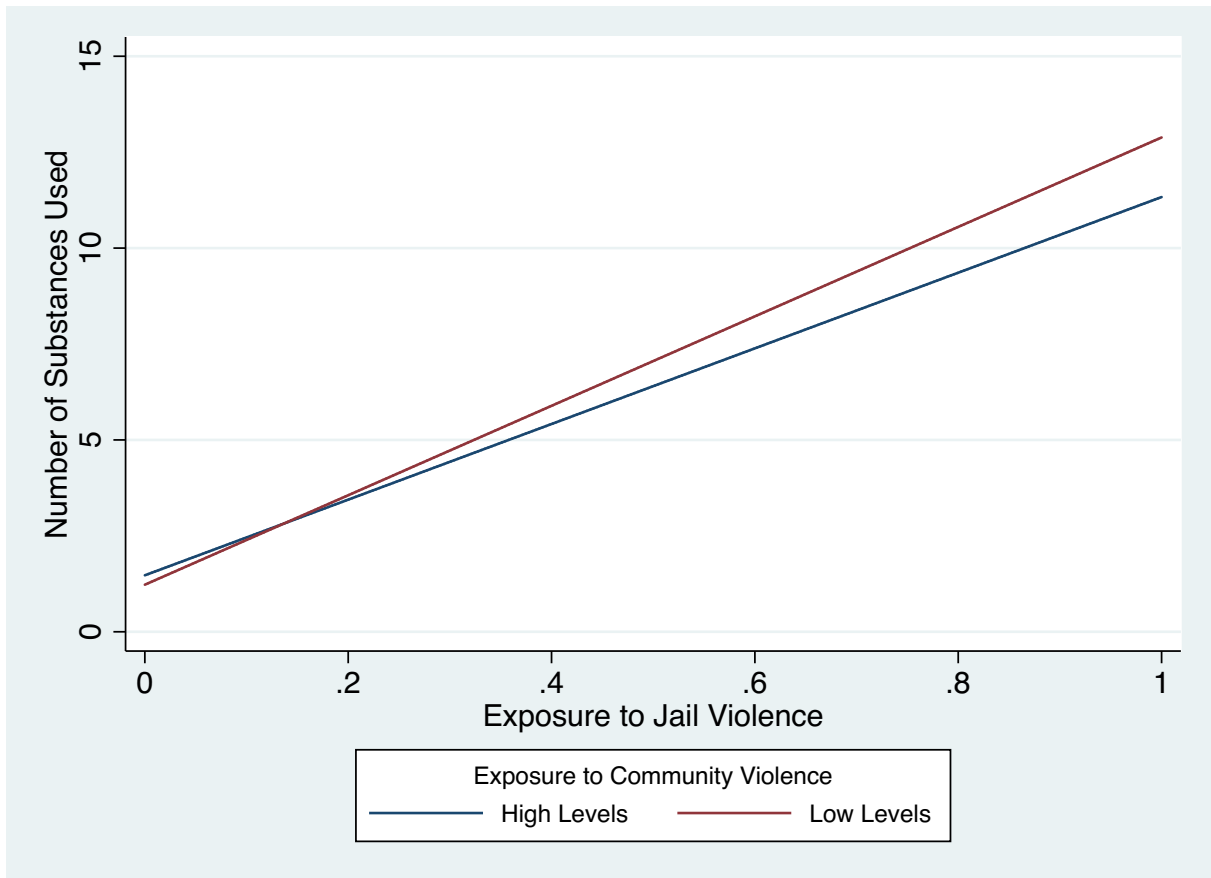
Figure 14

Representation of the Community Violence Exposure by Risk Status Interaction for Post-Traumatic Stress Symptoms (Study 4)
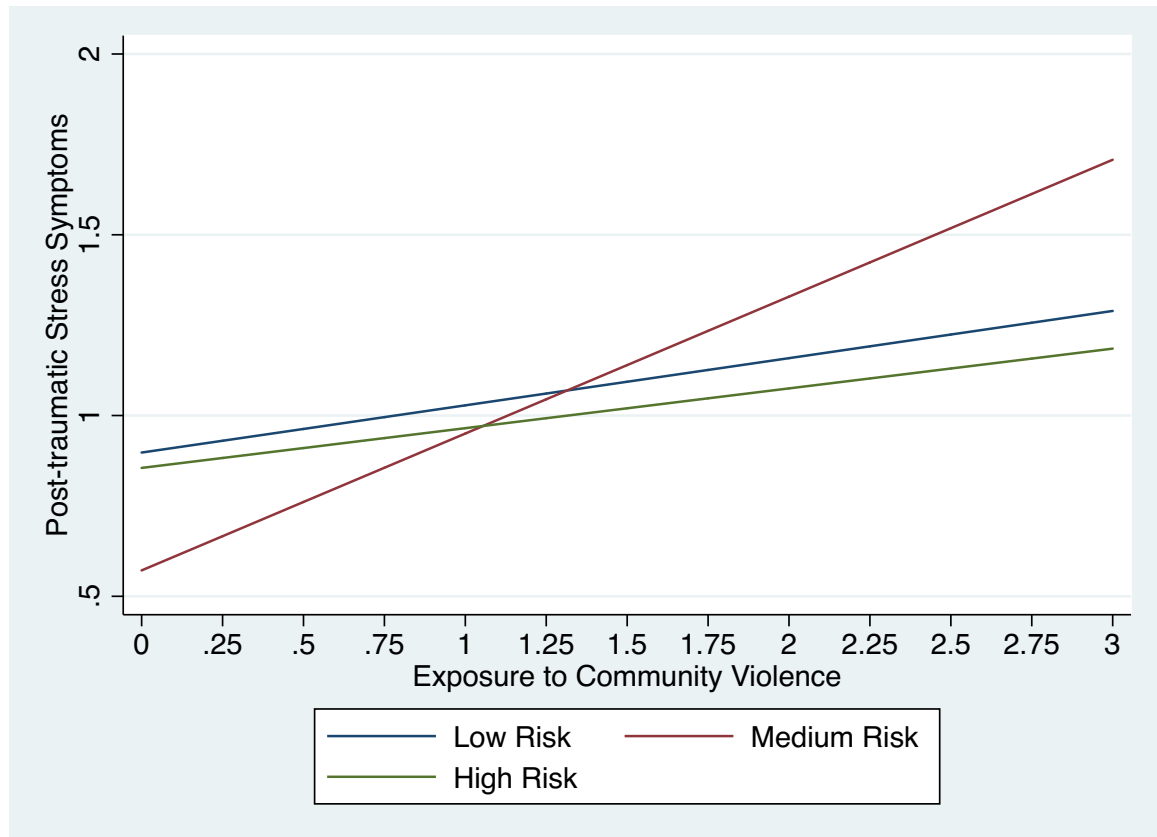
Figure 15

Representation of the Jail Violence Exposure by Risk Status Interaction for Antisocial Behavior (Study 4)
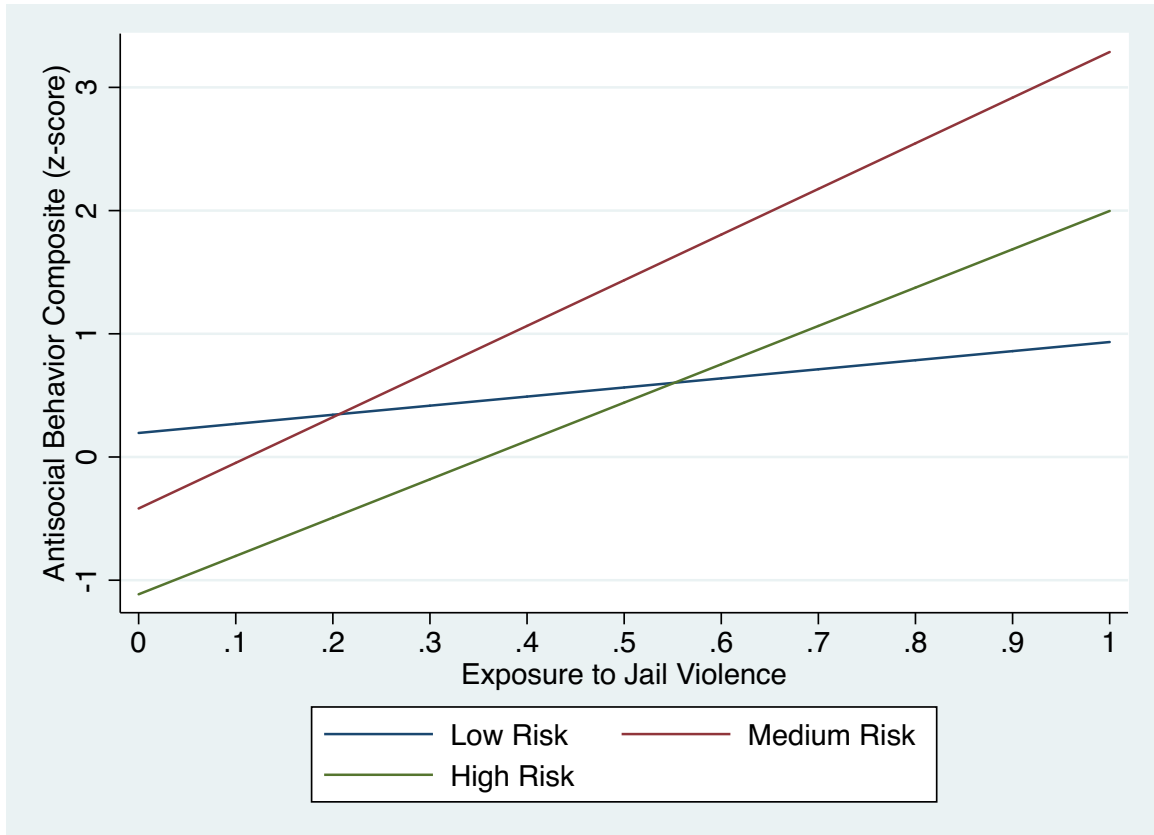
Figure 16

Representation of the Jail Violence Exposure by Risk Status Interaction for Substance use (Study 4)