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THE ASSOCIATION BETWEEN INTERPERSONAL VIOLENCE AND PTSD
AMONG INCARCERATED WOMEN: THE INFLUENCE OF EXPERIENTIAL
AVOIDANCE

By

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A thesis
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To the Graduate Faculty:

The members of the committee appointed to examine the thesis of
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RE: Your application dated 9/12/2006 regarding study number 2882MOD2:
Trauma and Substance Abuse Programming for Female Offenders: An
evaluation of "Seeking Safety" (Funding Pending)

Dear Dr. Lynch:

Thank you for your response to requests from a prior review of your application for the new study listed above. This is to confirm that your application is now fully approved. In reviewing your consent procedure for this study, your inclusion of the following special classes of subjects was taken into account: prisoners.

You are granted permission to conduct your study as most recently described effective immediately. The study is subject to continuing review on or before 9/13/2007, unless closed before that date.

Notify the HSC of any adverse events. Serious, unexpected adverse events must be reported in writing within 3 business days.

Submit progress reports on your project in six months. You should report how many subjects have participated in the project and verify that you are following the methods and procedures outlined in your approved protocol.

Report to the Human Subjects Committee when your project has been completed. You should provide a short progress report to the Human Subjects Committee in which you provide information about your subjects, procedures to ensure confidentiality, and the final disposition of the data.

Please note that any changes to the study as approved must be promptly reported and approved. Some changes may be approved by expedited review; others require full board review. Contact Patricia Hunter (208-282-3811; fax 208-282-4529; email: humsubj@isu.edu) if you have any questions or require further information.

Sincerely,

Ralph Baergen, PhD
Human Subjects Chair

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Abstract

Previous research has indicated that interpersonal violence (IPV) is a central factor in the lives of incarcerated women; and surveys of this population have demonstrated strong links between histories of IPV and later mental illness, specifically posttraumatic stress disorder (PTSD). The topic of PTSD is therefore particularly relevant for incarcerated women, whose rates of PTSD are considerably higher than women in the general population. However, not all individuals exposed to IPV develop PTSD and there is limited understanding of the routes through which such symptoms develop. Existing research has identified experiential avoidance techniques, such as dissociation and non-suicidal self-injury (NSSI), as significant predictors of PTSD. Although both dissociation and NSSI are common among female incarcerated populations, there are no current studies that include assessment of both trait dissociation and NSSI in the relationship between lifetime traumatic experiences and current PTSD in incarcerated women. The purpose of this study is to gain a more in depth understanding of the relationship between incarcerated women's experiences of IPV and later PTSD symptoms as mediated by these specific avoidance strategies. Participants for the current study included 224 female inmates from a sample taken from women's correctional institutions in a northwest state who chose to take part in a longitudinal treatment outcome study. It was hypothesized that (1) lifetime trauma would predict current symptoms of PTSD; that (2) trait dissociation would mediate the relationship between lifetime trauma and PTSD; and that (3) NSSI would moderate the relationship between dissociation and PTSD. Regression analyses demonstrated that dissociation significantly mediated the relationship between IPV and PTSD. However, neither a history of engaging in NSSI, frequency of NSSI behavior, NSSI severity scores, nor need for medical attention subsequent to NSSI moderated this relationship. The results of this study have the potential to contribute to our knowledge of female inmate populations and their mental health needs (e.g., prevention and treatment of traumatic symptoms).

Introduction

As the number of incarcerated women increases, greater empirical knowledge concerning these women's lives is necessary to best guide their treatment, intervention, and pre-release planning (Cook, Smith, Tusher, & Railford, 2008). Between 2010 and 2013, the percent of incarcerated women increased by 10.9%, accounting for a total of 14% of all incarcerated peoples in the United States (Minton and Golinelli, 2014). Existing research suggests that the experience of interpersonal violence (IPV) is a particularly important factor in the lives of this population (Brown, Miller, & Maguin, 1999; Dehart & Lynch, 2012). Further, studies with incarcerated women who have histories of IPV (physical, sexual, and psychological violence) indicate that such experiences are associated with negative mental health outcomes, such as PTSD (Drake & Brunette, 1998; Lynch et al., 2012).

Current literature has demonstrated multiple routes through which PTSD can be developed (Hedtke et al., 2008). For instance, in reaction to traumatic events, many people will engage in experiential avoidance (EA) strategies. Such techniques have been hypothesized to be important contributors to both the development and continued maintenance of PTSD (Armey & Crowther, 2008; Favazza, 1989; Martin et al., 2013; Weierich & Nock, 2008). Avoidance strategies, such as dissociation and non-suicidal self-injury (NSSI), have been linked to previous experiences of trauma and later negative mental health outcomes (Carlson et al., 2012; Roe-Sepowitz et al., 2007). Dissociation and NSSI also appear to be strategies frequently employed by incarcerated females (Borrill et al., 2003; Bloom, Owen, & Covington, 2004; McAllister, 2003).

Although studies have demonstrated a high prevalence of dissociation and NSSI in incarcerated women, few studies have examined these avoidance techniques as potential mechanisms for the development and maintenance of PTSD in this population. For example, there are no current studies that have assessed the extent to which trait dissociation and NSSI explain the relationship between cumulative lifetime traumatic experiences and current PTSD in incarcerated women. Therefore, the purpose of this study is to gain a more in-depth understanding of the dynamic relationship between incarcerated women's experiences of IPV and later PTSD symptoms. Specifically, the study will test a moderated mediation model, utilizing trait dissociation as a mediator in the relationship between IPV and PTSD, and NSSI as a moderator of this mediation. The following literature review presents existing relevant research to make a case for the proposed study.

Exploring Interpersonal Violence and its Outcomes

Trauma and PTSD. *Posttraumatic Stress Disorder* (PTSD) develops after a traumatic event that represents a threat to the individual's life or safety (American Psychiatric Association, 2013). The measures used in the current study are based on diagnostic criteria from the Diagnostic and Statistical Manual of Mental Disorders, 4th edition, Text Revision (DSM-IV-TR), which include exposure to a traumatic event, persistent re-experiencing of thoughts or feelings related to the event, persistent avoidance of stimuli associated with the trauma, and increased arousal such as irritability or hyper-vigilance (American Psychiatric Association, 1994). Further, several risk factors for PTSD have been identified including: being female, repetitive trauma, the severity and duration of the trauma, and familiarity with the perpetrator

(Martin et al., 2013; Wolff et al., 2011). However, there is still no consensus on specific mechanisms leading to the development of PTSD after exposure to a traumatic event.

Previous literature has demonstrated that a history of IPV is a strong predictor of current PTSD. A meta-analysis of the impact of IPV found that 31-84.4% (weighted mean of 63.8%) of women with histories of IPV met criteria for PTSD, compared to an estimated 10.4% of women in the general population (Golding, 1999). In particular, IPV in childhood has been strongly linked to current PTSD symptoms. Research with a national sample found that 13.5% of the female participants had experienced *childhood sexual abuse* (CSA); of those who reported CSA, 39.1% also met the threshold for clinically significant symptoms of PTSD compared to 7.8% of those who did not experience CSA (Molnar et al., 2001).

To better understand the association between IPV and PTSD, some research has focused on the number of forms of violence (i.e., cumulative IPV) one has experienced over the lifespan. Previous research suggests that cumulative IPV has strong links to negative mental health outcomes (Griffing et al., 2006). For example, a longitudinal study demonstrated that the odds of PTSD increase with the number of different types of violence experienced (e.g., sexual assault, physical assault, and witness of serious injury or violent death; Hedtke et al., 2008).

This research is underscored by literature that describes outcomes of cumulative violence beginning early in life. A study using a national sample found that histories of IPV beginning in childhood, particularly CSA, were predictive of current PTSD (Molnar, Buka, & Kessler, 2001). Similar research has demonstrated

that women in the general population who experienced both abuse in childhood and adult rape were 17 times more likely to have PTSD than those individuals who did not have these experiences, while those who experienced *either* childhood abuse or adult rape, but not both, were six times more likely to have PTSD (Schumm, Briggs-Phillips, & Hobfoll, 2006).

Given the demonstrated association between IPV and PTSD, it is important to better understand how the two are connected, which may be particularly relevant to incarcerated women, who have higher rates of both IPV and PTSD than women in the general population (Green et al., 2005; Lynch, DeHart, Belknap, Green, Dass-Brailsford, Johnson, & Whaley, 2014).

Interpersonal Violence and Incarcerated Women. Researchers have found that more than 75% of incarcerated women have experienced at least one traumatic event during their lifetime (Green, Miranda, Daroowalla, Siddique, 2005; Jordan, Shelenger, Fairbank, & Caddell, 1996; Lynch, Fritch & Heath, 2012; Singer et al., 1995), with some estimates as high as 98% (Green et al., 2005). For example, a 2008 study with 391 incarcerated women indicated that 70% of the sample had at least one experience of sexual violence that would be defined as rape in most of the United States today. Further, half of the women in this sample reported histories of childhood sexual abuse (McDaniels-Wilson & Belknap, 2008). These estimates have been replicated across studies of incarcerated women. Specifically, participants have reported high rates of partner and childhood abuse (Green et al., 2005).

Not only do incarcerated women report high rates of IPV, but they also tend to report multiple types and repetitive experiences of such violence. Wolff et al. (2011)

examined the prevalence of different types of traumatic exposures among female prison inmates. In this study, almost 75% of the women interviewed ($N=209$) reported histories of violence during their childhood (55% reported childhood sexual violence). Further, 85% of the women interviewed indicated experiences of trauma during adulthood, of which physical violence was reported most frequently (77%), with sexual violence also being common (35%). Further, 30% of the sample reported incidents of both physical and sexual violence occurring at some point throughout their lives. The frequency of these events was significantly higher in those individuals who were diagnosed with a serious mental illness (e.g., PTSD) than in those with no disorder (Wolff et al., 2011). These results are indicative of the high frequency of both childhood and adult physical and sexual abuse among incarcerated women; importantly, this abuse often involves severe, multiple exposures (Brown et al., 1999). Taken together, the results of these studies suggest incarcerated women are at high risk for cumulative IPV (Tusher & Cook, 2010).

Such high rates of IPV and cumulative IPV, increase incarcerated women's likelihood of suffering from poor mental health outcomes, particularly PTSD. Lynch and colleagues (2012) interviewed 102 women in prison and found that the women reported high rates of interpersonal trauma, and that their experiences of multiple and chronic forms of IPV were strongly associated with symptoms of PTSD. A study by Green and colleagues (2005) demonstrated similar results. These authors conducted structured interviews with 100 women in jail and found that 98% had a history of trauma exposure and 22% met criteria for current PTSD (Green et al., 2005). Harner and colleagues (2013) provided further evidence indicating a strong association

between the rates of IPV and PTSD in women in prison (N = 387). Their research demonstrated that almost half of the women (44%) met diagnostic criteria for PTSD, and were more likely to report exposure to nonsexual assault, sexual assault, and sexual contact with someone at least five years their senior as compared to women who did not meet criteria. These women also were also more likely to be diagnosed with dissociative disorders and report self-injurious behavior while in prison (Harner et al., 2013).

Given these findings, it is perhaps not surprising that the rates of PTSD are significantly higher in incarcerated populations of women than in community samples (Harner, Budescu, Gillihan, Riley, & Foa, 2013). This has been demonstrated in several previous studies, such as the one by Lynch and colleagues (2014) who conducted a study with 491 women in jail. These authors found that 53% of female inmates met criteria for lifetime PTSD when administered structured diagnostic interviews (Lynch et al., 2014). A similar study of female prisoners found that PTSD tended to be the most common diagnosis, apart from Substance Use Disorder, at prevalence rates of 33.5% for lifetime PTSD, and 22.3% for current PTSD (Teplin et al., 1996). Notably, these rates are more than two to three times higher than the rates of PTSD reported in the general population (National Comorbidity Study, 2007).

In summary, research has demonstrated very high rates of both IPV and PTSD within female incarcerated populations (Green et al., 2005; Kessler et al., 1995; Lynch et al., 2014). Moreover, the extant literature has provided evidence for the increased likelihood of dissociation and self-injury in women who meet criteria for PTSD (Harner et al., 2013). It thus becomes essential to better understand the

relationship between such life experiences and negative mental health outcomes, especially given the rising number of female inmates. The current study will explore these relationships and offer a more comprehensive conceptualization of what factors make individuals in this understudied population more susceptible to PTSD.

Experiential Avoidance

Experiential avoidance (EA) is characterized by an unwillingness to remain in contact with uncomfortable internal experiences (e.g., emotions, thoughts, or memories). An individual therefore engages in EA in order to avoid or alter such private events (Hayes, Wilson, Gifford, & Follette, 1996). Strategies that an individual may utilize range broadly; thus, EA includes any behavior that is utilized with the purpose of avoidance or escape from unwanted internal experiences or the contexts that trigger them (Hayes et al., 1996). Previous literature has found that while avoidance strategies may be protective immediately after trauma, those who continue to rely on such strategies have more negative outcomes, such as poor mental health, in the long-term (Krause, Kaltman, Goodman, & Dutton, 2008; Mullen & Suls, 1982).

Although there is agreement across literature that the use of EA is predictive of poor mental health, there is a lack of consensus on *why* it would result in such outcomes. The hypotheses for this relationship vary across theoretical orientation. One theory is that the strategies used to avoid private experiences may demand that one avoids all contexts in which they may rise (e.g., through dissociation; Hayes et al., 1996). This becomes problematic as the individual becomes increasingly limited in their conscious access to life events, therefore restricting access to their personal

history or self-knowledge (Greenberg, 1994). Another idea posits that EA restricts one's need or motivation to adapt to life's varying circumstances. In other words, one may utilize EA to avoid making challenging but healthy changes in their life at the cost of being able to tolerate a range of settings and affects (Hayes et al., 1996). For example, when an individual becomes upset she or he may use NSSI to cope with their affective state rather than confronting the source of the unpleasant experience. Regardless of the theoretical orientation, the existing research literature has demonstrated that EA strategies are commonly utilized among survivors of traumatic experiences, particularly IPV (Briere & Runtz, 1993; Polusny & Follette, 1995).

Trauma survivors endorse higher rates of EA than individuals without such experiences, and these strategies have been demonstrated to predict poor psychological functioning (e.g., PTSD; Leitenberg, Greenwald, & Cado, 1992). Thus, attempts to regulate unpleasant affect typically experienced after IPV (e.g., guilt, shame, fear) through escape or avoidance has been shown to increase negative ramifications later in life (Polusny & Follette, 1995). Foa and Riggs supported this conceptualization with results from their 1995 study. The researchers interviewed individuals shortly after traumatic events and found that those who used numbing or avoidance techniques were more likely to develop PTSD than those who did not. Further, the authors found that the severity of dissociative symptoms was a stronger predictor of mental health outcomes than anxiety (Foa & Riggs, 1995). Bal and colleagues (2003) reported analogous results in their assessment of avoidant behavior as a mediator between self-reported sexual abuse and severity of trauma-related symptoms in adolescents. These authors found that of the 970 adolescents included in

their study, 10% reported sexual abuse. The individuals who reported sexual abuse not only indicated higher rates of traumatic symptoms, they also described utilizing avoidance techniques more often than adolescents who reported any other type of stressful life event. Further, those who described utilizing avoidance strategies were more likely to suffer from stress-related symptoms than those who did not.

Similar findings have been reported in several studies with female victims of IPV. For example, Ullman and colleagues (2007) conducted a study with women in the general population ($N = 636$) who were identified as survivors of sexual assault and examined the relationships among assault severity, global support, negative social reactions, avoidance coping, self-blame, traumatic life experiences, and PTSD symptoms. Avoidance and negative social reactions were identified as the strongest correlates of PTSD symptoms (Ullman, Townsend, Filipas, & Starzynski, 2007). This is consistent with EA research among other populations.

Pineles et al. (2011) demonstrated similar results in their study of female survivors of violence. The team measured PTSD symptoms and coping strategies one month and three months post-assault using self-report and physiological measures. They found that those who reported the most reliance on avoidance strategies were similarly the most likely to be reactive to trauma reminders at follow-up, and were at the highest risk for increase in PTSD symptoms (Pineles et al., 2011).

Further support for the relationship between avoidance and PTSD in female victims of IPV was demonstrated in a Krause et al.'s 2008 study. The study followed recent victims of IPV ($N = 262$) over the course of one year and found a strong association between avoidance and the development and maintenance of PTSD

symptoms. This association was significant after controlling for several other variables, including: initial symptoms, childhood sexual abuse, IPV severity, perceived and formal social support, and revictimization (Krause, et al., 2008).

Although an association has been demonstrated between EA and poor mental health, there is no clear consensus on *why* this relationship exists. The experiential avoidance model (EAM) of psychopathology asserts that the relationship is based on classical conditioning (Chawla & Ostafin, 2007; Hayes, Strosahl, & Wilson, 1999). This assumption has been widely supported in theoretical approaches to treating psychopathology. In fact, many modern theoretical approaches to treating emotional disorders are founded in classical conditioning (Barlow, 1988), which utilizes exposure to emotion-laden stimuli while preventing any avoidant or escape response. The premise of such approaches assumes that repeated exposure to feared stimuli in absence of feared outcomes eventually weakens the relationship. However, when individuals utilize avoidance techniques, such as self-harm and dissociation, this learning process cannot occur and the relationship between unpleasant internal states and the avoidance technique is instead strengthened. Given the persistence, and often increased frequency of these unpleasant emotions subsequent to engaging in EA, it is likely that avoidance is one mechanism through which negative mental health may originate.

Therefore, there is strong support for the theory that EA plays a central role in the development and maintenance of poor mental health outcomes, particularly PTSD. However, a gap in the literature exists as far as which particular avoidance techniques are associated with PTSD (Armey & Crowther, 2008; Favazza, 1989;

Martin et al., 2013; Weierich & Nock, 2008). Two EA techniques in particular, NSSI (Chiles & Strosahl, 1995) and dissociation (Hayes et al., 1996), have been highlighted in the literature as strongly related to IPV, and predictive of poor mental health outcomes. Thus, a better understanding of the relationship between these two specific techniques and later symptoms of PTSD offers potential to inform the literature, especially in regard to treatment needs of those suffering from trauma symptoms.

Trauma and Dissociation. The phenomenon of detachment from one's emotions or cognitions was initially conceptualized as a defense against overwhelming or unpleasant internal states (Breuer, 1985). In 1907, Janet labeled this experience as dissociation; a term to describe the absence of a connection between memory processes or conscious awareness during and after overwhelming stress. Pathological, or problematic, dissociation is thought to occur when an individual experiences memory deficits, or inability to integrate cognitive processes amid dissociative episodes (Conway & Pleydell-Pearce, 2000; Ehlers & Clark, 2000; Nemiah, 1981). Such episodes are characteristic of stress brought on by traumatic events (Spiegel & Cardena, 1990).

There is a robust relationship between traumatic experiences and dissociative symptoms (Terr, 1991). Existing literature suggests that this association is formed because dissociative episodes are utilized to avoid, or escape from, trauma-related memories and the associated unpleasant arousal. In other words, an individual uses dissociation as a means of coping by separating themselves from their experiences (Putnam, 1991). Dissociation thus provides a means of mental escape and affect regulation in the face of trauma-related triggers (Foa & Hearst-Ikeda, 1996). This

escape can be adaptive when used immediately after a traumatic experience, but may become a maladaptive coping technique if used over time (Banyard, Williams, & Siegal, 2001; Cole, Alexander, & Anderson, 1996; Terr, 1995). For example, ongoing symptoms of dissociation, otherwise known as trait dissociation, have been linked to negative psychological outcomes such as PTSD (Ehlers & Bryant, 1998).

In this way, dissociation can be classified as an EA technique. Individuals use dissociation as a way to escape from unpleasant internal states; and through negative reinforcement, this escape behavior becomes increasingly habitual. Moreover, individuals who learn to cope with their traumatic experiences by dissociating have been shown to be at an increased risk to do so in the face of minor stressors (Candel, Merckelbach, & Kuijpers, 2003). As this pattern continues, an individual's emotional experiences are not integrated into a meaningful narrative, and become increasingly difficult to retrieve (Candel, Merckelbach, & Kuijpers, 2003). Such cognitive deficits are purported to be one mechanism through which psychopathology, particularly PTSD, originates.

This assertion is supported through research such as that done by Carlson and colleagues in 2012, who found that those who met criteria for trait dissociation scored twice as high on two measures of PTSD when compared to those who did not meet criteria. Moreover, the study demonstrated that 89% of those who had elevated current dissociation symptomology also had elevated levels of PTSD symptoms (Carlson et al., 2012).

Although an association between trait dissociation and PTSD has been demonstrated, literature on the nature of the relationship is limited. However, there

are a number of studies that support Carlson et al.'s (2012) results. For example, a study of 180 police officers measured dissociation and PTSD symptoms during training and again after 12 months of active police duty. The authors found that trait dissociation fully mediated the relationship between previous trauma and current PTSD symptoms, indicating that trait dissociation is predictive of PTSD symptoms in police officers (McCaslin et al., 2008). Similarly, a study conducted with individuals who had suffered motor vehicle accidents found that dissociation was correlated strongly with PTSD severity at both 3 months and 1-year follow-up ($r = .33$, $r = .27$; Ehlers, Mayou & Bryant, 1998). Another study of 154 individuals who had experienced the 1991 Oakland/Berkeley firestorm found that endorsing dissociative symptoms 7 and 9 months after the fire was more predictive of PTSD than variables such as anxiety and loss of personal autonomy (Koopman, Classen, & Spiegel, 1994).

The relationship between trait dissociation and PTSD is further supported by evidence of symptoms of dissociation and PTSD appearing to change similarly during treatment. A 2008 study in an outpatient clinic ($N = 174$) indicated that the patient's change in dissociation symptomology was significantly related to their change in PTSD over the course of their treatment (Lynch, Forman, Mendelsohn, & Herman, 2008). These studies provide support for the argument that the two disorders, namely dissociation and PTSD, are related.

Dissociation in Incarcerated Populations. Research conducted with incarcerated individuals has found especially high rates of dissociation. In 1996, researchers in Atlanta, Georgia administered the Dissociative Experiences Scale II (DES II) to 305 inmates in a detention center, 229 were males and 69 were females.

Researchers found that 25% of all inmates interviewed scored above the clinical threshold for dissociation (30 or higher). Further almost 30% of the women interviewed exceeded scores of 30 on the DES-II, and 16% of the women exceeded scores of 40 (Snow, Beckman, & Brack, 1996). These rates appear to significantly surpass those typically found in the general population. In a seminal study conducted by Ross, Joshi, and Currie (1990; $N = 650,000$), mean scores on the DES were found to be 10.8 in the general community, with 5% of the sample scoring above 30.

The discrepancy in rates of dissociation among incarcerated populations and those in the general community seems logical given the association between trauma and dissociation, and incarcerated individual's high risk for IPV. In a study by Roe-Sepowitz et al. (2007), researchers interviewed 192 incarcerated women and found that participants not only reported high levels of childhood abuse (including molestation, rape, emotional abuse, and physical abuse), but also that almost half of the participants reported clinically significant levels of dissociation. The individuals who reported more extensive abuse histories (sexual, emotional, and physical) also reported higher rates of dissociation (Roe-Sepowitz et al., 2007). Similarly, a Canadian study found that out of 93 inmates, 62 reported trauma-related dissociation. Notably, inmates who had experienced childhood sexual abuse obtained higher scores on measures of dissociation than those who did not (Dietrich, 2008).

Thus, the existing literature suggests that in both general and incarcerated populations, IPV is associated with trait dissociation. Specifically, results of previous research indicate that IPV, particularly interpersonal violence starting in childhood, is predictive of increased levels of trait dissociation. Further, previous literature has

demonstrated a strong relationship between trait dissociation and the development of PTSD in the general population; however, this association has not yet been replicated in incarcerated populations. The current study offers the potential to replicate this important finding as well as offer further insight regarding the relationship between EA and PTSD.

Trauma and Non-Suicidal Self-Injury. As mentioned, another example of an EA technique is NSSI. *Non-Suicidal Self-Injury (NSSI)* also commonly referred to as *self-mutilation* or *deliberate self-harm*, is defined as the act of purposefully inflicting wounds on one's body that are severe enough to result in tissue damage. Importantly, the act of self-injury is not done with assistance of another individual, nor is it committed with suicidal intent (Winchel & Stanley, 1991). In 1983, Pattison and Kahan defined three criteria that must be met for a behavior to be considered NSSI. The criteria are as following: 1) the actions must be direct, 2) the actions must be of low lethality, and 3) the actions must be repetitive in nature (Pattison & Kahan, 1983). To meet the first criterion, the person who is inflicting self-harm must be aware of the effects of their actions, and must consciously want to inflict them upon his or herself. An example of such behavior would be inflicting superficial burns on one's arm. The second criterion indicates that a behavior is not likely to result in death, nor is death the goal of the person inflicting the harm. Finally the third criterion implies that the behavior is frequent as opposed to an action that was only carried out once (Pattison & Kahan, 1983).

Self-harming behavior occurs in many forms. For example, socially acceptable NSSI (e.g., tattooing and piercing) is often seen among non-psychiatric

populations, while severe self-harm (e.g., self-immolation) is sometimes observed among individuals suffering with psychosis. Self-injury is also common among populations with PTSD, and such behavior among these individuals has demonstrated a strong association with emotional distress (Favazza, 1998). Several theoretical models attempt to explain this relationship, including the affect regulation model and the dissociation model.

The affect regulation model of self-harm posits that NSSI serves to express or control overwhelming affective states. The dissociation model similarly suggests that NSSI's objective is to regulate emotion; however it does so through interacting with dissociative states (Chapman, Gratz, & Brown, 2006). For example, NSSI may be used to disconnect or reconnect from reality by either instigating or ending a dissociative episode. Therefore, an individual may engage in self-harm to bring themselves back from an episode, or in opposition, to feel such severe pain that they are able to enter into a dissociative episode. Across these two prominent theories is the common purpose of affect regulation, or relief from unpleasant internal experiences (Brown, Comtois, & Linehan, 2002). Thus, NSSI can be classified as an EA technique, a concept supported by the experiential avoidance model of self-injury, or EAM (Chapman, Gratz, & Brown, 2006).

The EAM accounts for the robust negative reinforcement provided through escape conditioning. Despite its harmful consequences, NSSI is often effective at reducing or eliminating uncomfortable internal states (e.g., memories, emotions, somatic experiences; Arney & Crowther, 2008; Chapman, Gratz, & Brown, 2006). In other words, an individual encounters an event that triggers an unpleasant internal

state (e.g., arousal), and subsequently NSSI is used, significantly reducing the internal experience and thereby negatively reinforcing the behavior. This negative reinforcement strengthens the relationship between unpleasant internal states and NSSI, and eventually self-harm becomes the automatic avoidance response (Chapman, Gratz, & Brown, 2006; Connors, 1996). Although it is likely that NSSI serves a variety of functions, the EAM has found broad support across the literature.

In self-report studies, it has been demonstrated that the primary reason individuals endorse using NSSI is to avoid, terminate, or escape internal experiences (Favazza & Conterio, 1989). In a study of 240 females who reported self-harm, NSSI was described as a strategy to control thoughts, relieve unpleasant affect and dissociative symptoms, and facilitate relaxation (Favazza & Conterio, 1989). A similar study conducted by Breire and Gil (1989) found that individuals who reported self-harming behaviors most often used NSSI to decrease dissociative symptoms, relieve themselves of trauma symptoms (e.g., flashbacks), and regulate uncomfortable emotion. Overall, results of these studies underscore NSSI's role in affect regulation and avoidance of internal experiences, supporting the EAM.

Although NSSI provides short-term relief (Briere, 1992), it has been linked to poor psychological outcomes. Runtz and Schallow (1997) conceptualized self-destructive behaviors as methods of coping, and hypothesized that such behaviors would mediate the relationship between experiences of trauma and impaired psychological functioning. A 2001 study of 5,226 female navy recruits supported Runtz & Schallow's (1997) theory. Merrill and colleagues included several variables (i.e., abuse severity, parental support, and coping strategies) as predictors of

psychological adjustment and found that negative coping variables (i.e. self-destructive and avoidant) had the strongest association with poor psychological adjustment in adulthood (2001). They then utilized structural equation modeling and found that the effect of abuse severity on adult outcomes was partially mediated by avoidant and self-destructive coping strategies (Merrill et al., 2001). Thus, as hypothesized, a relationship was evidenced between trauma, coping, and poor psychological adjustment.

As may be expected given their trauma histories, incarcerated women are at especially high risk of engaging in NSSI behaviors. Chapman, Specht, and Cellucci (2005) found that out of 105 women at a correctional facility, 48% engaged in NSSI in their past. Further support is provided with a study conducted by Borrill et al. (2003) who interviewed 301 women in prison. They found that half of the women in the sample reported at least one act of self-harm in their lifetime, and that self-harm was strongly associated with being a victim of violence (i.e. physical assault, sexual assault, and violence from family and friends; Borrill et al., 2003). These rates are notably higher than those found in the general population. In a nation-wide study of adults in the United States, 5.9% had a lifetime prevalence of NSSI; 0.9% had engaged in such behaviors in the last 12 months (Klonsky, 2011).

Furthering our understanding the associations between IPV, dissociation, NSSI, and mental health offers the potential to inform intervention programs for incarcerated individuals. Further, it is important to understand how avoidance techniques such as NSSI and dissociation together are associated with current symptoms of PTSD, which has not yet been explored in the literature.

Trauma, Dissociation, NSSI, and PTSD

Previous research has evidenced associations among all four variables discussed (i.e. IPV, trait dissociation, NSSI, and PTSD). Particularly, it has been demonstrated that IPV predicts dissociation (Dietrich, 2008; Roe-Sepowitz et al., 2007), NSSI (Borrill et al., 2003; Merrill et al., 2001), and PTSD (Hedke et al., 2008; Molnar et al., 2001; Wolff et al., 2011). Furthermore, it has been shown that trait dissociation is predictive of PTSD (Carlson et al., 2012; Ehlers et al., 1998; McCaslin et al., 2008), and that NSSI behaviors are predictive of poor mental health outcomes (Borrill et al., 2003; Merrill et al., 2001; Runtz & Schallow, 1997). Finally, a strong link has been exhibited between the occurrence of dissociation and NSSI (Favazza, 2008; Low, Jones, Macleod, & Power, 2000). Self-injury is often reported both subsequent to an abusive experience and alongside increased dissociative symptoms (Nijman et al., 1998).

The relationship between dissociation and NSSI has been demonstrated across several studies. One such study, conducted by Low, Jones, Macleod, & Power (2000), found that women in a high-security hospital who engaged in self-harm were likely to obtain higher scores on the Dissociative Experiences Scale (DES) than those who did not engage in such behaviors. Moreover, the women's scores on the DES best identified those with the most severe self-injuries (with the frequent harmers scoring the highest on the self-report scale). Importantly, the authors also found that the relationship between childhood sexual abuse and current self-injury was mediated by dissociation (Low et al., 2000).

More evidence for the link between dissociation and NSSI is offered through research done by van der Kolk et al. (1991). The researchers' work demonstrated that NSSI, in particular cutting oneself, was specifically related to dissociation. Relevant to the model being proposed, and in corroboration with Low et al. (2000), these authors also suggest that experiences related to interpersonal safety precipitate both dissociative episodes and self-destructive behavior (van der Kolk, Perry, & Herman, 1991).

Not only are both NSSI and dissociation predicted by IPV and strongly associated with one another, both NSSI and dissociation are predictive of poor mental health outcomes (Merrill et al., 2001). In particular, dissociation has been found to be predictive of PTSD (Carlson et al., 2012; Lynch et al., 2008), and NSSI has been linked to impaired psychological functioning and adjustment (Merill et al., 2001; Runtz & Schallow, 1997).

Although current literature has established relationships among these constructs, a large gap in understanding exists regarding how they interact. For example, research has not established whether engaging in NSSI behaviors impacts the relationship between dissociation and current PTSD. Thus, the literature is limited in understanding how the presence of self-injury influences the effects of dissociation on mental illness, particularly PTSD, after an individual has experienced trauma. A greater understanding of how these constructs are related is important to inform psychologists' treatment of trauma victims, and may offer insight into the mechanisms related to the development and maintenance of PTSD.

It is important to note that the limited research examining the relationship between dissociation, NSSI and later psychological outcomes has been conducted with clinical or community samples. Although these studies are valuable and provide important insight, results of this research may not readily translate to other groups; for example a unique population like incarcerated women.

The mental health needs of incarcerated women are notably understudied; and there are no current studies conducted with incarcerated women that examine whether trait dissociation mediates the relationship between IPV and PTSD in this population. Further, although it has been demonstrated that NSSI and dissociation are strongly associated and both predict poor mental health outcomes, there has been no work examining how NSSI behaviors may influence the relationship between dissociation and PTSD in this population. However, incarcerated women report extensive trauma histories, as well as high rates of dissociation, NSSI, and PTSD when compared to prevalence rates in the community (Bloom et al., 2004; Borrill et al., 2003; Harner et al., 2013; Lynch et al., 2013; Roe-Sepowitz et al., 2007; Snow, 1996), making the understanding of these relationships even more seminal to the fields' understanding of these phenomena. As the rate of women being incarcerated continues to increase (Bloom, et al., 2006; Merrill, 2014), so does the importance of this research.

Hypotheses of Present Study

Hypothesis 1: IPV will be positively associated with trait dissociation. More frequent experiences of violence and a higher number of unique types of violence of IPV will be positively associated with the women's endorsement of trait dissociation (Dietrich, 2008; Roe-Sepowitz et al., 2007). Thus, chronicity of trauma will serve as a

predictor in the model. Chronicity is defined as the frequency of trauma (how many times each type of IPV occurred) multiplied by the number of unique types of IPV reported on the Trauma History Questionnaire. See Figures 1 and 2.

Hypothesis 2: Dissociation will be positively associated with current PTSD.

Women's endorsement of trait dissociation will be positively associated with their current PTSD symptoms. See Figures 1 and 2.

Hypothesis 3: Trait dissociation will mediate the relationship between cumulative IPV and current PTSD symptoms, and the relationship between dissociation and PTSD will be moderated by NSSI. Hypothesis 1 predicts a positive relationship between women's experiences of IPV and their endorsement of trait dissociation, and Hypothesis 2 predicts a positive association between dissociation and current symptoms of PTSD. Together, these hypotheses form a model in which dissociation serves as a mediator, or indirectly increases, PTSD. This test is a replication of previous research conducted in the general population (Carlson et al., 2012; Ehlers, Mayou & Bryant, 1998; Koopman, Classen, & Spiegel, 1994; McCaslin et al., 2008).

Research has also consistently demonstrated links between dissociative episodes and NSSI, where the two behaviors often appear together – though which behavior occurs initially is variable between individuals (Armey & Crowther, 2008; Favazza, 1989; Low et al., 2000; Macleod & Power, 2000). This conceptualization suggests that individuals will likely utilize one or both EA techniques as strategies to cope with the negative effects of their trauma.

Therefore, the degree to which an individual endorses trait dissociation is likely to influence their engagement in NSSI, and vice versa. Accordingly, when there is no history of NSSI, it would be expected that women who experience low levels of dissociation would also endorse low levels of current PTSD. Without the use of these two avoidance techniques, women may be more likely to be engaging in active coping, or may be more effective at managing their negative emotions.

Given that the previous literature has emphasized a strong association between dissociation and the occurrence of NSSI (Arney & Crowther, 2008; Favazza, 1989; Low et al., 2000; Macleod & Power, 2000), it is expected that when a woman endorses low levels of trait dissociation, she will also endorse low levels of lifetime NSSI. However, women who report high levels of both dissociation and NSSI will most likely endorse the highest levels of PTSD, given that these mechanisms are both avoidance oriented and predict poor mental health outcomes. Thus, it is hypothesized that women who have historically engaged in both NSSI and dissociation, after experiencing IPV, will be the most likely to also report more severe PTSD symptoms.

Moreover, it is predicted that the positive relationship between trait dissociation and PTSD will be stronger for women with histories of NSSI compared to women who have not engaged in such behaviors. Assuming women's history of NSSI moderates the relationship between dissociation and current PTSD symptoms, it is also likely that lifetime NSSI will influence the strength of the indirect relationship between cumulative IPV and PTSD. If so, this would demonstrate a pattern of moderated mediation between the variables being studied.

Moderated mediation is assumed when the strength of an indirect effect is dependent on the level of another variable (Hayes, 2013; MacKinnon, 2008; Preacher, Rucker, & Hayes, 2007). The indirect effect refers to the product of the effect of the independent variable on the mediator (a path), and the mediator on the dependent variable (b path) while controlling for the IV. In the case of the current study, four versions of the moderator will be assessed. The first model will include the total severity score as described by Gutierrez (2001), which will be measured as a continuous variable. The current study will also include NSSI frequency (continuous), need for medical attention subsequent to NSSI behaviors (dichotomous), and whether or not an individual reported ever engaged in NSSI (dichotomous) in unique models. It is hypothesized that these measurements of NSSI will moderate the effect of IPV on current PTSD symptoms through trait dissociation. See Figure 1 and 2.

Thus, I predict that women's lifetime histories of NSSI will moderate the relationship between dissociation and current PTSD symptoms while controlling for IPV (moderated b path). Further, in the case that the moderation proves significant, I expect that the strength of the mediated effect is conditional on the value of the moderator (mediated b path), a phenomenon that has been termed moderated mediation. Therefore, to test Hypotheses 3, I expect that a statistically significant indirect effect (both a & b paths) will be dependant on the value of the proposed moderator.

To test this model, I used PROCESS, a computational tool that is run through SPSS (Hayes, 2012). Through bootstrapping, this program is able to estimate the strength of the effect of the moderator (i.e., NSSI) on individual paths in the

mediation model (Hayes, 2012). Bootstrapping, a powerful resampling technique, is advantageous in testing the outcomes of regression models because of its ability to estimate parameters of a population. PROCESS is also advantageous in its ability to test both the indirect effect, and the moderation of this indirect effect (i.e., the interaction of NSSI and dissociation while controlling for IPV) in the same model (i.e., Model 14; Hayes 2007).

Further analysis of the mediated model was done in order to reduce the chance of committing a type 1 error. It has been recommended by methodologists that mediation analyses be based on significance tests of the indirect effect. Testing the indirect effect is powerful because it directly addresses the mediation (MacKinnon et al., 2002; 2007). The product of coefficients approach has historically measured the significance of a mediator by dividing the mediated effect with its standard error and then comparing the obtained value to a standard normal distribution (Sobel, 1982).

MacKinnon, Lockwood, and Hoffman (1998) & MacKinnon et al. (2002) provided evidence that comparing the indirect effect to a normal distribution results in lower power because the product of the regression coefficients is typically not normally distributed. To increase power, asymmetric confidence limits were used to evaluate significance. To establish asymmetric confidence limits, z statistics are computed for both regression coefficients and are used to establish critical values, which are then used in the equation: Asymmetric Confidence Limits = $\alpha * \beta \pm (\text{critical value})(\text{standard error of } \alpha * \beta)$. Alpha represents the effect of the independent variable on the mediator, and Beta represents the effect of the mediator on the dependent variable while controlling for the independent variable. If the

confidence interval does not include zero, the mediated effect is considered significant (MacKinnon et al., 1998).

Method

Participants

Participants included in the current study were 203 female inmates from a study of treatment-seeking imprisoned women ($N = 224$). The women were inmates in a northwestern prison who volunteered to take part in a longitudinal study on group therapy. Participants who engaged in NSSI prior to having been exposed to IPV were removed ($N = 18$) from the sample. Participants whose reported NSSI frequency was greater than three standard deviations from the mean were also removed ($N = 3$). Thus, only the participants who had not engaged in NSSI until after the first traumatic experience (or who had never engaged in NSSI), and those whose reported NSSI frequency within three standard deviations of the mean were retained in the final sample to ensure both the temporal nature of the model described and the normality of data distribution ($N = 203$).

The women's ages ranged from 19 to 60 years old ($M = 34.49$, $SD = 9.39$). The sample is ethnically diverse. Women endorsed the following ethnic identities using a check all that apply format: 81.5 % identified as White/Caucasian/European American ($N = 168$), 14.6% as American Indian ($N = 30$), 14.6% as Hispanic American/Hispanic ($N = 30$), 3.8% identified as African American ($N = 8$), 1.9% as European ($N = 4$), 0.9% as Asian American ($N = 2$), and 0.9% did not identify a specific ethnic identity ($N = 2$). The women had a mean annual income of \$15,347 ($SD = 20,729.61$) in the 12 months prior to their incarceration, with a range of \$0 to \$250,000 per year. Similar to the disparity in income, women's education's ranged from 6th grade or less ($N = 4$, 1.9%) to the completion of a graduate program ($N = 1$,

0.5%) with most of the women reporting their highest education as the completion of a GED ($N = 71$, 34.5%). Of the women included in the sample, 44 were single (21.4%), 46 were divorced (22.3%), 40 were married (19.4%), 56 were living with their partner (27.2%) and 19 were not living with their current partner (9.2%) prior to incarceration. Finally, of the 203 women in the sample, 175 endorsed being parents of children under age 18 (85%). See Table 1.

Measures

Demographics Questionnaire. This form asked for basic demographic information including: age, education, employment history, income, marital status, number and location of children under the age of 18, ethnicity, current charges, and sentence length. See Appendix A.

Trauma History Questionnaire (THQ; Green, 1996). The THQ is a 24-item self-report questionnaire that measures the lifetime occurrence of traumatic experiences in three distinct areas: crime-related events, general disaster and trauma, and interpersonal violence. Each individual was asked whether they have experienced a specific event in the past; if a participant answered “no” the interviewer moved on to the following question, if they answered “yes” they were asked for further detail. Every item has two sub-questions: the number of times an event occurred (recorded as: 0 = never; 1 = once; 2 = a few times; 3 = 5 times or more), and the approximate age at which the events occurred.

The THQ is described as an easily administered and reliable assessment for understanding an individual’s exposure to traumatic events over the course of their lifetime; the events described in the measure are diverse and apply to a wide-range of

populations (Hooper, Stockton, Krupnick, & Green, 2011). Hooper et al. reviewed several studies that used the THQ and found preliminary evidence that the measure is reliable and valid across both clinical and nonclinical samples.

The measure is best used for capturing lifetime exposure related to Criterion A1 stressors for PTSD (Hooper et al., 2011). For the current study, only items measuring exposure to IPV (18 through 23) were included to produce a total score of trauma chronicity. Chronicity was determined by multiplying the frequency of trauma (how many times each type of IPV occurred (on scale of 0 to 3) with the number of unique types of trauma reported on the THQ (McDonald, Borntrager, & Rostad, 2014). Thus, total chronicity scores include a possible range from 0-18. This score served as the predictor in the moderated mediation model. See Appendix B.

Dissociative Experiences Scale (DES; Bernstein-Carlson & Putnam, 1986). The DES is a 28-item self-report questionnaire used to measure typical dissociative symptoms on a continuum of how often they occur. The measure assesses several types of dissociative experiences, including: amnesia, depersonalization, derealization, absorption, and imaginative involvement (Carlson & Putnam, 1993). For example, participants respond to the statement “Some people have the experience of finding new things among their belongings that they do not remember buying. Mark the line to show what percentage of the time this happens to you.” The participant is then asked to circle a percentage between 0-100% indicating how often they have had this experience.

The DES has good validity and reliability, and strong psychometric properties. The reported test-retest reliability of the DES is .79 to .96, and a Cronbach’s alpha of

.95 (Carlson & Putnam, 1993). In the present study, the DES had similarly high internal consistency, with an alpha of .94. A meta-analysis of the DES found that it has both excellent convergent validity with other dissociative experiences questionnaires, and excellent predictive validity in predicting dissociative disorders and traumatic experiences. It is best used to measure the current view on past dissociative experiences (van Ijzendoorn & Schuengel, 1996).

The women's scores for the DES were calculated using Carlson & Putnam's (1993) method. For each of the 28 items, participants indicated where they fell along a continuum of zero to 100 percent of the time; the DES total score was then based on the mean of all item scores. A higher total score suggests greater dissociative symptoms, with a score of 30 indicating severe dissociation (Carlson & Putnam, 1993). See Appendix C.

Self-Harm Behavior Questionnaire (SHBQ; Gutierrez, Osman, Barrios, & Kopper, 2001). The SHBQ is a self-report questionnaire that assesses self-harm and suicidal-related behaviors and thoughts. The measure is divided into four sections, including: non-suicidal self-harm, past suicide attempts, suicide threats, and suicide ideation. The current study used only the items assessing self-harm. Women responded to the question "have you ever hurt yourself on purpose?" If women answered "yes," the participant was asked to answer follow-up questions, namely to describe what she did in an open-ended format. Next the participant described how many times she hurt herself, the age at which she began self-harming, her age the last time she self-harmed, whether and who she may have told about engaging in the behavior, and whether she has ever needed to see a doctor after self-harming.

The measure was validated using a sample of 342 undergraduate psychology students. The SHBQ proved to have high internal consistency for all four sections (alphas ranging from .89 to .96); it was also found to have high convergent validity with well-established measures including the Suicide Behaviors Questionnaire-Revised, and the Adult Suicide Ideation Questionnaire (Borschmann, Hogg, Phillips, & Moran, 2012; Gutierrez et al., 2001).

The current study used scores based on the first item of the SHBQ (i.e., non-suicidal self-harm). The score was calculated as described by Gutierrez and Osman (2008), the developers of the measure. This method involved coding the free-response items (those following a “yes” response to “have you ever hurt yourself on purpose”) so that a single numerical value was generated to represent self-harming severity. The value was determined by assessing frequency and duration of the behavior, whether an individual disclosed the self-harm to another person, and need for medical attention. For example, responses to the item assessing frequency of NSSI were coded as: blank = 0, once = 1, twice = 2, three times = 3, and four or more times = 4. Injury that warranted medical attention also increased an individual’s score (endorsing medical attention = 2), as did disclosures to others (disclosure = 2). Because the SHBQ inquires about lifetime occurrence of NSSI, scores were weighted based on the age of the most recent self-harming behavior. To weight this appropriately, the age of the most recent NSSI act was subtracted from the individual’s current age to produce the following scores: blank = 0, 1 year or less = 4, 1-2 years = 3, >2 years = 2. The total subscale score was then obtained by summing the coded values across these free-response questions; overall higher scores indicated more serious NSSI behaviors.

Thus, responses to items in the self-harm section included scores ranging between 0 and 18 (Gutierrez & Osman, 2008). See Appendix D for measure and scoring.

The PTSD Checklist (PCL; National Center for PTSD, Boston, 1993). The PCL is a 17-item self-report checklist of PTSD symptoms that is closely based on DSM-IV criteria. Individuals rate how bothered by particular symptoms of PTSD they have been in the last month on a scale of 1 (*not at all*) to 5 (*extremely*). Total scores are obtained by summing each of the individual's responses.

The PCL has demonstrated strong psychometric properties on a variety of measures of validity of reliability (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996). The PCL has shown strong internal consistency (alphas ranging from 0.89 to 0.92) and high diagnostic efficiency ($r = 0.83$) when the individual's total scores are used. It has been endorsed as a valid and efficient measure of the degree of current PTSD symptoms. It has also been shown to have high convergent validity with well-established measures such as the CAPS ($r = 0.93$; Blanchard et al., 1996). Similarly, in the current study the PCL had high internal consistency ($\alpha = .87$). See Appendix E.

Procedures

Female inmates from a women's prison in a northwest state were invited to participate in a study assessing the effectiveness of a group therapy for PTSD and substance use disorder. To be included, women had to be over 18-years of age, speak English, and be eligible for release within two years. A trained research team member interviewed the women one-on-one in private, enclosed rooms. After the consent form was read to the women, participants followed the interview with a copy of the

questionnaires. Each of the directions, questions, and answers was read out loud by the researcher in order to control for participants' reading ability. Women had the choice to fill out the questionnaire themselves, or have the experimenter write their responses for them. Women were given a candy bar during the interview and a certificate of completion of the study. A university Human Subjects Committee approved this protocol.

Results

Descriptive statistics

Women in this sample reported high rates of IPV. The average number of IPV experiences reported was 9 ($SD = 4.1$). Of the 203 women, 150 (73.9%) indicated that they had been forced to engage in intercourse against their will. Twenty-seven (13.3%) of these women reported a single event, while 83 (40.9%) reported being raped four or more times. Similarly, 114 (56.2%) of the women reported having been attacked with a weapon at some point in their lives; 29 of these women (14.3%) reported having such experiences four or more times. One hundred and sixty one women in the sample (79.3%) reported having been attacked by someone without a weapon; 118 of these women (58.1%) reported having such experiences four or more times.

Comparable to the rates of IPV exposure, women in this sample also reported significant rates of dissociation, NSSI, and symptoms of PTSD. Almost one-third of the women (29.9%) obtained a score above 30 on the DES, which is considered to be the cut-off for clinically significant symptoms of trait dissociation (Carlson & Putnam, 1993). One hundred women (49.3%) reported that they had engaged in at least one previous NSSI behavior; and 49 (24.14%) reported needing medical attention after their self-injury. Correspondingly, the average and modal score on the PCL was 50 ($SD = 12.9$), exceeding the recommended threshold of 30 to meet criteria for a diagnosis of PTSD (National Center for PTSD, 1993). See Tables 2 and 3.

There were two significant associations between socio-demographic variables and mental health indicators. Specifically, number of previous incarcerations was

positively associated with symptoms of PTSD ($r = .20, p < .01$), and age was negatively associated with NSSI severity ($r = -.15, p < .05$). Given these associations, these variables were included as covariates in the subsequent data analyses.

Preliminary Analyses

Before addressing the hypotheses of the current study, the predicting variables (i.e., IPV, dissociation, and NSSI) were assessed for normality. For the purposes of the current study, NSSI was measured four ways. The first two measures of NSSI were continuous – a total severity score and frequency of NSSI (number of unique self-harming behaviors across the lifespan). The second two measures were dichotomous – history of NSSI (either “yes” or “no”), and if NSSI behavior had ever warranted medical attention.

Results of descriptive analyses demonstrated that IPV chronicity scores ($M = 8.53, SD = 4.14$) were normally distributed (skewness = .69 and kurtosis = 1.82). Scores on the PCL ($M = 50.01, SD = 12.91$) were also normally distributed within reason (skewness = 1.54 and kurtosis = 1.53). However, several other variables needed to be transformed in order to maintain the assumption of normality. Women’s scores on the DES ($M = 22.93, SD = 15.82$) were moderately positively skewed (skewness = 4.88 and kurtosis = -.38). To address this, a square root transformation was performed, resulting in an acceptable distribution (skewness = .56 and kurtosis = -1.8). Similarly, severity scores on the SHBQ were positively skewed ($M = 6.16, SD = 7.06$; skewness = 2.65 and kurtosis = 3.94). To address this, a logarithm transformation was performed, resulting in an acceptable distribution (skewness = -1.03 and kurtosis = -1.38).

Further transformation was required for the frequency count of NSSI behaviors ($M = 52.19$, $SD = 170.04$; skewness = 21.63 and kurtosis = 59.46). To address the issue with normality, frequency was assessed using Mahalanobis distance; results from this analyses indicated that three participants reported frequency was significantly distant from the centroid ($X^2 = 15.42$, $p < .001$). After outliers were removed ($N = 3$), the data was still significantly positively skewed and highly kurtotic. Subsequently a logarithm transformation was used to further normalize the distribution, resulting in acceptable skewness (1.94), and kurtosis (-.53). See Table 3.

The associations among IPV, dissociation, NSSI and PTSD

After variables were assessed for normality, zero-order correlations were examined to assess relationships among the predicting variables (i.e., IPV, dissociation, and NSSI). Results of the correlations demonstrated that, as hypothesized, IPV chronicity was moderately associated with both dissociation and NSSI ($r = .26$, $p < .01$; $r = .37$, $p < .01$). Also in line with the hypotheses, dissociation and NSSI severity were moderately correlated with one another ($r = .255$, $p < .01$). Although moderate correlations emerged, collinearity statistics suggested that the assumption of multicollinearity was met.

As a reminder, the current study's main objective was to test the hypothesis that IPV and symptoms of PTSD would be mediated by dissociation, and that this mediation would be moderated by NSSI. The hypotheses of the study were analyzed using hierarchical linear regression. Each model was tested for significance using the SPSS macro PROCESS (Hayes, 2007) which allowed for the use of bootstrapping ($K = 5000$).

Mediation Analyses. Given bootstrapping's robust power, the product of coefficients test was conducted to reduce the likelihood of a type 1 error while determining the significance of the mediation model (i.e., the indirect effect of IPV predicting PTSD through dissociation).

Results of the mediation analyses demonstrated that IPV chronicity significantly predicted dissociation (a path: $\beta = .30, t = 4.38, p < .001$), and dissociation significantly predicted PCL scores (b path: $\beta = .49, t = 7.78, p < .001$) while controlling for IPV and total number of incarcerations. The standardized indirect effect ($\beta = .46$) was also statistically significant (95% A.C.I. = .24 - .70). See Figure 2 and Table 4.

Severity of NSSI. The first moderated mediation model tested the significance of the interaction between NSSI severity and dissociation when predicting PTSD, controlling for IPV and the aforementioned covariates. NSSI severity scores did not significantly interact with dissociation ($\beta = .06, t = .02, p = .983$) and thus did not moderate the relationship between dissociation and PTSD. See Table 5.

Frequency of NSSI. The second model assessed the interaction between frequency of NSSI and dissociation when predicting women's PTSD symptoms. NSSI frequency also did not moderate the b path, failing to support the hypothesis ($\beta = .10, t = .04, p = .967$). See Table 6.

History of NSSI. The third model assessed the interaction of NSSI history and dissociation when predicting PTSD. The interaction term (NSSI and dissociation;

$\beta = .00, t = .05, p = .963$) was not statistically significant. Therefore, an endorsement of historically engaging in NSSI did not moderate the indirect effect. See Table 7.

Need for Medical Attention. The fourth model assessed the interaction between the need for medical attention subsequent to NSSI and dissociation when predicting PTSD. Once again, the interaction term (need for medical attention following NSSI and dissociation; $\beta = .02, t = .27, p = .789$) was not statistically significant. Therefore, reportedly seeking medical attention subsequent to engaging in NSSI did not significantly moderate the indirect effect. See Table 8.

Post-Hoc Analyses. Results demonstrated a significant association between dissociation and NSSI ($r = .255, p < .01$). This association supports the dissociation model of NSSI (Chapman, Gratz, & Brown, 2006), which posits that self-harm is often utilized to bring oneself in or out of a dissociative state with the purpose of affect regulation. In order to better understand the complex relationship between NSSI and dissociation, as well as to further explore why NSSI did not moderate the indirect effect of the current study, squared semi-partial correlations between the variables were explored. Squared semi-partial correlations measure the relationship between a dependent variable (i.e., PTSD), and an independent variable (e.g., dissociation) while controlling for the effects of other predictors in the analysis (e.g., NSSI; Semipartial Correlations, 2004).

Squared semi-partial correlations demonstrated that severity scores on the SHBQ predicted 2.16% ($p < .05$) of the unique variance in PTSD symptoms. However, when controlling for dissociation, the severity score predicted less than .00% of the variance ($p = .983$; dissociation $sr^2 = .27, p < .001$). Similarly, a history of

NSSI, measured dichotomously, predicted 3.31% ($p = .01$) of the unique variance in PTSD symptoms before controlling for dissociation, and less than .00% after ($p = .589$; dissociation $sr^2 = .27$, $p < .00$). In contrast, neither frequency ($sr^2 = .02$, $p = .185$), nor need for medical attention ($sr^2 = .00$, $p = .899$), significantly predicted symptoms of PTSD. Therefore, NSSI did not add to our understanding of the association between IPV and PTSD symptoms when dissociation was included in the model.

Discussion

This study examined the role of experiential avoidance (i.e., dissociation and NSSI) in the relationship between IPV and PTSD among 203 women in prison. Participants responded to an invitation to take part in a longitudinal study on the effects of group therapy, and were interviewed regarding their mental health and traumatic life experiences. The current study has provided several findings that are important contributions to our limited knowledge of incarcerated women.

First, the participants' reports of their experiences of IPV replicated other recent studies suggesting incarcerated women are at high risk of exposure to multiple forms of violence, as well as exposure to repeated violence. For example, approximately three-fourths of the women in this sample reported that they had been forced to have intercourse, and almost 41% of those women reported that they had been raped 4 or more times in their life. Similarly, more than 50% of the sample reported being attacked with a weapon at least one time, and approximately 75% had been attacked by someone without a weapon. These high rates of IPV support extant literature's findings that incarcerated women experience many more lifetime violence than the general population (Bloom et al., 2004; Brown et al., 1999; Bureau of Justice Statistics).

Given such extensive rates of IPV, it is perhaps unsurprising that rates of dissociation were also much higher than those estimated in the general population. Almost one-third of the women (29.9%) obtained a score above 30 on the DES, which is considered to be the cut-off for clinically significant symptoms of trait dissociation (Carlson & Putnam, 1993). This finding replicates previous studies that

have demonstrated that incarcerated individuals score significantly higher on measures of dissociation than individuals living in the community (e.g., Roe-Sepowitz et al., 2007). The difference between these scores is likely attributable in part to the higher number of traumatic life events. Further, given the limited access to other coping mechanisms (e.g., seeking social support or spending time outdoors) that women in prison have, it may be that they are more likely to utilize EA techniques such as dissociation while incarcerated, increasing this score.

Similar to the high rates of dissociation, the women included in this sample indicated high rates of NSSI. Of the 203 women included in the sample, 100 (49.3%) reported that they had engaged in at least one previous NSSI behavior; almost half of these women ($N = 49$) reported purposefully cutting their skin. Moreover, 49 women reported needing medical attention after their self-injury. These results underscore both the seriousness and high prevalence of NSSI among this at-risk population.

Results also suggested that most women first engaged in NSSI in adolescence or young adulthood. In fact, 55% of the women who utilized NSSI techniques began doing so between the ages of 12 and 19, and 24% reported that they had first engaged in NSSI between the ages of 20 and 30. This finding replicates previous literature (e.g., Whitlock et al., 2006) that has found young adulthood and adolescence to be the typical age of onset for self-injurious behavior. This period of onset may be due to several factors. For example, it is during this time that individual's intellectual functioning becomes more abstract (Steinberg, 2002), which may lead to increased awareness of feelings such as guilt, shame, or self-blame (McAllister, 2003). Increased awareness of these feelings may lead to increased negative affect (e.g.,

feeling overwhelmed, sad, frustrated), and extant research has demonstrated that such affective changes are highly predictive of self-harming behavior (Klonsky, 2010). Specifically, Klonsky (2010) demonstrated that negative affect typically precedes self-harming behavior, and that these affective states are often relieved subsequent to NSSI. This suggests that individuals in this age group may be at especially high risk of engaging in such behaviors if they are unaware of other affect regulation techniques. Therefore, young adults and adolescents may benefit from targeted intervention and treatment that model more effective strategies to cope with uncomfortable emotional experiences.

Much like the high rates of dissociation and NSSI, rates of PTSD symptoms among this sample were also elevated. The average and modal score on the PCL was 50 ($SD = 12.9$); significantly higher than scores obtained among the general public (National Center for PTSD, 1993). These scores likely reflect the large amounts of violence exposure typical of this sample, and replicate previous studies conducted with women in prison that have shown high prevalence rates of PTSD symptoms (e.g., Harner et al., 2013; Lynch et al., 2012). Overall, the current study replicates previous research suggesting that women in prison have high rates of mental health problems and traumatic experiences prior to their incarceration (James & Glaze, 2006). This suggests that incarceration may provide a unique and optimum time for intervention and treatment that may be otherwise limited or inaccessible due to limited resources of women prior to incarceration.

Beyond the noted elevations in symptoms of mental illness, results of the current study demonstrated a strong association between two socio-demographic

variables and variables of interest. Specifically, the number of previous incarcerations was positively associated with symptoms of PTSD, and age was negatively associated with NSSI severity scores. These results replicate previous literature that has demonstrated populations with PTSD have higher rates of recidivism than those without (Kubiak, 2004). Highly supported explanations regarding the difference in reentry rates often surround the high prevalence of comorbidity between PTSD and substance use disorders among incarcerated populations (Simpson, 2003; Stewart, Mitchell, Wright, & Loba, 2004). Growing evidence suggests that there are higher rates of drug relapse and lower rates of treatment adherence among those suffering from trauma symptoms (Kubiak, 2004), often resulting in a cycle of incarceration. The inverse relationship between age and NSSI also replicates previous literature (Roe-Sepowitz, 2007). A seminal meta-analysis found that although NSSI may occur at any age, adolescents and young adults are at especially high risk for engaging in self-harming behaviors, and that these behaviors tend to decrease in adulthood (Fliege et al., 2009).

It was hypothesized that women who reported higher chronicity of IPV would also endorse more symptoms of dissociation. Results of the regression supported this assumption. Similarly, results supported the second hypothesis, that dissociation would be positively associated with current symptoms of PTSD. Moreover, dissociation significantly mediated the relationship between IPV and PTSD (hypothesis three), replicating findings from the general population (Carlson et al., 2012; Ehlers, Mayou & Bryant, 1998; Koopman, Classen, & Spiegel, 1994; McCaslin

et al., 2008). These findings suggest that trait dissociation is one important mechanism in the development and maintenance of PTSD symptoms following IPV.

The third hypothesis also stated that NSSI would moderate the aforementioned mediated model. This hypothesis was not supported. There was no significant interaction between NSSI and dissociation among any of the four unique measurements of self-harm (i.e., severity score, frequency, history of NSSI, or need for medical attention). This finding was unexpected given previous literature demonstrating that the use of NSSI predicts increased psychological and emotional distress (Chapman, Gratz, & Brown, 2006; Merrill et al., 2001). The difference in findings may be explained through the dissociation model of NSSI. As demonstrated through the results, both history of NSSI and severity of NSSI predicted a significant amount of variance in PTSD before controlling for dissociation. Thus, although NSSI is predictive of PTSD, the variance it explains is subsumed by symptoms of dissociation. Therefore, results of the post hoc analyses support previous findings that NSSI and dissociation are strongly related (Favazza, 2008; Low, Jones, Macleod, & Power, 2000) and that both predict poor mental health (Carlson et al., 2012; Merrill et al., 2001). These findings also suggest that dissociation is a stronger predictor of PTSD symptoms following IPV than NSSI alone; and that those who dissociate likely represent a sizable portion of the sample who are at risk for self-injurious behaviors.

In contrast, subsequent analyses demonstrated that neither frequency of NSSI nor need for medical attention subsequent to NSSI were significant predictors of trauma symptoms. These findings may suggest that it is not the minute facets of self-harm that are predictive of poor psychological health, but rather the more general act

itself. This broader conceptualization of NSSI may have been captured through the severity score and the endorsement of previous self-harm behavior.

Yet another explanation for these results may be an issue of methodology. Women's intentions when engaging in NSSI were not assessed, so their motivations remain unknown. The function of self-harm may vary widely from offenders attempting to gain attention or comfort from others in a typically non-caring environment (Schwartz, Cohen, Hoffman, & Meeks, 1989), to those using it as alleviation from tension or anger (Jones et al., 1979; Walsh and Rosen, 1988). Moreover, the current study did not assess culturally appropriate self-injurious behaviors (e.g., tattooing and piercing), which are more common among incarcerated samples (Laumann & Derick, 2006). These varying functions may be related to other socio-demographic or cultural variables rather than those included in the current study. Finally, women may have been reluctant to report their recent or ongoing self-harm due to the possible punitive repercussions (e.g., being placed in segregation). Therefore estimates of NSSI behavior may not be representative of the population.

To summarize, the regression analyses demonstrated that dissociation mediated the relationship between IPV and PTSD. Previous incarcerations also predicted increased rates of PTSD, and age was inversely related with NSSI severity. However, in this study, NSSI did not moderate the relationship between dissociation and PTSD when controlling for IPV. These findings support the theory that dissociation serves as an EA technique, and is predictive of poor mental health outcomes (i.e., PTSD). Although NSSI did not significantly moderate the relationship between dissociation and PTSD, it was moderately correlated with both variables.

This result offers support for the dissociation model of self-injury. It also adds to the literature suggesting that NSSI is predictive of poor mental health outcomes and is frequently utilized by individuals who also experience dissociative symptoms.

Overall, findings from the current study suggest that dissociation is a strong predictor of PTSD with or without a history of NSSI. The findings are therefore supportive of the recent revisions to the Diagnostic and Statistical Manual of Mental Disorders (DSM 5; American Psychiatric Association, 2013), which included dissociation as one subtype of PTSD. These findings have significant implications for the treatment of traumatized populations. For example, assessing dissociative symptoms may help to identify those at heightened risk for developing or maintaining PTSD-related pathology. This corroborates previous research that has demonstrated a strong, positive relationship between PTSD and dissociation symptomology over the course of treatment (Lynch et al., 2008). Such findings indicate that treatment aimed at either dissociation or PTSD symptoms tend to reduce distress related to both. Therefore, dissociation is a pertinent target when treating traumatized individuals in therapeutic settings.

Limitations

There are several clear limitations to the current study. The first limitation is that the current study relied on retrospective data. Retrospective data, much like other types of self-report, are subject to biased reporting. Namely, this form of data collection is dependent upon the women's ability to accurately recall events and details surrounding events, many of which occurred several years prior to data collection. The current study relied on women's reports of many details concerning

their previous experiences and behaviors (e.g., frequency and duration of NSSI behavior and IPV experiences) that sometimes had occurred several years previously. Thus, this limitation may have impacted the accuracy of the results. In the future, a longitudinal design could be employed to assist in resolving this problem.

A second limitation to the current study was the questionnaire used to measure NSSI. Although the participants provided a great amount of detail, the data were not collected with the intention to test the hypotheses of the current study. Therefore it did not provide as much specificity as other measures may have that would be specifically chosen to address the questions raised in this paper. However, given that the current study was conducted using archival data, it was not possible to change the measures. The main issue with the use of the SHBQ is that the primary focus is on suicidality; the SHBQ has three sections devoted to suicidality and only one specific to NSSI. Future studies should collect more specific and detailed data by asking questions focused on prior NSSI behavior.

A final limitation of the current study is its generalizability. Women in this study were treatment-seeking, and their interest in obtaining services may have resulted in a unique subsample of the prison population. While this is an important consideration, it should be noted that the total capacity of the prison is 289. Thus, a substantial portion of the women incarcerated in the prison during the three years of data collection for the treatment outcome study were included, suggesting this sample (N=224) is likely representative of the greater prison population at this facility. Moreover, although this study will add to the dearth of literature on incarcerated women, it is not clear that the findings of the study will translate to the general

population. Incarcerated women are very unique in that they have experienced much higher rates of traumatic experiences, and report much higher levels of psychological distress than individuals in the general population. Further studies should be conducted to clarify whether the findings of this study would also apply to females who are not incarcerated.

Conclusion

As the number of incarcerated women increases, greater empirical knowledge concerning these women's lives is necessary to best guide best practice in assessment, intervention, and pre-release planning. Among other variables, the central role of trauma in these women's lives makes them unique from other populations. Although unfortunate, these experiences allow for an opportunity to study relationships between phenomena that are less prevalent among members of the general population (e.g., trait dissociation and NSSI). The current study demonstrated several significant relationships between aspects of IPV, dissociation, NSSI, and PTSD. Data from this sample suggests that IPV predicts higher levels of all variables of interest, and that dissociation mediates the relationship between IPV and PTSD. Moreover, the data suggest that dissociation and NSSI share a robust association, but dissociation is a stronger predictor of PTSD than self-injurious behaviors. Additionally, descriptive data indicated that the number of previous incarcerations was a risk factor for PTSD, and that younger women were at higher risk for self-injury.

Overall, these findings suggest the importance of early intervention with at-risk populations. The findings also point to dissociation as a relevant target for

treatment subsequent to traumatic experiences, given its strong, positive association with symptoms of PTSD. Moreover, these results highlight a complex relationship between dissociation and self-harm among incarcerated women. Specifically, the findings indicate that most women who engaged in self-harm also reported dissociative traits, highlighting self-harm as a potential coping mechanism for dissociative symptoms. Elucidating this relationship in future research may aid in the development of more efficacious treatments for incarcerated women, and hopefully reduce the debilitating psychological effects of traumatic experiences among such at-risk populations.

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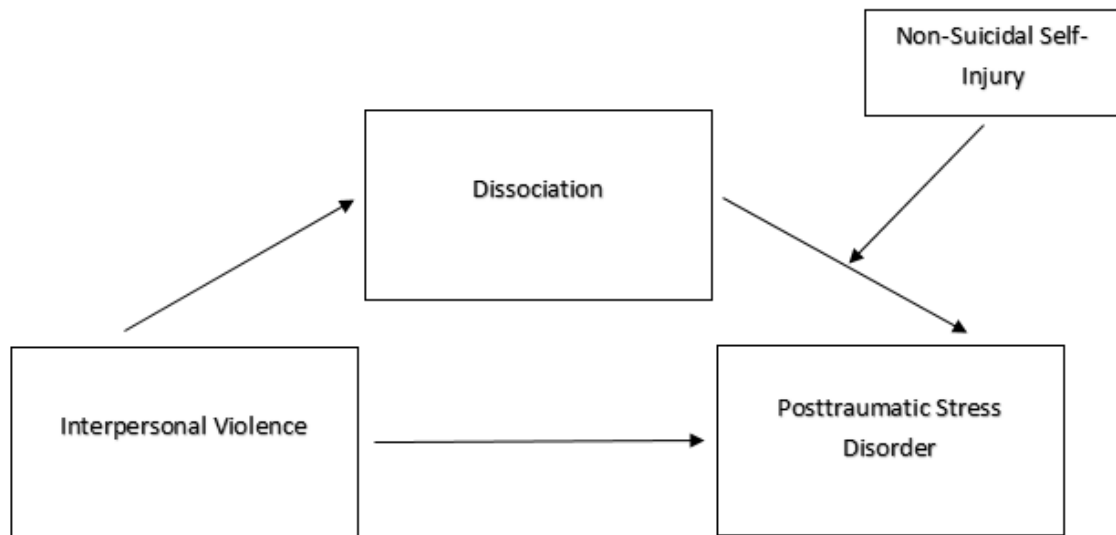


Figure 1. Non-suicidal self-injury moderates the relationship between dissociation and symptoms of PTSD, while controlling for interpersonal violence.

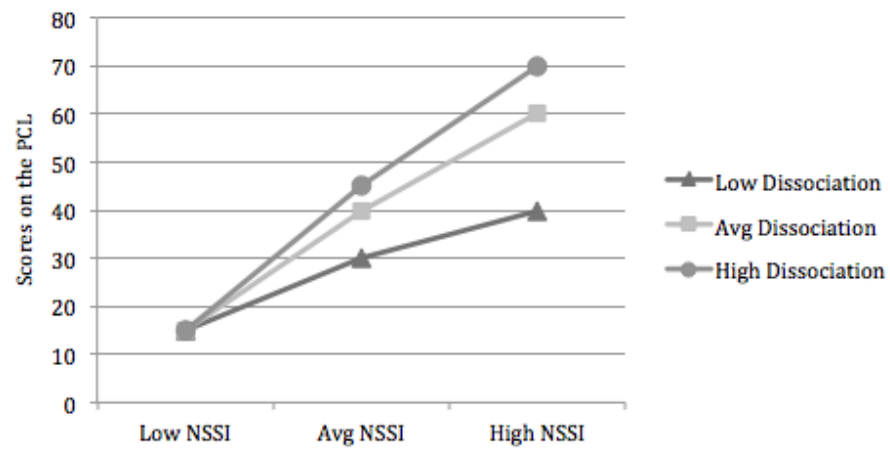
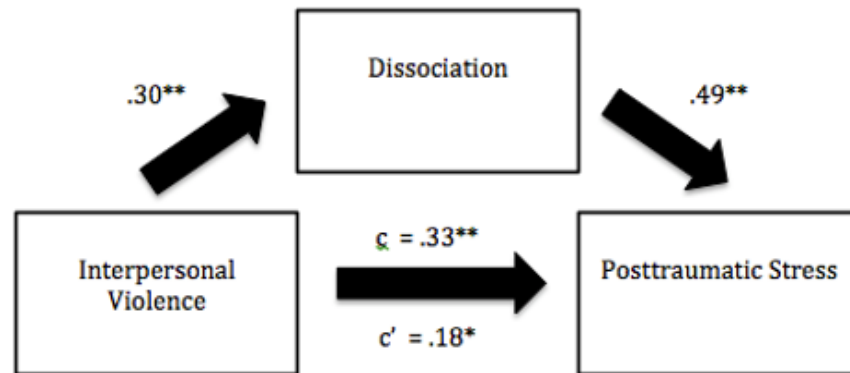


Figure 2. Hypothetical representations of NSSI moderating the relationship between dissociation and PTSD. *This figure illustrates how different levels of NSSI were predicted to impact the relationship between dissociation and women's scores on a measure of PTSD. Specifically, low levels of NSSI predict the lowest scores on the PTSD measure, while high levels of NSSI predict the highest scores across all levels of dissociation.*



Note: Standardized Betas; ** indicates $p < .001$; * indicates $p < .01$

Figure 3. Dissociation mediates the relationship between interpersonal violence and symptoms of PTSD.

Table 1

Demographics of Sample

	Women	Percent
Demographic Variable	<i>N</i>	%
Ethnicity		
African American	3	1.5%
Asian American	1	0.5%
Caucasian/White	140	69%
Hispanic	17	8.4%
Native American/Indian	7	3.4%
Mixed Race	33	16.3
Other/Did not specify	2	0.9%
Marital Status		
Single	44	21.7%
Divorced	46	22.7%
Widowed	1	0.5%
Married	37	18.2%
Living w/ partner	56	27.6%
Not living w/ partner	19	9.4%
Level of Education		
Completed 8 th grade or less	10	5%
Some high school	27	13.4%
Completed high school/GED	89	43.9%
Some college	54	26.6%
2-4 year college degree or more	15	7.4%
Parent		
Yes	172	84.7%
No	30	14.8%
Household Income		
≤ \$9,000	70	36.3%
\$9,000 - \$19,900	88	42.3%
\$20,000 - \$39,000	33	16.9%
\$40,000 - \$75,000	7	3.5%
> \$75,000	2	1%

Table 2

Frequencies of Predictor Variables

Variable	N	Percent
Interpersonal Violence		
Forced to engage in intercourse	150	73.90%
Touched genitals/private parts	129	63.50%
Other unwanted sex	72	35.50%
Attacked with weapon	114	56.20%
Attacked without weapon	161	79.30%
Beaten by family member	104	51.20%
Dissociation-DES		
0-14	74	36.50%
15-29	71	34.90%
30-44	36	17.80%
45-60	16	7.80%
>60	6	3%
Severity Scores-SHBQ		
0-6	110	54.20%
7-10	25	12.30%
11-14	29	14.20%
15-18	39	19.30%
Frequency of NSSI		
≤10	61	67%
11-30	14	14.40%
31-50	7	7.30%
≥51	11	11.30%
History of NSSI		
Yes	100	49.30%
No	103	50.70%
Needed Doctor Following NSSI		
Yes	49	24.10%
No	50	24.60%

Table 3
Descriptive Statistics of Variables Used in Regression¹

Predictor	Mean	Standard Deviation	Skewness	Kurtosis
Chronicity of IPV	8.53	4.14	.69	1.82
Scores on the DES (Dissociation)*	22.93	15.82	4.88	-.38
Severity of NSSI*	6.16	7.06	2.65	3.94
Frequency of NSSI*	8.40	18.79	21.63	59.46
Scores on the PCL (PTSD)	50.01	12.91	1.54	1.53
<hr/> Covariates <hr/>				
Age	34.52	9.45	.25	.43
Number of Incarcerations	7.10	8.52	2.64	8.54

¹ Descriptive statistics provided prior to transformations for ease of interpretation

* Variable was transformed in subsequent analyses

Table 4

Dissociation Mediates the Relationship Between IPV and PTSD²

Predictor(s)	Outcome Variable	Unstandardized Beta	Standard Error	β	t
IPV	Dissociation	0.12	0.03	0.30	4.38**
Dissociation ^a	PTSD	3.67	0.47	0.49	7.78**
IPV	PTSD	1.02	0.21	0.33	4.79**
IPV, Dissociation	PTSD	0.56	0.20	0.18	2.89*

Note: first row in the table represents the a-path, or dissociation (mediator) being regressed onto IPV (IV); the second row represents the b-path, or PTSD (DV) being regressed onto dissociation while controlling for IPV; the third row represents the c-path, or PTSD being regressed onto IPV; the fourth row represents c'-path, or PTSD being regressed onto IPV and dissociation simultaneously

² Controlling for number of incarcerations; regression analyses run using bootstrapping ($K = 5000$)

** $p < .001$, * $p < .01$, $R^2 = .32$, Adjusted $R^2 = .29$

^a variable underwent square root transformation

Table 5

Severity of NSSI as a Moderator in the Relationship Between Dissociation and PTSD ³					
Predictors	Unstandardized Beta	Standard Error	β	t	F
IPV	0.74	0.21	0.24	3.59**	16.84**
Dissociation ^a	0.39	0.07	0.48	7.67**	
Severity of NSSI ^b	-0.19	0.22	-0.1	-1.51	
Interaction Term	0	0.01	0	0.02	
Covariates					
Age	-0.11	0.08	-0.01	-1.39	
Number of Incarcerations	0.26	0.09	0.02	2.95*	

³Regression analyses run using bootstrapping ($K = 5000$)

** $p < .001$, * $p < .01$, $R^2 = .35$, Adjusted $R^2 = .33$

^a variable underwent square root transformation; ^b variable underwent logarithm transformation

Table 6

Frequency of NSSI as a Moderator in the Relationship Between Dissociation and PTSD ⁴					
Predictors	Unstandardized Beta	Standard Error	β	t	F
IPV	0.96	0.32	0.31	2.96**	8.044**
Dissociation ^a	0.37	0.07	0.45	5.72***	
Frequency of NSSI ^b	0.02	0.06	0.1	0.89*	
Interaction Term	0	0	0	0.04	
Covariates					
Age	-0.04	0.12	-0.01	-1.39	
Number of Incarcerations	0.15	0.13	0.02	2.95**	

⁴Regression analyses run using bootstrapping ($K = 5000$)

*** $p < .001$, ** $p < .01$, * $p = .05$ $R^2 = .36$, Adjusted $R^2 = .31$

^a variable underwent square root transformation; ^b variable underwent logarithm transformation

Table 7

History of NSSI as a Moderator in the Relationship Between Dissociation and PTSD ⁵					
Predictors	Unstandardized Beta	Standard Error	β	t	F
IPV	0.73	0.21	0.2	3.46**	16.55**
Dissociation ^a	0.38	0.08	0.47	7.55**	
History of NSSI	-2.09	3.01	-0.08	-1.11	
Interaction Term	0	0.10	0	0.05	
Covariates					
Age	-0.12	0.08	-0.01	-1.39	
Number of Incarcerations	0.26	0.09	0.02	2.89*	

⁵Regression analyses run using bootstrapping ($K = 5000$)

** $p < .001$, * $p < .01$, $R^2 = .35$, Adjusted $R^2 = .33$

^a variable underwent square root transformation

Table 8

Need for Medical Attention Subsequent to NSSI as a Moderator in the Relationship
Between Dissociation and PTSD⁶

Predictors	Unstandardized Beta	Standard Error	β	t	F
IPV	1.21	0.32	0.39	3.82**	9.22**
Dissociation ^a	0.36	0.09	0.46	6.04**	
Need for Med.	-1.38	3.95	-0.02	-0.29	
Interaction Term	0.03	0.12	0.02	0.27	
Covariates					
Age	-0.08	0.11	-0.01	-0.73	
Number of Incarcerations	0.15	0.12	0.01	1.22	

⁶Regression analyses run using bootstrapping ($K = 5000$)

** $p < .001$, * $p < .01$, $R^2 = .39$, Adjusted $R^2 = .34$

^a variable underwent square root transformation

Appendix A

DEMOGRAPHIC SHEET: The biographical information on this page is used to provide summaries of those who participated in this study without providing details about any one individual

1. Age: ____

2. Education

____ Sixth grade or less

____ some college

____ Completed 8th grade

____ 2 year college degree

____ Some high school

____ 4 year college degree

____ Completed high school

____ some graduate school

____ GED

____ completed a graduate program

____ Technical degree

3. Employment status prior to being at the PWCC:

(1) full-time

(2) part-time

(3) occasional (4) disability/SSI

(5) no income

4. What year did you last work: _____

5. Your income the last 12 months you worked: _____

6. Marital/relationship status prior to incarceration:

(1) single

(2) divorced

(3) widowed

(4) married

(5) living with partner (5) not living with current partner

7. Has your relationship status changed since you came to the PWCC? ____ Yes ____
No

7a. If yes, how?

8. Parent: ____ Yes ____ No 8a. Number of children under the age of 18 ____

8a. Where do your children under 18 live?

8b. How often do you see them? daily 2-3 times/week weekly
2x/month monthly less often then month never

9. Ethnicity (check all that apply):

- (1) African American / Black
- (2) Caribbean / Haitian
- (3) African
- (4) Asian American
- (5) Asian / Pacific-Islander
- (6) White / European American / Caucasian
- (7) European
- (8) Hispanic American / Hispanic
- (9) Native American / American Indian
- (10) Other _____

10. How long have you been at the PWCC? _____ (number of months)

Were you incarcerated before you arrived at the PWCC? For how long?
_____ (number of months)

11. Why are you in prison? What are you charged with?

12. When are you eligible for release? _____ (month/year)

13. How many times have you been incarcerated? _____

14. What length sentence(s) have you served in the past?

- a. Number of Times_____
- b. Approximate Age_____

c. How upsetting was the event at the time? 1 2 3 4 5
Not at all Moderately Extremely

d. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely

General Disaster and Trauma

5. Have you ever had a serious accident at work, in a car or somewhere else? YES NO

If yes, please specify _____

a. Number of Times _____

b. Approximate Age _____

c. How upsetting was the event at the time? 1 2 3 4 5
Not at all Moderately Extremely

d. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely

6. Have you ever experienced a natural disaster such as a tornado, hurricane, flood, major earthquake, etc., where you felt you or your loved ones were in danger of death or injury? YES NO

If yes, please specify _____

a. Number of Times _____

b. Approximate Age _____

c. How upsetting was the event at the time? 1 2 3 4 5
Not at all Moderately Extremely

d. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely

7. Have you ever experienced a “man-made” disaster such as a train crash, building collapse, bank robbery, fire, etc., where you felt you or your loved ones were in danger of death or injury? YES NO

If yes, please specify _____

a. Number of Times _____

b. Approximate Age _____

c. How upsetting was the event at the time? 1 2 3 4 5
Not at all Moderately Extremely

d. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely

8. Have you ever been exposed to dangerous chemicals or radioactivity YES NO

that might threaten your health?

a. Number of Times_____

b. Approximate Age_____

c. How upsetting was the event at the time? 1 2 3 4 5
Not at all Moderately Extremelyd. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely**9. Have you ever been in any other situation in which you were seriously YES
NO****injured?****If yes, please specify**_____

a. Number of Times_____

b. Approximate Age_____

c. How upsetting was the event at the time? 1 2 3 4 5
Not at all Moderately Extremelyd. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely**10. Have you ever been in any other situation in which you feared you YES
NO****might be killed or seriously injured?****If yes, please specify**_____

a. Number of Times_____

b. Approximate Age_____

c. How upsetting was the event at the time? 1 2 3 4 5
Not at all Moderately Extremelyd. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely**11. Have you ever seen someone seriously injured or killed? YES
NO****If yes, please specify who**_____

a. Number of Times_____

b. Approximate Age_____

c. How upsetting was the event at the time? 1 2 3 4 5
Not at all Moderately Extremelyd. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely**12. Have you ever seen dead bodies (other than a funeral) or had to YES
NO**

handle dead bodies for any reason?

If yes, please specify_____

a. Number of Times_____

b. Approximate Age_____

c. How upsetting was the event at the time? 1 2 3 4 5
Not at all Moderately Extremely

d. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely

**13. Have you ever had a close friend or family member murdered or YES NO
killed by a drunk driver?**

If yes, please specify relationship (e.g., mother, grandson, etc.)_____

a. Number of Times_____

b. Approximate Age_____

c. How upsetting was the event at the time?	1	2	3	4	5
	Not at all	Moderately		Extremely	

d. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely

14. Have you ever had a spouse, romantic partner, or child die? YES
NO

If yes, please specify relationship_____

a. Number of Times _____

b. Approximate Age_____

c. How upsetting was the event at the time?	1	2	3	4	5
	Not at all		Moderately		Extremely

d. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely

15. Have you ever had a serious or life-threatening illness? YES
NO

If yes, please specify_____

a. Number of Times_____

b. Approximate Age_____

c. How upsetting was the event at the time?	1	2	3	4	5
	Not at all	Moderately		Extremely	

d. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely

16. Have you ever received news of a serious injury, life-threatening illness or unexpected death of someone close to you? YES NO

If yes, please specify_____

a. Number of Times_____

b. Approximate Age_____

c. How upsetting was the event at the time? 1 2 3 4 5
Not at all Moderately Extremely

d. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely

17. Have you ever had to engage in combat while in military service YES NO

in an official or unofficial war zone?

If yes, please indicate where_____

a. Number of Times_____

b. Approximate Age_____

c. How upsetting was the event at the time? 1 2 3 4 5
Not at all Moderately Extremely

d. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely

Physical and Sexual Experiences

18. Has anyone ever made you have intercourse, oral or anal sex against your will? YES NO

If yes, please indicate the nature of relationship with person (e.g. stranger, friend, relative, parent, partner, sibling)_____

a. Number of Times_____

b. Approximate Age_____

c. How upsetting was the event at the time? 1 2 3 4 5
Not at all Moderately Extremely

d. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely

19. Has anyone ever touched private parts of your body, or made you touch theirs, under force or threat? YES NO

If yes, please indicate the nature of relationship with person (e.g. stranger, friend, relative, parent, partner, sibling)_____

a. Number of Times_____

b. Approximate Age_____

c. How upsetting was the event at the time? 1 2 3 4 5
Not at all Moderately Extremely

d. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely

**20. Other than incidents mentioned in Questions 18 and 19, have there YES
NO**

been any other situations in which another person tried to force you to have unwanted sexual contact?

If yes, please indicate the nature of relationship with person (e.g. stranger, friend, relative, parent, partner, sibling)_____

a. Number of Times_____

b. Approximate Age_____

c. How upsetting was the event at the time? 1 2 3 4 5
Not at all Moderately Extremely

d. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely

**21. Has anyone, including family members or friends, ever attacked you YES
NO**

with a gun, knife or some other weapon?

If yes, please indicate the nature of relationship with person (e.g. stranger, friend, relative, parent, partner, sibling)_____

a. Number of Times_____

b. Approximate Age_____

c. How upsetting was the event at the time? 1 2 3 4 5
Not at all Moderately Extremely

d. How much has it affected your life in the past year? 1 2 3 4 5
Not at all Moderately Extremely

**22. Has anyone, including family members or friends, ever attacked YES NO
you without a gun, knife, or some other weapon?**

If yes, please indicate the nature of relationship with person (e.g. stranger, friend, relative, parent, partner, sibling)_____

- a. Number of Times_____
- b. Approximate Age_____
- c. How upsetting was the event at the time? 1 2 3 4 5
 Not at all Moderately Extremely
- d. How much has it affected your life in the past year? 1 2 3 4 5
 Not at all Moderately Extremely

**23. Has anyone in your family ever beaten, “spanked” or pushed you YES NO
 hard enough to cause injury?**

- a. Number of Times_____
- b. Approximate Age_____
- c. How upsetting was the event at the time? 1 2 3 4 5
 Not at all Moderately Extremely
- d. How much has it affected your life in the past year? 1 2 3 4 5
 Not at all Moderately Extremely

Other Events

**24. Have you experienced any other extraordinary stressful situation or YES
 NO**

event that is not covered above?

- If yes, please specify**_____
- a. Number of Times_____
- b. Approximate Age_____
- c. How upsetting was the event at the time? 1 2 3 4 5
 Not at all Moderately Extremely
- d. How much has it affected your life in the past year? 1 2 3 4 5
 Not at all Moderately Extremely

Appendix C

DES: This questionnaire consists of twenty-eight items about experiences that you may have in your daily life. We are interested in how often you have these experiences. It is important, however, that your answers show how often these experiences happen to you when you are not under the influence of alcohol or drugs. To answer the questions, please determine to what degree the experience described in the question applies to you and circle the number to show what percentage of the time you have the experience.

1. Some people have the experience of driving or riding in a car or bus or subway and suddenly realizing that they don't remember what has happened during all or part of the trip. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

2. Some people find that sometimes they are listening to someone talk and they suddenly realize they did not hear part or all of what was said. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

3. Some people have the experience of finding themselves in a place and having no idea how they got there. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

4. Some people have the experience of finding themselves dressed in clothes that they don't remember putting on. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

5. Some people have the experience of finding new things among their belongings that they do not remember buying. Circle a number to show what percentage of the time this happens to you.

0% 10 20 30 40 50 60 70 80 90
100%

6. Some people sometimes find that they are approached by people who they do not know who call them by another name or insist that they have met them before. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

7. Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and they actually

see themselves as if they were looking at another person. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

8. Some people are told that they sometimes do not recognize friends or family members. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

9. Some people find that they have no memory for some important events in their lives (for example, a wedding or graduation). Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

10. Some people have the experience of being accused of lying when they do not think that they have lied. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

11. Some people have the experience of looking in a mirror and not recognizing themselves. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

12. Some people have the experience of feeling that other people, objects, and the world around them are not real. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

13. Some people have the experience of feeling that their body does not seem to belong to them. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

14. Some people have the experience of sometimes remembering a past event so vividly that they feel as if they were reliving that event. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

15. Some people have the experience of not being sure whether things that they remember happening really did happen or whether they just dreamed them. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

16. Some people have the experience of being in a familiar place but finding it strange and unfamiliar. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

17. Some people find that when they are watching television or a movie they become so absorbed in the story that they are unaware of other events happening around them. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

18. Some people find that they become so involved in a fantasy or daydream that it feels as though it were really happening to them. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

19. Some people find that they sometimes are able to ignore pain. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

20. Some people find that they sometimes sit staring off into space, thinking of nothing, and are not aware of the passage of time. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

21. Some people sometimes find that when they are alone they talk out loud to themselves. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

22. Some people find that in one situation they may act so differently compared with another situation that they feel almost as if they were two different people. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

23. Some people sometimes find that in certain situations they are able to do things with amazing ease and spontaneity that would usually be difficult for them (for example, sports, work, social situations, etc.). Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

24. Some people sometimes find that they cannot remember whether they have done something or have just thought about doing that thing (for example, not knowing whether they have mailed a letter or have just thought about mailing it). Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

25. Some people find evidence that they have done things that they do not remember doing. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

26. Some people sometimes find writings, drawings, or notes among their belongings that they must have done but cannot remember doing. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

27. Some people sometimes find that they hear voices inside their head that tell them to do things or comment on things that they are doing. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

28. Some people sometimes feel as if they are looking at the world through a fog so that people and objects appear far away or unclear. Circle a number to show what percentage of time this happens to you.

0% 10 20 30 40 50 60 70 80 90 100%

1. Have you hurt yourself on purpose? yes = 2 no = 0
- a. Frequency: blank = 0 once = 1 twice = 2 3 times = 3 4 times or more = 4
- b. Duration (age of last time – age of first time): blank = 0 0-1 year = 1 2-3 years = 2
- 4-5 years = 3 6 or more years = 4
- c. Current Risk (current age – age of last time): blank = 0 1 year or less = 4
- 1-2 years = 3 >2 years = 2
- d. Disclosure: yes = 2 no/blank = 0
- e. Medical Attention: yes = 2 no/blank = 0

Appendix E

PCL: Below is a list of problems and complaints that people sometimes have in response to stressful experiences. Please read each one carefully and circle a number to indicate how much you have been bothered by that problem in the past month.

		Not at all	A little bit	Moderately	Quite a bit	Extremely
1.	Repeated, disturbing memories, thoughts or images of a stressful experience?	1	2	3	4	5
2.	Repeated, disturbing dreams of a stressful experience?	1	2	3	4	5
3.	Suddenly acting or feeling as if a stressful experience were happening again (as if you were reliving it)?	1	2	3	4	5
4.	Feeling very upset when something reminded you of a stressful experience?	1	2	3	4	5
5.	Having physical reactions (e.g., heart pounding, trouble breathing, sweating) when something reminded you of a stressful experience?	1	2	3	4	5
6.	Avoiding thinking about or talking about a stressful experience or avoiding having feelings related to it?	1	2	3	4	5
7.	Avoiding activities or situations because they reminded you of a stressful experience?	1	2	3	4	5
8.	Trouble remembering important parts of a stressful experience?	1	2	3	4	5
9.	Loss of interest in activities that you used to enjoy?	1	2	3	4	5
10.	Feeling distant or cut off from other people?	1	2	3	4	5
11.	Feeling emotionally numb or being unable to have loving feelings for those close to you?	1	2	3	4	5

12.	Feeling as if your future will somehow be cut short?	1	2	3	4	5
13.	Trouble falling or staying asleep?	1	2	3	4	5
14.	Feeling irritable or having angry outbursts?	1	2	3	4	5
15.	Having difficulty concentrating?	1	2	3	4	5
16.	Being “super-alert” or watchful or on guard?	1	2	3	4	5
17.	Feeling jumpy or easily startled?	1	2	3	4	5