ABSTRACT

Title of Document:	SELF-PROTECTIVE BEHAVIORS AND INJURY IN DOMESTIC VIOLENCE SITUATIONS: DOES IT HURT TO FIGHT BACK?
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Routine activities theory has different implications regarding situational crime prevention when applied to domestic violence. Indeed, it is often impossible for the victim to make herself a less suitable target or increase capable guardians. Therefore, women sometimes engage in their own form of situational crime prevention; self-protective behaviors. However, relatively little is known empirically about self-protective behaviors, their prevalence, context, and link to victim injury. Using both quantitative and qualitative data from the Women's Experience of Violence (WEV) funded NCOVR project, I explored the phenomenon of self-protective behaviors in domestic violence situations to examine whether the use of self-protective behaviors impacts the probability and severity of subsequent injury. I found that forceful physical behaviors increase injury whereas both forceful and nonforceful verbal behaviors served as a protective factor against subsequent injury. This study contributes to the body of literature regarding self-protective behaviors and injury by overcoming some of the methodological limitations in previous research as well as examining a group of high risk women normally excluded from this research subject.

SELF-PROTECTIVE BEHAVIORS AND INJURY IN DOMESTIC VIOLENCE SITUATIONS: DOES IT HURT TO FIGHT BACK?

By

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Thesis submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Master of Arts
2008

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ACKNOWLEDGEMENTS

First and foremost, I would like to express my deepest gratitude to Dr. Sally Simpson for her excellent mentorship throughout this entire research project and for providing me with the data. In addition, I would like to thank my other two committee members, Dr. Laura Dugan and Dr. Doris MacKenzie. Dr. Laura Dugan's enthusiasm and statistical guidance and Dr. Doris MacKenzie's theoretical contributions were integral to the development of this thesis.

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CHAPTER 1: INTRODUCTION

From a routine activities framework, domestic violence represents a unique crime situation. Because of the high level of exposure between the offender and the target, domestic violence situations pose problems for traditional situational crime prevention. More specifically, it is difficult to decrease exposure to the offender or increase capable guardians when the victim and the offender are intimate partners. Consequently, women must turn to their own methods of situational crime prevention. Included in these methods are self-protective behaviors. Self-protective behaviors encompass a variety of actions that are used to lessen injury or thwart an attack. They can be categorized as physical and verbal behaviors and further classified into forceful and nonforceful responses. However, these strategies may vary with regards to their effectiveness in avoiding or decreasing injury in a domestic violence dispute.

Women are often cautioned against using forceful physical self-protective behaviors (i.e. fighting back) during a physical or sexual assault. However, very little empirical research has examined the effects of self-protective behaviors on the probability of sustaining an injury and/or severity of injury incurred in domestic violence incidents. Previous research regarding self-protective behaviors in general is inconclusive, presenting mixed results that vary greatly with the demographic, situational, and operational definitions of self-protective behaviors. The research is further limited due to a lack of proper measures to assess temporal sequencing between self-protective behaviors and injury and a limited range of included situational characteristics as controls. In addition, due to the small number of victimizations in previous datasets, injury has often been coded as a binary variable. This ignores the

possibility that injury may be inevitable, but some behaviors may decrease the severity of injury or conversely that some behaviors may illicit a stronger violent response from the offender. The current study will account for these previous limitations by measuring injury as a categorical variable based on severity, properly assessing the temporal sequencing in the statistical models, as well as including a wide variety of situational controls that may impact injury.

Therefore, the purpose of the current study is to provide both methodological and substantive contributions to the literature on self-protective behaviors and injury. First, this study examined the effects of self-protective behaviors on the overall probability of sustaining injury. This serves as a basis for subsequent analyses as well as a replication of previous studies that have relied on a binary indicator of injury. In addition, to replicate previous studies, this model ignored the temporal sequence between injury and self-protective behaviors.

Second, of interest in this study was the impact that the temporal ordering between self-protective behaviors and injury within each domestic violence incident. To this end, the first model was replicated in regards to the binary indicator of injury, but the temporal sequence of events leading up to injury was assessed. This model corrected for the measurement error associated with causality in previous studies and ascertained the impact of self-protective behaviors on the overall probability of sustaining an injury. More specifically, this study used qualitative data to reconstruct when injury occurred in relation to when the self-protective behaviors were used. Qualitative narratives of each incident were examined to ascertain whether self-protective behaviors were utilized before or in response to injury. This enables a more accurate analysis of the effects of

self-protective behaviors on injury. These results are contrasted with the model that ignores the temporal sequencing of events in order to determine the differences (if any) of this methodology.

Third, this study examines the effects of self-protective behaviors on the severity of injury. Injuries can range from minor to severe (excluding death as an outcome) and therefore it is important to examine whether some self-protective behaviors not only predict injury overall, but the type of injury sustained. To this end, this study assesses the impact of self-protective behaviors on a categorical typology of injury. This model also ignores the temporal sequencing of events to serve as a partial replication of previous methodologies.

Fourth and finally, this study corrects the measurement error with regards to the temporal sequence of events leading up to injury and assesses injury as a categorical variable based on severity. This model provides the most conceptually and statistically sound model for ascertaining the effects of self-protective behaviors on initial injury. These results are contrasted with both the model that features a categorical indicator of injury but suffers from measurement bias as well as the binary injury model that includes temporal sequencing.

By contrasting the results of these four models, the impact of correcting for the measurement error in establishing causality as well as the effects of assessing injury as a binary variable can be assessed. Ultimately, this thesis will provide both substantive and methodological contributions to the study of self-protective behaviors and injury.

CHAPTER 2: LITERATURE REVIEW

Routine Activities Theory and Intimate Partner Victimization

Tjaden and Thoennes (2000) report that 25% of the female respondents in the National Violence Against Women Survey reported physical or sexual victimization by an intimate in their lifetime. To the extent that this survey is indicative of the general population, this equates to a sum of 1.5 million women who are the victims of intimate partner violence each year (Tjaden and Thoennes, 2000). Despite these statistics, very few theories have been able to adequately address domestic violence or the responses of victims to violence because domestic violence is a private crime that is likely to be repeated against the same victim. The theory with the most applicability to intimate partner violence is routine activities. In addition, situational crime prevention, a notion that extended from routine activities theory, can be used to explain women's responses to violence – namely self-protective behaviors.

Routine activities theory has traditionally been used to explain opportunistic predatory crime. However, routine activities theory can also be used to explain and predict situational characteristics in intimate partner violence and can subsequently be useful to inform policies in this area. Although, domestic violence is a more private crime than the street crime normally explained by routine activities, the theory can explain the occurrence of domestic violence with regards to the convergence of the three conditions necessary for a crime. In addition, routine activities theory as it informs situational crime prevention can be used to understand how women respond and the effectiveness of their actions in intimate partner attacks.

Cohen and Felson (1979) theorize that for crime to occur, three essential elements must be in place. The first is that a motivated offender has to be available. Assuming that humans are rational beings that seek to maximize pleasure and minimize harm, they contend that 'motivated offenders' is always a met condition. Given the opportunity to criminally offend without sanctions, there will always be someone who will take advantage of the situation and act in his/her best interest.

There are two different domestic violence theoretical frameworks that apply to the condition of the motivated offender. Taken from a feminist theoretical perspective and current domestic violence research on the typologies of offenders, the first motive for domestic violence is control through the use or threat of force (for a review of the literature see, Johnson and Ferraro, 2000). This desire for control stems from the cultural values of patriarchy that dictate men to be dominant within relationships (Dobash and Dobash, 1979; Dutton, 1988; Johnson, 1995). These values coupled with the acceptance of violence as a legitimate means to obtain goals in other institutions create the motive to control an intimate partner through the use of coercive violence. If domestic violence is a mechanism of control within the home, the targeting strategy will be deliberate instead of opportunistic (Dugan and Apel, 2005) which is a minor departure from traditional routine activities theory. Here, the offender uses violence and the constant impending threat of violence against the partner in order to maintain control within the household through instilling fear in the victim. Repeated victimizations occur when the offender feels it necessary to reinforce or reassert that control.

However, other researchers assert that the use of violence in intimate relationships is expressive (Felson, 2002). Here, the offender is motivated out of anger and takes that

aggression out on a suitable target. It is important to note that the aggression does not necessarily have to be caused by the intimate partner. It may be that the offender is generally motivated by anger and chooses to act on the most suitable target; the domestic partner (Felson, 2002; p.15).[1] From this standpoint, violence committed within the home is similar to any other violent act and therefore traditional routine activities theory can explain domestic violence without any modifications. The choice of the victim is based on accessibility and the perceived risk of punishment. Since domestic partners are accessible on a daily basis and the risk of repercussions is minimal compared to other assaults, the offender will repeatedly victimize the partner in lieu of less suitable targets. This theoretical standpoint may be especially salient given the current sample which consists of both homosexual and heterosexual domestic violence incidents. Felson (2002) argues that since the rates of heterosexual and homosexual male violence are relatively the same, the violence does not stem from a patriarchal need to control women.

The debate between the different motivations underlying domestic violence does not pose a challenge to routine activities theory because the theory is not contingent on the offender's type of motivation, simply the presence of motivation. Also, both expressive and instrumental violence can be explained in the rational choice framework that routine activity theory relies on. Expressive violence is aimed at the best opportunistic target which is the target with the least probability of repercussions attached to it. On the other hand, instrumental violence is used to achieve a purpose, and in the

[1] It is important to note that Felson (2002) does not distinguish between expressive and instrumental violence. He makes the argument that all violence is instrumental because it is merely a method of achieving one's goals be it the release of anger or control. He does however acknowledge control as a possible goal justifying the use of violence by offenders within intimate partner relationships. In addition, Felson (2002) found some empirical support for the control motive of violence within domestic relationships.

case of domestic violence that purpose is control. Here, the offender makes the rational choice that the benefits of achieving control within the family outweigh any repercussions that may come from achieving that control through violence. In sum, in order for domestic violence to occur, there has to be an offender who is motivated to use violence. However, the motivated offender is not a sufficient condition for the crime to occur.

Given a motivated offender who seeks control of his/her partner through violence or uses violence as a general expression of anger, the next two conditions of Cohen and Felson's (1979) routine activities theory can help predict when domestic violence is likely to occur. They argue that in addition to a motivated offender, a suitable target must also be present for a crime to occur. In their original theory they proposed that the increase in technology rendered items more portable and accessible which explains the rise in property crime between 1947 and 1974.

The concept of the accessibility of targets can also be applied to victims of domestic violence. Mannon (1997) applied a routine activities approach to multiple forms of intimate and domestic violence and argues that intimate partners and children are suitable targets because they are accessible on a daily basis and are unlikely to report the violence. Also, women may be suitable targets because they may be unmatched with regards to physical strength and size compared to their partners. Felson (2002) explains the difference in injury incurred in domestic violence situations as a function of the difference in physical stature and strength between the partners. In addition, he argues that domestic violence can be thought of as similar to other crimes, but it occurs frequently when the relationship features conflict and the perpetrator and victim converge

on a daily basis. Along this line of reasoning, a suitable target would be one that is easily accessible and, in the case of violent crimes, can be overcome with physical strength. Women in intimate relationships are the most suitable target then because they are in frequent exposure to their offenders and they may be or perceived to be physically weaker than their counterparts.

The third necessary condition for the occurrence of a crime according to the routine activities perspective is the lack of suitable guardians (Cohen and Felson, 1979). Domestic violence is typically a private crime which occurs in the home, which is void of capable guardians to act as social controls. In fact, the more isolated a family is from outside social influences predicts the likelihood of subsequent abuse (Nielson et al., 1992). This makes domestic violence a particularly salient problem in the United States where families are reliant on the nuclear structure and extended family is no longer a predominant influence or means of social control within the home (Gelles and Straus, 1988). Therefore, the typical bystanders (if any) in domestic violence situations are children. Previous research has estimated that children are found in a little less than one half of all domestic violence incidents (Fantuzzo and Fusco, 2007; Gjelsvik, 2003) and of these child bystanders, a large percentage of them are under the age of 6 which inhibits their effectiveness as suitable guardians. In fact, the child bystander may actually be a victim him/herself. Osofsky (1995) estimates that in homes where domestic violence is present, children are 15 times more likely to be physically assaulted compared to the overall probability of child abuse based on the national average.

In addition, the possibility that capable guardians can intervene does not necessarily guarantee that domestic abuse is prevented. Historically, domestic violence

has been perceived to be a private crime that is handled within the family without community intervention. Although much has changed over the last three decades as a result of public awareness and social service programs aimed at removing the barriers preventing a woman from leaving, there may be guardians that are capable, but not conducive to preventing domestic violence. For example, religious institutions to which victims may turn for emotional support or guidance may actually encourage a woman to stay in the relationship due to religious marital obligations (Fortune, 2000). In addition, certain subpopulations may face additional barriers from their communities. For example, in Moss et al.'s (1997) qualitative study, African American women reported being discouraged from reporting domestic violence for fear of bringing a negative stigma to the African American community. Also, Presisser (1999) collected narratives of abused immigrant women in South Asian communities in the United States and found that they did not report marital sexual assault due to their community's values of patriarchy coupled with the perceived racism of the institutions where they could seek help. Therefore, the quantity or presence of capable guardians does not necessarily mean that a crime will be prevented and may actually impede criminal justice system and social service efforts.

In sum, routine activities theory is useful to explain when domestic violence is likely to occur. Given a motivated offender, the structure of intimate partner relationships is conducive to violence. It features a suitable target who is in frequent and unavoidable contact with her attacker in a situation in which there are few capable guardians to intervene or deter violence. The persistent convergence of these conditions also makes domestic violence likely to be repeated.

Situational Crime Prevention and Public Policy Implications for Domestic Violence

Routine activities theory has been used to influence crime prevention through the increase of suitable guardians (including technology such as cameras) and the reduction of accessible targets through innovations such as increased lighting in parking lots to make targets less attractive. However, it is difficult to increase capable guardians within the home. In addition, it is also difficult to reduce the suitability of the intimate partner as a target because the crime often occurs in the victim's residence and therefore the victim of domestic violence comes into frequent and unavoidable contact with the perpetrator in her daily routine activities.

Consequentially, the current public policies based on routine activities may be inadequate to address the problem of intimate partner violence. As Dugan and Apel (2005) point out, the targeting strategy of the offender is deliberate, not opportunistic and therefore crime prevention strategies reducing opportunities will be ineffective. Although domestic violence legislation such as mandatory arrest policies may temporarily reduce the opportunity of the offender to victimize the intimate partner repeatedly, these laws have been an ineffective deterrent. Using the NCVS, Felson, Ackerman, and Gallagher (2005) failed to find a specific deterrent effect for offenders arrested for either misdemeanor or felony domestic assaults. In addition, through their study using the NCVS, Dugan and Apel (2005) found that reducing the exposure of the victim to the offender may actually have the opposite effect as hypothesized in routine activities theory. Domestic violence victims who try to minimize exposure to their offender may actually elicit a retaliatory effect from their attacker and be at a greater risk for being victimized (Dugan and Apel, 2005).

Therefore, sometimes victims of domestic violence will engage in their own form of situational crime prevention. In particular, some victims use self-protective behaviors in order to prevent the completion or reduce the severity of injury in an assault. In this way, self-protective behaviors can be thought of as behaviors in which the woman utilizes to decrease the suitability of herself as a target. Women may accomplish this using a variety of methods, both forceful and nonforceful. Forceful actions pose a threat to the offender which she may utilize to decrease her perceived vulnerability making the costs of domestic violence greater than the perceived benefits. Conversely, nonforceful behaviors which assuage the situation or appease the attacker may be used by the woman in hopes that the achievement of control prior to violence may make violence unnecessary in that situation.

Self-Protective Behaviors: A Review of the Research

Women's use of violence as a self-protective behavior has been demonstrated in several studies. For example, Hamberger (1997) found through an analysis of women arrested for domestic violence that they most often cited self-defense as the reason for their violence. In addition to violent strategies, women also employ nonviolent self-protective behaviors within domestic violence incidents. A qualitative study done by Downs, Rindels, and Atkinson (2007) found that women actually employ a wide variety of behaviors including violent physical behaviors and nonviolent appeasement strategies.

Although there has been wide variability in measurement, four main types of self-protective behaviors in sexual assault, physical assault, and robbery literature can be identified; these include forceful physical behaviors, nonforceful physical behaviors, forceful verbal behaviors, and nonforceful verbal behaviors (for a review see Ullman,

1997; Ullman, 2002). Forceful physical self-protective behaviors typically include fighting, biting, scratching, brandishing a weapon, or threatening the offender with a weapon. Nonforceful physical behaviors include pulling away, fleeing and pushing the offender away. Forceful verbal protective behaviors are ones that are used to scare the offender or attract outside help such as screaming, yelling, insulting the offender, or threatening to call the police. Nonforceful verbal behaviors involve reasoning, begging, or crying at the offender. Research has looked at the effectiveness of these protective behaviors in stopping the completion of the crime (in the case of sexual assault) as well as whether they result in subsequent injury to the victim.

Unfortunately, very little research has examined the effects of self-protective behaviors on injury in domestic violence situations. Therefore, the research that informs this study involves the use of self-protective behaviors in a variety of crimes such as sexual assault, robbery, and physical assault. In general, the research regarding self-protective behaviors and injury has focused mainly on sexual assault. Many of these studies evaluate whether using self-protective behaviors will decrease the probability of rape completion and what effect self-protective behaviors have on incurring serious injury. Research is mixed as to which type of self-protective behavior works best to decrease the chance of a rape being completed. For example, a number of studies report that physical resistance is best (Bart, 1981; Clay-Warner, 2002; Kleck and Sayles, 1990; Lizotte, 1986; Ullman, 1998), whereas other research has determined that verbal self-protective behaviors are more effective (Cohen, 1984; Quinsey and Upfold, 1985; Siegel et al, 1989). Although some studies have found that using self-protective behaviors decreases the chances of the rape being completed, other research has suggested that the

use of self-protective behaviors may in turn increase the chance of sustaining serious physical injuries. For example, Ullman and Knight (1993) found that forceful physical resistance predicted a decrease in sexual assault, but an increase in physical injury.

Injuries resulting from domestic violence disputes are typically studied through the broader crime of physical assaults. However, less research has been done on the use of self-protective behaviors in physical assaults compared to sexual assaults. The research that has been done has yielded mixed effects regarding self-protective behaviors on the reduction of injury. With regards to physical assaults in general, Skogan and Block (1983) reported that forceful resistance increased the likelihood of injury in stranger assaults; however, nonforceful resistance was unrelated to injury. Tark and Kleck (2004) separated self-protective behaviors into 16 categories and found that only certain forceful behaviors were associated with an increase in injury, namely struggling and fighting without a weapon. In addition, only struggling was related to an increase in serious injury. Conversely, Thompson et al. (1999) found that the use of self-protective behaviors was negatively associated with injury, suggesting that they were helpful in warding off an attack. One of the only studies to specifically focus on domestic violence was done by Bachman and Carmody (1994). They categorized self-protective behaviors as physical and verbal and compared the effects of these behaviors on the likelihood of injury for intimate and stranger perpetrated assaults. They found that the odds of injury in an intimate partner assault were almost twice that of a stranger assault if any behavior was taken. Bachman et al. (2002) replicated those findings, controlling for contextual factors and temporal sequencing, and found that the risk of injury was the highest if the victim used physical resistance. The methods of each of these studies varied widely in their

sample (whether they looked at men and women, intimate partners and/or strangers) and their typologies of self-protective behaviors which may account for some of the mixed results.

In addition to self-protective behaviors, certain demographic characteristics have been shown to interact with self-protective behaviors or have independent effects on injury. For example, Skogan and Block (1983) found that the victim's age interacted with the type of self-protective behavior used. More specifically, younger victims tended to use forceful resistance more so than their 60 year and older counterparts. With regards to ethnicity, there has been very little research, but that which has been done suggests that the effects of injury from self-protective behaviors are not contingent on race of the offender or victim (Bachman et al., 2002; Tark and Kleck, 2004; Thompson et al., 1999). Bachman and Carmody (1994) found that race did not impact whether a victim sustained injury in intimate partner physical assaults, but did increase the probability of seeking medical treatment. However, these results are not easily interpreted because the seriousness of injury and whether the woman reported the violence to police or social services were not controlled for in the analysis.

Although demographic characteristics are pertinent, characteristics of the situation may have a greater impact on the decision to use self-protective behaviors, and subsequent injury (Atkenson, Calhoun, and Morris, 1989). No published studies have analyzed the impact of the victim's drug or alcohol use on the probability that he/she will engage in self-protective behaviors in physical assaults. However, sexual assault research indicates that victims may choose to use self-protective behaviors more if they perceive the attacker to be under the influence of drugs or alcohol (Atkenson et al., 1989; Clay-

Warner, 2002). Also, the use of self-protective behaviors may vary with the location of the attack. For example, victims may use physical resistance more indoors where verbal resistance (screaming and yelling) may not be effective (Skogan and Block, 1983). Likewise, the presence of bystanders may increase the use of verbal self-protective strategies in the hopes of attracting outside intervention. Weapon possession by the victim or offender may impact the types of self-protective behaviors that the victim employs. Skogan and Block (1983) found that victims were less likely to resist in situations where the offender brandished a gun. Furthermore, Thompson et al. (1999) found that victims were less likely to sustain an injury when the offender had a firearm, perhaps due to a decrease in the probability that the victim will fight back physically. There has not been much research on the effects of victim weapon use and injury because the current datasets fail to capture enough victims that brandish a weapon.

Limitations of Prior Research on Self-Protective Behaviors and Injury

Exclusion of Marginalized Populations

Previous studies have relied on nationally representative surveys or clinical samples to assess the impact of self-protective behaviors on injury. However, these samples are not representative of all victims of domestic violence. Indeed, there are marginalized populations that are not captured in nationally representative surveys and are unlikely to be captured in clinical samples. Incarcerated women constitute a portion of the population that is normally omitted from nationally representative surveys. To the extent that this marginalized population's experiences of domestic violence differ from the mainstream population, our understanding of intimate partner victimization is incomplete. Indeed, Dugan and Castro (2006) compared the NCVS with this current

study's sample using routine activities predictors as the framework for the comparisons and found that these samples differed with regards to the amount of violence they experience, the predictors of violence, and their responses to victimization. Also, Richie (1999) found that incarcerated women may experience more frequent and more severe violence than their non-incarcerated counterparts. In addition, these women may not utilize the same help seeking behaviors as other women. More specifically, they may feel apprehensive about approaching social services because of previous exposure to the criminal justice system or they may perceive the criminal justice system as unhelpful. Therefore, the strategies that these women utilize to protect themselves from injury in domestic violence situations warrant examination not only because it furthers our understanding of the predictors and effects of self-protective behaviors, but it includes a population that is likely to experience violence but may be unlikely to seek help. To overcome this limitation, this study examines the responses of incarcerated women using data from the Baltimore City Detention Center.

Measurement Error Associated with Temporal Sequence

Most previous studies have suffered from and acknowledged the limitation of establishing causality between self-protective behaviors and injury. A major limitation with the current literature is that the datasets commonly used (for example, the NCVS prior to 1992), cannot determine the temporal sequence of events in order to decisively say whether the injury occurred after the self-protective behavior, during, or before. Therefore, it could be that the self-protective behavior was used in response to an injury sustained instead of a preemptive action before injury. The inclusion of behaviors that occur after injury results in false positives for injury. When this occurs, causality cannot

be established because it is uncertain whether the independent variable actually preceded the dependent variable. Fisher et al. (2007) suggest that qualitative data may be able to help disentangle whether injury occurs before or after the self-protective behavior to effectively examine the temporal sequence of events leading up to injury. To this end, this study uses the qualitative interviews provided by women regarding each incident to accurately model the proper temporal sequencing.

Operationalization of Self-Protective Behaviors

As a third limitation, many studies have failed to disaggregate self-protective behaviors properly in order to examine their effects on injury. Earlier studies examined only verbal compared to physical self-protective behaviors. This ignores the possibility that behaviors that pose a threat to the offender may differ from those that are used to assuage an offender. From a feminist perspective, this fails to capture any retaliatory violence that occurs as a result of the loss of control within the relationship. Other studies have looked at forceful versus nonforceful behaviors, but this also has limitations because it collapses across verbal and physical behaviors which may be qualitatively different. Later studies have examined the different types of physical behaviors and verbal behaviors; however, there has been little consistency in typologies among researchers, ranging from two to 16 categories. Although 16 categories disaggregate behaviors to their fullest extent, it may be sacrificing efficiency by not combining similar behaviors. To this end, this study examines self-protective behaviors along two dimensions, forceful/nonforceful and physical/verbal.

Measurement of Injury

A fourth limitation of existing literature relates to injuries. Many studies have coded injury as a dichotomous variable, usually as a result of limitations in the sample such as accurate measures of the severity of injury or a lack of reported serious injuries. While injury as a binary variable is informative, it does not fully adequately address if certain types of self-protective behaviors increase the severity of injury or the type of injury received. Some self-protective behaviors may increase the risk of more serious injuries whereas others may predict minor injuries. Although minor injuries should not be discarded, it is necessary to examine which behaviors pose the greatest threat (and conversely which behaviors serve as the best protective factors) to a woman's health. To this end, this study measures injury as a categorical variable based on severity.

Those studies that have disaggregated injury into different categories have often looked at medical treatment as indicative of serious injury. This is confounded by reporting behaviors, especially when comparing stranger and intimate partner assaults. For example, Bachman and Carmody (1994) found that intimate partner assaults were more likely to result in injury when self-protective behaviors were used, however; their results did not find any significance for the probability of needing medical treatment. They acknowledged that their findings may be a function of the reporting behaviors of those who have an intimate relationship with their offender compared those who are assaulted by a stranger. Research has repeatedly demonstrated that women who are victimized by a partner are less likely to seek outside help when compared to a stranger victimization. For example, Dutton (1995) estimates that only approximately 15% of women will seek help from the criminal justice system after a domestic violence incident. This problem is exacerbated for women who have had previous involvement with the

criminal justice system because they may be even less likely to seek outside help (Richie, 1999). This study rectifies this problem by utilizing self-reports to ascertain injury severity.

Omitted Situational Characteristics

Many situational characteristics have not been studied or included as controls in previous research because of data limitations. Two relevant controls that have been omitted in the previous literature are the victim's drug/alcohol use and the use of a weapon by the victim. Because of the limited number of victims that report using weapons in national surveys, the effects of a victim brandishing or using a weapon have not been examined or controlled. Weapon use by the victim is an important factor to consider because it may increase the perceived threat of the victim to the offender, overcome any size differentials between combatants, or impact the likelihood that the victim physically fights back. Any of these scenarios could lead to the decrease in injury that is reported in some previous literature regarding physical self-protective behaviors (Thompson et al., 1999).

There has been much literature that has discussed the offender's alcohol and drug use, especially with regards to rape. Some researchers have suggested that a high proportion of offenders may be intoxicated during the offense (Amir, 1971). Alcohol and drug use also impacts self-protective behaviors. For example, Atkenson et al. (1989) found that women used physical resistance more when they thought that the offender was on drugs or alcohol. As for victim alcohol use, Harrington and Leitenberg (1994) found that women who were drunk at the time of the sexual assault reported less resistance. To date, no published studies have examined the effects of drug or alcohol use on the part of

the victim with regards to self-protective behaviors and intimate partner physical assaults. However, alcohol and drug use in general may impact the probability of a victim fighting back in a domestic violence situation and the types of self-protective behaviors she utilizes. To this end, this study controls for alcohol/drug use and weapon use. In addition, this study includes other theoretically relevant routine activities controls that have been omitted from analyses of intimate partner assaults in general.

CHAPTER 2: HYPOTHESES

Some self-protective behaviors could be hypothesized to decrease the probability that the offender will continue to perpetrate the crime because the costs outweigh the benefits when the victim fights back. Indeed, this is what would be expected if domestic violence is expressive and similar to other forms of violence and the self-protective behaviors were sufficient enough to cause the offender to reevaluate the suitability of the target. However, this may be different in domestic violence situations where the perceived costs of diminished dominant control if the offender withdraws the attack may outweigh the costs of the consequences stemming from the victim's self protective behaviors (e.g. injury from physical attack, arrest from police notification, etc.). Intimate partner violence presents a unique situation for the offender because the motivation extends beyond the current situation into a desire for persistent control within the relationship. Thus, for the offender, the current incident of domestic violence carries implications for subsequent situations. Therefore, when the victim acts on her own behalf, the offender could be expected to increase the severity of the attack and persist instead of withdraw in order to regain control of the situation and maintain control in the relationship. Following this line of reasoning, I propose the following hypotheses which are drawn from empirical research, a feminist framework, and routine activities theory for understanding domestic violence.

Forceful Physical Self-Protective Behaviors

Forceful physical resistance is used to pose a direct physical and/or mental threat to the attacker. Although the perceived costs of incurring physical injury may be salient to the offender, by withdrawing from an attack, the domestic violence offender may lose

the control he or she was trying to achieve through the use of force. Therefore, the following two hypotheses are proposed:

Hypothesis 1a. Forceful physical behaviors by victims are expected to increase the overall probability of sustaining an injury.

Hypothesis 2a. Forceful physical behaviors by victims are expected to increase the severity of injury incurred.

However, if domestic violence is expressive, the opposite may be true. Forceful physical resistance may decrease injury in an attack by increasing the cost of the attack to the offender which may decrease the ease or suitability of the intimate partner as a target for aggression. Therefore, the following two alternative hypotheses are proposed:

Hypothesis 1b. Forceful physical behaviors by victims are expected to decrease the overall probability of sustaining an injury.

Hypothesis 2b. Forceful physical behaviors by victims are expected to decrease the severity of injury incurred.

Forceful Verbal Self-Protective Behaviors

Along the same line of reasoning, forceful verbal behaviors may pose a challenge to the control in the relationship. Therefore the long term benefits associated with established control in the relationship may motivate the offender to continue and increase the severity of the attack.

Hypothesis 3a. Forceful verbal behaviors by victims are expected to increase the overall probability of sustaining an injury.

Hypothesis 4a. Forceful verbal behaviors by victims are expected to increase the severity of injury incurred.

Conversely, forceful verbal behaviors may scare the offender into withdrawing the attack if the intimate partner is no longer perceived as an accessible target.

Hypothesis 3b. Forceful verbal behaviors by victims are expected to decrease the overall probability of sustaining an injury.

Hypothesis 4b. Forceful verbal behaviors by victims are expected to decrease the severity of injury incurred.

Nonforceful Physical Self-Protective Behaviors

There are two possible mechanisms by which nonforceful physical behaviors may impact the probability or severity of injury. By removing the accessibility of the target from the offender, nonforceful physical behaviors will decrease the suitability of the target. In addition, fleeing from the situation may increase the probability that capable guardians become present and therefore may increase the level of social control in the situation.

Hypothesis 5. Nonforceful physical behaviors by victims are expected to decrease the overall probability of sustaining an injury.

Hypothesis 6. Nonforceful physical behaviors by victims are expected to decrease the severity of injury incurred.

Nonforceful Verbal Self-Protective Behaviors

Although nonforceful verbal self-protective behaviors do not reduce the suitability of the target or increase capable guardians, they may fulfill the offender's motivation of control without the use of violence. Instead of challenging the offender, self-protective behaviors such as pleading and begging display deference to the offender and reinforce the power structure within the relationship. Therefore, because the offender will have achieved his/her desired outcome, no violence would be necessary to exert or maintain control within the relationship.

Hypothesis 7. Nonforceful verbal behaviors by victims are expected to decrease the overall probability of sustaining an injury.

Hypothesis 8. Nonforceful verbal behaviors by victims are expected to decrease the severity of injury incurred.

CHAPTER 3: METHODS

Sample

This research sample was drawn from an existing dataset from a previous National Consortium of Violence Research funded project. The Women's Experience with Violence project sought to understand the entire realm of women's violence including victimization and perpetration. The original project collected data from the Baltimore City Detention Center in Baltimore, Maryland as well as two additional sites, Minneapolis, Minnesota and Toronto, Ontario. For this analysis, only the Baltimore data was used. At the Baltimore site, participants included 351 women (98% response rate) who were paid 15 dollars each for their participation. Table 1 displays some descriptive information regarding this sample. As shown, these women were 34.61 years old on average and this sample consisted of mainly African Americans (91.5%), with 6% Caucasian, and 2% women of other races. The majority of these women did not graduate high school (54.4%) and only 2.3 percent graduated college.

Turning to their criminal histories, the women in this sample were first arrested at approximately 23 years old; however, the age range is fairly wide, ranging from 11-47. In addition, they tend to be reoffenders, arrested an average of 3.51 times before data collection. The majority of them were currently serving time for a drug related offense (54.7%) and13 percent for a technical violation such as violating probation or parole. These women were not a particularly violent sample with only approximately 5 percent arrested on assault charges and less than 1 percent arrested for murder.[2]

[2] It is important to note that some of these women were still awaiting adjudication and therefore these crime statistics reflect their arrest data, not conviction data.

Table 1. Sample Characteristics (n=199)

	Overall Sample (n=351)		Domestic Violence Subsample (n=199)	
	Mean(SD) or Percentage	**Range**	**Mean(SD) or Percentage**	**Range**
Type of Incident				
Partner Violent Only			58.3%	
Part. Avoided Vio. Only			14.6%	
Both			27.1%	
Respondent Demographics				
Mean Age	34.61	18-61	33.24	18-51
Race				
African American	91.5%		89.4%	
Caucasian	6.0%		7.5%	
Hispanic	0.9%		1.0%	
Native American	0.6%		1.0%	
Other	1.1%		1.0%	
Highest Education				
9^{th} grade or less	15.1%		14.6%	
10^{th}-11^{th} grade	39.3%		39.2%	
High School(GED)	32.8%		31.2%	
Some College	10.5%		12.1%	
College Graduate	2.3%		3.0%	
Criminal History				
Mean Age at 1^{st} Arrest	23.21(7.72)	11-47	21.83(7.11)	11-42
Mean Times Arrested	3.51(1.43)		3.62(1.39)	
Used Drugs in Cal. Period	92.0%		91.5%	
Current Incarc. Offense				
Arson	1.4%		1.0%	
Assault	4.9%		6.5%	
Burglary	1.1%		1.5%	
Child Abuse	0.3%		0.5%	
Drugs	54.7%		52.8%	
Forgery	0.3%		0.5%	
Murder	0.9%		1.0%	
Prostitution	2.3%		3.5%	
Robbery	1.4%		2.0%	
Technical Violation	13.2%		13.1%	
Other	17.5%		17.6%	

In addition to the demographic and criminal history information, all of these women were interviewed personally in one or two sessions about their violent and avoided violent experiences during the 36 months prior to their incarceration. These incidents included both partner and non-partner violence. A retrospective longitudinal design was employed to construct a computerized life calendar to map the frequency and spacing of events during the reference period. In addition, qualitative narratives detailing these incidents were collected and recorded by the interviewer.

Out of the 351 women at the Baltimore City Detention Center, 199 (56.70%) experienced domestic violence (or avoided domestic violence) at least once within the reference period (36 months prior to current incarceration). Table 1 also displays the descriptive statistics for this sample of women that experienced domestic violence. Of these women, the majority of them reported having domestic violent incidents only (58.3%); however, a sizable minority (14.6%) reported only incidents in which they thought violence was going to occur, but it did not. The average age of these women was 33.24 which is approximately 1 year younger than the overall sample, but the age range for the domestic violence sample was narrower than for the overall sample. The majority of the domestic violence victims (similar to the overall sample) were African American (89.4%); however, the most notable difference between the samples is that the sample of domestic violence victims is comprised of more Caucasians than the overall sample (7.5%). Most of these women did not graduate high school (53.8%) and very few received any college education or earned a degree (15.1%). Their criminal histories also looked similar to the overall sample with the majority of the current incarceration charge being drug related (52.8%). These women also do not appear to be a violent sample;

however, a larger percentage of these women were arrested on assault charges compared to the full sample (6.5%). Overall, these women look strikingly similar to the women in the general sample.

Definition of Partner Violence

For the purposes of this study, a partner was anyone the respondent considered to be an intimate partner; it was not restricted to legally binding, cohabitating, or heterosexual relationships. Most studies of domestic violence focus on heterosexual couples; however, the current study features incidents that represent both heterosexual and homosexual domestic violence situations. Although this is against the convention of traditional domestic violence research, homosexual couples were included for three reasons. First, although a feminist framework is often used to explain heterosexual violence within a patriarchal system, I contend that the use of violence as a mechanism of control can also extend to homosexual couples as well. Renzetti (1992) addressed control as a motivation in lesbian violent relationships and found that that power imbalance was a source of conflict within the relationship that led to abuse. In addition, although Felson (2002) did not specifically address the issue of control as a motive in homosexual relationships, he did assert that both partners within a relationship may desire control of the other partner. He attributed the difference in the behavioral manifestation of this desire (e.g. violence on the part of men and verbal reprimands on the part of women) as the result of physical differences between men and women, not the result of socialization. Therefore, it is reasonable to assume that homosexual couples, which are also marked by interdependence, may desire the control of one another irrespective of gender or gender-roles. Second, routine activities theory is not gender specific. Although the motives and

opportunities may be contingent on gender in some situations, this theory applies to both female and male offenders. Lastly, in this particular sample, some of the respondents reported both heterosexual and homosexual incidents of violence and excluding these incidents may introduce bias into the models by not capturing all of the unique violent incidents that a woman experienced within the reference period.

Types of Incidents

Participants provided detailed narratives describing each incident of partner violence and avoided violence in detail and these details were recorded by the interviewer.[3] Domestic violent incidents are incidents in which the respondent was physically or sexually attacked by her intimate partner. Avoided violent incidents capture situations in which the respondent thought that violence was going to occur, but circumstances or happenstance diffused the situation. These are situations in which the respondent perceived herself to be in danger of violence, but subsequently the situation changed and violence was avoided. Examples of avoided violent incidents are situations in which the respondent used self-protective behaviors and completely deterred violence, bystanders intervened before violence could occur, or the situation simple diffused. Out of the 487 incidents, the majority of the incidents were classified as violent (78.23%). Both partner violent and avoided violent experiences are important to analyze considering the optimal goal of a self-protective behavior would be to avoid violence. Therefore, by only focusing on violent situations, the results may be biased because they would be conditioned on more serious incidents of domestic conflict. In addition, in the

[3] This dataset also features series incidents in which similar abuse situations happened so frequently that the respondent could not distinguish between them or place them temporally. These were excluded from the analysis because assessing temporal sequencing or coding situational controls is not possible. Therefore, the present study examined only unique incidents of domestic violence in which there was sufficient information for analysis.

cases in which women had prior violent experiences within the relationship, excluding avoided incidents would ignore those in which the woman may have recognized the signs of a violent situation, utilized behaviors to protect herself, and diffused the situation. The inclusion of avoided violent incidents has been justified in other studies as well. For example, Skogan and Block (1983) noted that their analysis of stranger assault cases in the NCS (now known as the National Crime Victimization Survey) yielded many incidents in which no violence actually occurred. Instead, these were incidents in which the victims reported being threatened or intimidated. Considering, by definition, that avoided violent incidents do not have injury associated with them, they were coded as no injury.

The Use of Qualitative Interviews

This dataset is unique in that it is the first to be able to begin to address the issue of temporal sequencing within these incidents with qualitative data. As Fisher et al. (2007) contend, qualitative interviews would aid in reconstructing events because close ended survey questions are inadequate to capture the entire incident. To this end, the qualitative narratives in this dataset were used to construct an accurate sequence of events in each domestic violence incident. More specifically, any incidents in which self-protective behaviors were utilized after injury was already sustained were coded as no self-protective behavior taken because the actions did not occur before the measurement of the dependent variable.

The following is an example of a narrative in which the self-protective behavior came before any injury:

> "There was a girl that was asking me for help and he came home with an attitude. I went upstairs to see what was wrong and we started arguing. He kept telling me to get out, and to leave him alone. One thing lead to another. He hit me and I hit him back. We just fought (punching). And when it was over I had two black eyes."

Conversely, the following is an example of a narrative in which the self-protective behavior came after the initial injury:

> "I thought I was pregnant and I told him. We were at house - it was evening – and we were both on drugs. We started arguing. He said he didn't want it. He kept saying it and he started slapping and stuff. He slapped me in the face and he hit me in the stomach. It lasted for 30 minutes - it stopped when I ran to the bathroom and locked the door. "

There were some incidents in which the temporal sequence was ambiguous. Generally in these incidents it could not be determined who initiated the physical confrontation or the incident was so vague that it could not be ascertained when any injury occurred and thus any self-protective behavior could not be placed in relationship to injury. All incidents in which the sequence of events was ambiguous were omitted from all analyses (n=12).

Self-protective Behaviors: Independent Variable

Previous research varies greatly on the classifications of self-protective behaviors. This study defines self-protective behaviors using four categories based on Ullman's (1997; 2002) review of research on rape avoidance and Zoucha and Coyne's (1993) research on rape. These include *nonforceful verbal resistance* (pleading, crying, or trying to assuage the offender); *nonforceful physical resistance* (fleeing or hiding); *forceful verbal resistance* (screaming or yelling in order to attract attention or scare offender); and *forceful physical resistance* (wrestling, struggling, pushing, striking, biting, and using a weapon). I contend that this is the most conceptually sound classification of self-protective behaviors because it allows me to examine physical and verbal behaviors and

the characteristics of those behaviors. Also, by operationalizing this way I am able to measure self-protective behaviors along two dimensions which more effectively capture both the type and characteristic of the behavior and distinguish between qualitatively different responses to violence. Nonforceful behaviors are ones that do not pose a challenge to the offender and instead are used to appease or escape the situation whereas forceful behaviors are used to actively fight back. This distinction is important because physical self-protective behaviors in which the woman remains engaged in the situation may impact injury differently than behaviors in which the women escapes her attacker.

All self-protective behaviors are dichotomous indicators of whether a particular action or multiple actions that fall within that category were taken. Therefore, a woman may have taken multiple strategies within one category (e.g. verbally insulted her offender and threatened her offender). It is important to note that within each incident a woman may utilize more than one type of self-protective behavior. Indeed there is some overlap between these behaviors in the current study. As shown in Table 2, the majority of the incidents featured some sort of self protective behavior. In only about 20% of the incidents the victims did not take any self-protective behavior. Forceful verbal behaviors were utilized most often with 268 incidents featuring at least one indicator of this self-protective behavior.

Table 2. Frequencies of Self-Protective Behaviors across Incidents

	Injury Frequency (%)			
Variable	**None**	**Minor**	**Mod./Sev**	**Total**
Forceful Physical	110 (13.3%)	62 (7.5%)	13 (1.6%)	185
Forceful Verbal	175 (21.1%)	80 (9.7%)	13 (1.6%)	268
Nonforceful Physical	131 (15.8%)	64 (7.7%)	16 (1.9%)	211
Nonforceful Verbal	48 (5.8%)	15 (1.8%)	4 (0.5%)	67
None	77 (9.3%)	10 (1.2%)	10 (1.2%)	97
Total	541	231	56	828

Table 3 displays the correlations among the self-protective behaviors. Although there is overlap with regards to self-protective behaviors in these situations, the highest correlation between these behaviors in this data was .27 between forceful physical and forceful verbal and therefore multicollinearity is not a major concern with regards to the operationalization of the independent variable.

Table 3. Correlations between Self-Protective Behaviors

	Forceful Physical	Forceful Verbal	Nonforceful Physical	Nonforceful Verbal
Forceful Physical	1.0000			
Forceful Verbal	0.2738	1.0000		
Nonforceful Physical	0.0841	0.1407	1.0000	
Nonforceful Verbal	0.0927	0.0135	0.0357	1.0000

Both violent and avoided violent incidents feature a wide range of these self-protective behaviors. Table 4 presents the distribution of self-protective behaviors within each type of incident. As shown, forceful verbal behaviors were used most often in both types of incidents within over 50 percent of each type of incident featuring this behavior. The largest difference between the types of incidents is with regards to forceful physical behaviors which are used more often in violent incidents (42.5%) compared to avoided violent incidents (21.7%).

Table 4. Partner Violent/Avoided Violent Incidents and Self-Protective Behaviors

	Frequency (Percent)	
	Partner Violent	**Partner Avoided Violent**
Forceful Physical	162 (42.5%)	23 (21.7%)
Forceful Verbal	213 (55.9%)	55 (51.9%)
Nonforceful Physical	169 (44.4%)	42 (39.6%)
Nonforceful Verbal	53 (13.9%)	14 (13.2%)
None	72 (18.9%)	25 (23.6%)
Total	381	106

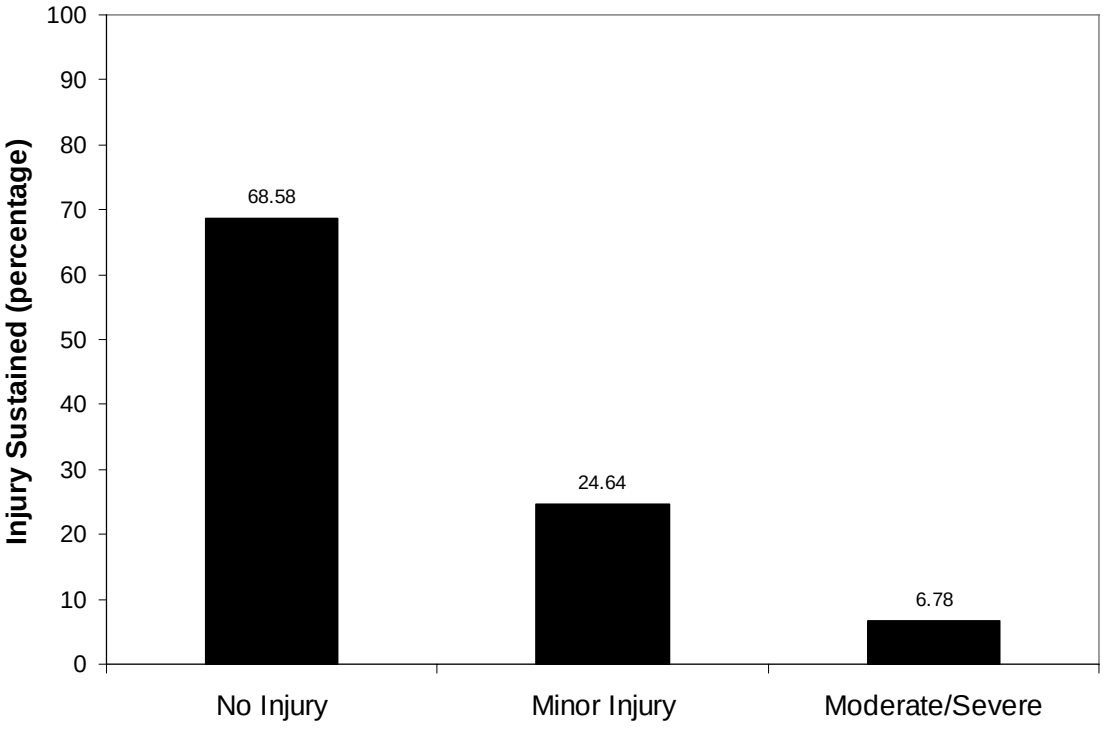
Note: Percents were calculated within each type of incident. Due to the overlap in self-protective behavior, the percents will not equate to 100.

Injury: Dependent Variable

Injury was broken down into three mutually exclusive categories that rely on the self-reports from the victims. These categories include *no injuries; minor* (scratches, bruises, black eyes, minor swelling); *moderate*/*serious* (knocked unconscious, broken

teeth, knife wounds, gun wounds, internal injuries). As shown in Figure 1, the majority of the incidents featured no injury (68.58%) and relatively few incidents featured moderate or severe injuries (6.78%). The most common injury reported by the women overall was bruising and scratches.

Figure 1. Distribution of Injury (n=487)



Although a woman may incur multiple injuries that span both injury categories, these were coded for the most severe injury that the woman sustained. Therefore if the woman had injuries indicative of both the minor and severe categories, the incident was coded as moderate/severe. There is a wider range of possibly injuries included in the moderate/severe category, but they can be broadly conceptualized as injuries that may require medical assistance and therefore pose the greatest threat to a woman's health. It is important to note that, unlike other studies, outside medical intervention is not be used as

a measure of the seriousness of injury because that is contingent on reporting behaviors, which are not being analyzed.

Demographic, Situational, and Sample Specific Controls

I also control for important demographic, situational, and other sample specific characteristics. Table 5 provides the operational definitions for all control variables.

Table 5. Operational Definitions of Control Variables

Variable	Metric
Demographic Characteristics	
Sex of offender	(female = 0, male = 1)
Race of offender	(nonwhite = 0, white = 1)
Opponent is young (<30)	(0,1)
Situational Characteristics	
Offender Drug Use	Alcohol (0,1)
	Drugs (0,1)
Victim Drug Use	Alcohol (0,1)
	Drugs (0,1)
Time of Day	Day (<6pm) (0,1)
	Night (>6pm) (0,1)
Location	Public (0,1)
	Private (0,1)
Bystanders	(0,1)
Sexual Assault	(0,1)
Offender Weapon	(0,1)
Victim Weapon	(0,1)
Sample Specific Controls	
Child Victimized Frequently	(0,1)
Victimized by Non-Domestic	(0,1)
Perpetrates Domestic Violence	(0,1)
Perpetrates Non-domestic Violence	(0,1)
Sought Formal Services	(0,1)
Violence is Single Incident	(0,1)

Table 6 displays the distributions of all included control variables. With regards to the demographic characteristics, 81.7 percent of the offenders in this sample were male and the majority of the offenders and victims were over the age of 30, and non-Caucasian.

Situational controls that may affect injury include location (public or private), alcohol and drugs (both the offender and the victim), victim and offender weapon, bystanders, whether the victim has children, time of day (day or night), and sexual assault. Some of the situational characteristics reflected the uniqueness of an incarcerated sample. As shown in Table 5, victims use weapons more often than the offenders overall (12.3% compared to 6.6%). Also, either the victim or the offender was using drugs or alcohol in more than half of the incidents. In other respects, these situations seem to correspond to domestic violence incidents reported in mainstream sources. The majority of these incidents occurred in a private location at night and only 8.8% of the incidents featured bystanders. Also, only a relatively small portion of these attacks were considered sexual assaults (6.4%).

Because of the uniqueness of the sample, other relevant controls were included; the history of violence for the respondent (both frequent childhood and adult nondomestic violence), the respondent's perpetration of violence (both domestic and nondomestic), and a final measure indicating whether the woman had a single incident of domestic violence within the reference period or multiple reported incidents.[4] As shown in Table 6, these women represent a population that is at a high risk of violence. The majority of these women were victims of violence as children (76.6%) and also victims of non-

[4] This variable cannot capture whether the respondent has ever in her lifetime been the victim of another domestic violence incident, however; it does serve as a proxy to control for those who experience repeated and frequent victimization.

domestic violence as adults (73.1%). In addition, they also perpetrate violence with 55.6 percent perpetrating domestic violence and 43.5 perpetrating some form of non-domestic violence.

Table 6. Distribution of Control Variables for 487 Incidents

	Injury (Frequency)			Total (%)
	None	**Minor**	**Mod/Sev**	
Demographic Controls				
Offender: Caucasian	32	16	2	10.3%
Offender: Male	267	104	27	81.7%
Offender: Young (<30)	94	38	4	27.9%
Victim: Caucasian	26	15	5	9.4%
Victim: Young (<30)	28	14	0	8.6%
Situational Controls				
Offender Weapon	17	7	8	6.6%
Victim Weapon	37	21	2	12.3%
Offender on Drugs/Drunk	167	73	27	54.8%
Victim on Drugs/Drunk	187	74	20	57.7%
Bystanders	30	11	2	8.8%
Children	269	92	24	79.1%
Private Location	73	23	3	20.3%
Day (before 6pm)	161	50	13	46.0%
Sexual Assault	20	7	4	6.4%
Sample Specific Controls				
Child Abuse Victim	258	87	28	76.6%
Non-domestic Victimization	244	91	21	73.1%
Perp Domestic Violence	196	59	16	55.6%
Perp Non-dom Violence	151	54	7	43.5%
Formal Services (n=365)	13	22	14	10.0%
Single Incident	35	12	2	10.0%
Total	334 (68.58%)	120 (24.64%)	33 (6.78%)	

Statistical Models

These women may use a variety of strategies that depend on the context in which the violence occurs. Thus, a woman's self-protective behaviors may vary across situations. To this end, this study uses each incident of violence or avoided violence as the unit of analysis. However, considering that each woman may have a total of eight incidents of abuse and eight incidents of avoided intimate partner abuse, these incidents are inherently dependent on one another which could deflate the standard errors leading me to falsely reject the null hypotheses. Therefore, the models account for nesting of incidents within the person by adjusting the standard errors by using the *cluster* subcommand in Stata. As noted above, the total number of incidents of partner and avoided violence that are included from this dataset is 487 and these incidents are clustered within 199 women.

Four models were analyzed to ascertain the effects of self-protective behaviors on injury. Broadly, these models differ in their operationalization of the dependent variable and measurement bias correction for temporal sequencing. The results are contrasted in terms of how the measurement of the dependent variable and the possible measurement bias affects the statistical results and substantive interpretations. The statistical models progress from replication of previous research to ultimately end with a model that I contend is the most conceptually and statistically sound representation of the effects of self-protective behaviors on injury.

Logistic Regressions (Models 1 and 2)

Two logistic regression models were used to ascertain the impact of self-protective behaviors on the overall probability of sustaining any injury.

$$\Pr(Y = 1) = \frac{\exp(X\beta)}{1 + \exp(X\beta)}, \qquad (1)$$

where

$X\beta = \beta_0 + \beta_1$ Self-Protective Behaviors + β_2 Demographic Controls + β_3 Situational Controls + β_4Sample Specific Controls

Here, injury was measured as a binary variable to match how it has been operationalized in most previous studies examining self-protective behaviors. In addition, to further replicate previous findings, this initial model was not corrected for any measurement bias associated with the temporal sequencing. Therefore this model measured the effects of self-protective behaviors used at any point during the attack.

The second model mimics the first model by using a dichotomous dependent variable, but it differs by accounting for the temporal sequencing of events and correct for this measurement bias associated with the previous model. The results of Model 1 and 2 are compared to highlight any interpretive differences that arise when temporal sequencing of events is taking into account.

Multinomial Logistic Regressions (Models 3 and 4)

To analyze the impact of self-protective behaviors on the severity of injury, two multinomial logistic regressions are used.

$$\Pr(Y = k) = \frac{\exp(X\beta_k)}{1 + \sum_{k=1}^{K} \exp(X\beta_k)}, \qquad \text{k=1,2} \qquad (2)$$

where

$k = 1$ if injury is minor
$k = 2$ if injury is moderate/severe
and

$X\beta_k = \beta_{0k} + \beta_{1k}$ Self-Protective Behaviors + β_{2k} Demographic Controls + β_{3k} Situational Controls + $\beta 4$Sample Specific Controls

Although the dependent variable is ordinal, a multinomial logistic regression was chosen over an ordinal logistic regression because these data fail to meet the assumption of parallel forms (also known as the proportional odds assumption). In other words, the estimates are not equal across the values of the dependent variable. A Likelihood-Ratio test constraining the effects to be proportional and an unconstrained model which allows for the estimates to vary with conditions (relaxes the parallel regression assumption) confirms this assertion ($p<.05$).[5] In order to ascertain which variables were violating this assumption, a Brant test was performed (Brant, 1990). Table 7 displays the results of the Brant test which revealed significant results for forceful verbal behaviors, the offender

[5] The likelihood-ratio test cannot be performed on ordinal logistic regressions with adjustments for clustering. Therefore this model omits the standard error adjustments for clustering.

being young, the offender being white, the offender having a weapon, and the offender being on drugs or alcohol, and the victim perpetrating domestic violence ($p<.05$).[6] This suggests that these six variables in particular violate the assumption of parallel forms. Although the multinomial logistic regression loses efficiency compared to an ordinal logistic regression, using an ordinal logistic regression with this dependent variable would violate the underlying assumptions of the model and therefore lead to a model misspecification and uninterpretable results (see Long, 1997; p.140 for review of proportional odds assumption and problems with misspecification of models).[7]

Table 7. Brant Test Assessing the Proportional Odds Assumption

	Chi. Sq.	**$p > \chi^2$ (df)**
All	**34.67**	**0.056 (23)**
Self-Protective Behavior		
Forceful Physical	0.03	.853 (1)
Forceful Verbal	5.77	.016 (1)
Nonforceful Physical	2.08	.150 (1)
Nonforceful Verbal	0.03	.855 (1)
Demographic Controls		
Offender is Male	0.65	.420 (1)
Offender is White	4.28	.039 (1)
Offender is Young	4.40	.036 (1)
Victim is White	2.35	.125 (1)
Situational Controls		
Offender had Weapon	8.26	.004 (1)
Victim had Weapon	0.69	.406 (1)
Offender was on Drugs/Drunk	4.27	.039 (1)

[6] The Brant test probes for violations of the proportional odds assumption by estimating j-1 logistic regressions given the results of an ordinal logistic regression. As a result, this test cannot perform when cell sizes are too small. In this sample, none of the younger victims (less than 30 years of age) sustained moderate/severe injuries. Therefore, this test was conducted omitting this variable in order to obtain accurate results.

[7] The original conception of this paper included a scaled dependent variable of injury with 4 levels; no injury, minor, moderate, and severe. This classification may have allowed the analysis to proceed using an ordinal logistic regression; however, the moderate and severe categories were collapsed in the current study due to sample size limitations.

Victim was on Drugs/Drunk	0.29	.589 (1)
Bystanders Present	0.03	.869 (1)
Child(ren)	0.01	.923 (1)
Location was Private	2.58	.108 (1)
Time of Attack (Day)	0.09	.769 (1)
Sexual Assault	0.06	.806 (1)
Sample Specific Controls		
Child Victim(frequently)	0.42	.518(1)
Non-domestic Victimization	0.57	.449(1)
Perp Domestic Violence	4.82	.028(1)
Perp Non-dom Violence	1.79	.181(1)
Single Incident	0.18	.668(1)

The first multinomial regression (Model 3) models the results in accordance with previous research in regards to temporal sequencing. More specifically, this model examines the effects of self-protective behaviors used at any point during the attack, before, during, or after injury. Three comparisons are made within this model including; minor injury versus no injury, moderate/severe injury versus no injury, and moderate/severe injury versus minor injury.

The second multinomial regression model mimics the first with regards to comparisons, but it eliminates the false positives associated with the previous model. Thus, this model was analyzed using the same coding scheme for temporal sequencing as Model 2. Table 8 displays the differences in frequencies for self-protective behaviors after the measurement error is corrected. As shown, the largest difference was within the minor injury category with 91 self-protective behaviors recoded to reflect the accurate temporal sequence. Overall, 125 self-protective behaviors were recoded because they occurred after injury was already sustained.

Table 8. Frequencies of Self-Protective Behaviors Pre and Post Correction

	Injury								
	None			**Minor**			**Moderate/Severe**		
	Pre	Post	*Diff*	Pre	Post	*Diff*	Pre	Post	*Diff*
Self-Protective Behavior									
Forceful Physical	110	107	*3*	62	44	*18*	13	8	*5*
Forceful Verbal	175	170	*5*	80	52	*44*	13	9	*4*
Nonforceful Physical	131	124	*7*	64	44	*20*	16	12	*4*
Nonforceful Verbal	48	43	*5*	15	6	*9*	4	3	*1*
Total			20			91			14

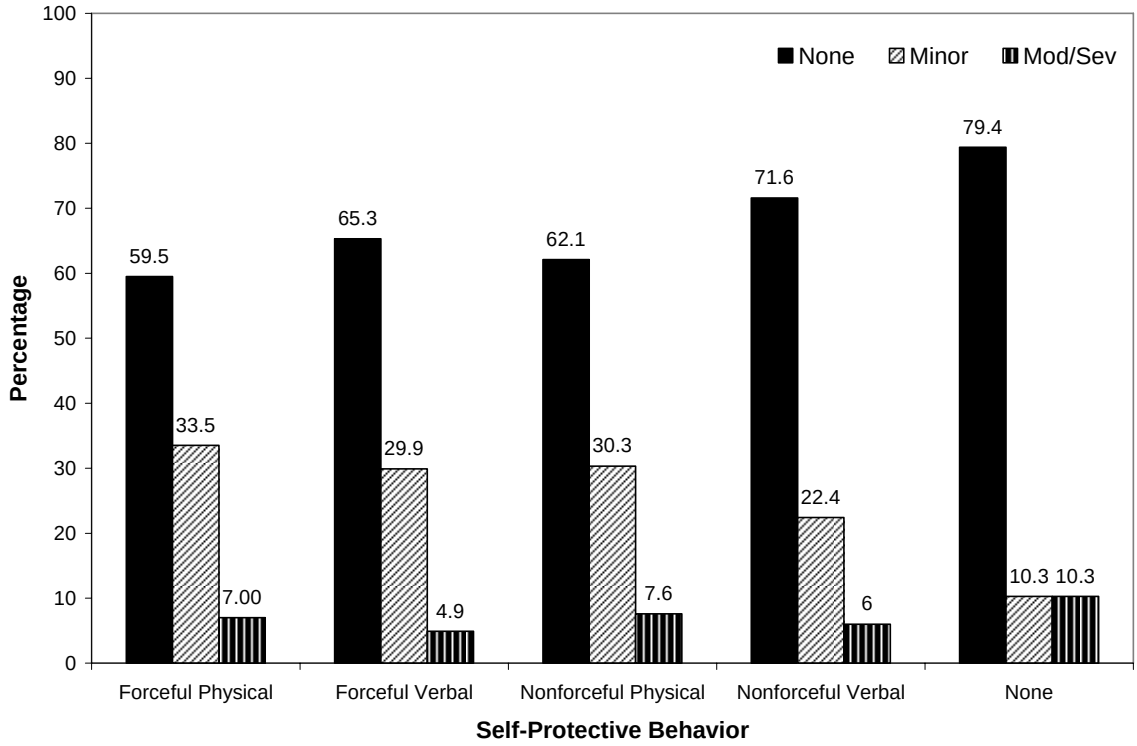
CHAPTER 4: RESULTS

Before I report which self-protective behaviors predict injuries using the four multivariate models specified above, I report the descriptive statistics of both self-protective behaviors and their associated injuries. More specifically, I examine the extent to which women used self-protective behaviors and the patterns of injury for those behaviors pre and post measurement error correction. Then logistic regressions (Models 1 and 2) are compared to assess the overall probability of injury when self-protective behaviors are used. Subsequently, the multinomial logistic regressions (Models 3 and 4) will be compared to further highlight the differences when the measurement error associated with temporal sequence is corrected on the disaggregated variable of injury. Finally, both models with the measurement error correction (Models 2 and 4) are compared to demonstrate the differences when injury is disaggregated.

As noted above, the women used self-protective behaviors overwhelmingly when they were in violent or potentially violent altercations with their current or former partner. In fact, 80% of the incidents featured some sort of self-protective behavior. Interestingly, this is comparable to the frequency of self-protective behaviors in previous studies using general populations. For example, Fisher et al. (2007) found that 77% of sexual assault victims used at least one type of resistance during the attack. Bachman and Carmody (1994) found that 78% of domestic violence victims used either a physical or passive/verbal action and this was greater than the percentage that utilized these behaviors in stranger assaults (69%). Therefore, it appears that the current high-risk sample of incarcerated women's responses follow a similar pattern compared to other populations.

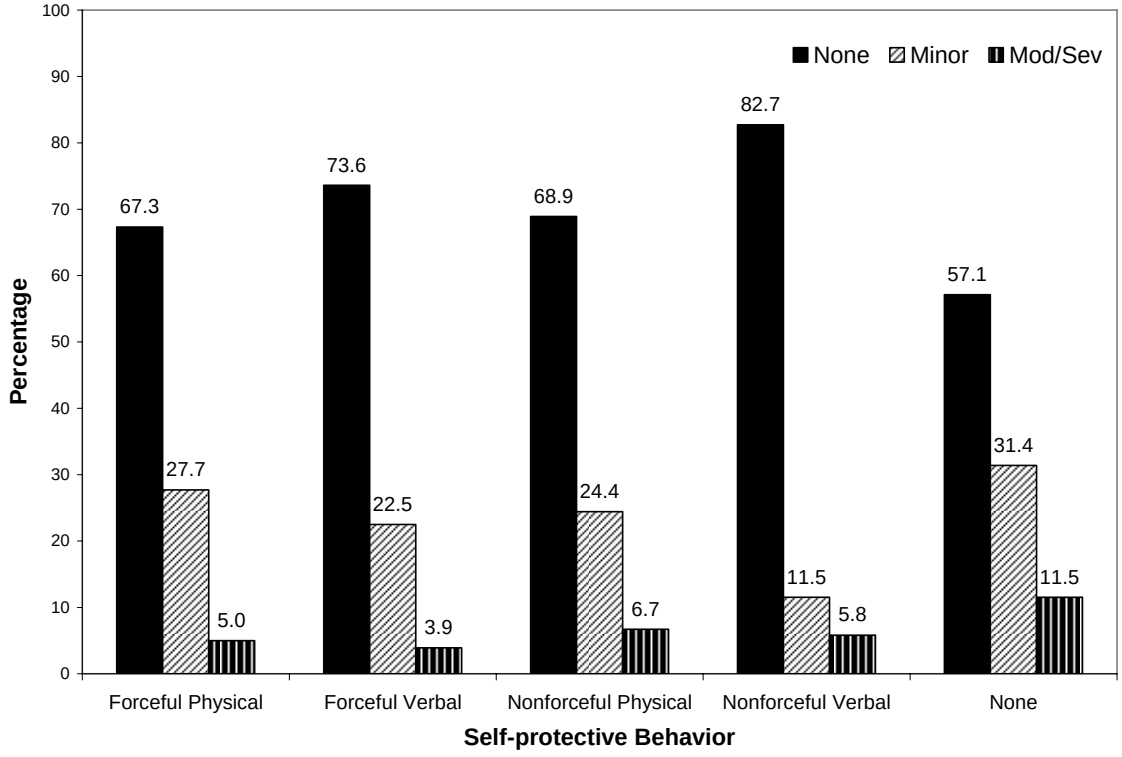
Figure 2 displays the percentage of injury sustained for each self-protective behavior before temporal sequence was assessed. The patterns of injuries were fairly consistent across the self-protective behavior condition with the majority experiencing no injury and moderate/severe injury being rare. However, as shown, the distributions become more extreme as the self-protective behavior moves from forceful physical to nonforceful physical. For all self-protective behaviors, avoiding injury was the most common with ranges from 59.5 percent for forceful physical behaviors to 71.6 percent for nonforceful verbal. Minor injuries were more common compared to moderate/severe injuries for all behaviors with the forceful physical condition yielding the highest percentage of injuries at 33.5 percent and nonforceful physical the lowest at 22.4 percent. The overall percentage of those who used a self-protective behavior and sustained a moderate/severe injury was relatively rare at between 5 and 8 percent.

Figure 2. Distributions of Injury by Self-Protective Behavior (Pre-Correction)



Comparatively, Figure 3 displays the injuries sustained after the measurement error was corrected. The patterns between these two figures remain relatively consistent, with some notable differences. As shown, the percentage of those who avoided injury while not engaging in any behavior decreases by 22.3 percent. In addition, for those who do not utilize ant self-protective behavior, the percentage of minor injury sustained increases by approximately 20 percent. Among the self-protective behaviors, the verbal behaviors yielded the highest percentages of injury avoidance. Conversely, forceful physical behaviors resulted in the highest percentage of minor injury.

Figure 3. Distributions of Injury by Self-Protective Behavior (Post-Correction)



By comparing these two figures (Figures 2 and 3), the importance of correcting for the measurement error associated with temporal sequencing becomes most apparent. Whereas the pre-correction figure indicates that taking no action may be the most effective route because it yields the highest percentage of avoiding injury and quite low

percentages of minor and moderate/severe injuries, the post-correction figure displays a different picture. Here, taking no action actually is associated with the lowest percentage of no injury and the highest percentage of minor injury.

Models 1 and 2: Logistic Regressions – Replication and Correction

Table 9 displays the results of the logistic regression for the probability of sustaining injury when temporal sequence is not assessed. This is a replication of previous research that has used a binary indicator of injury and suffers from the measurement error associated with establishing causality. This model supports hypothesis 1a that forceful physical self-protective behaviors increase the probability of injury (β=.856, $p< .01$). In fact, the odds of sustaining an injury when forceful physical behaviors are used increases by a factor of 2.35, holding all else constant. None of the other self-protective behaviors were significantly associated with sustaining injury.

Table 9 also displays the results of the logistic regression when the measurement error associated with temporal sequence is corrected. Again, hypothesis 1a was supported, forceful physical behaviors increased the probability of injury in this model as well; however, the magnitude was much less (β=.497, $p< .05$). Conversely, with regards to forceful verbal behaviors, the alternative hypothesis (Hypothesis 3b) was supported. Forceful verbal behaviors actually decreased the odds of injury by a factor of 0.53 (β= -.628, $p< .01$), holding all else constant. As expected (Hypothesis 7), nonforceful verbal self protective behaviors also decreased the odds of injury (β= -1.034, $p<.05$) by approximately 65 percent. Nonforceful physical behaviors were the only self-protective behavior that was not significantly associated with injury. In addition, two control variables are significant in Model 2. The offender drinking or on drugs (β=.571), and the

offender having a weapon during the attack (β=.829) increased the probability of the victim being injured ($p< .05$).

Table 9. Logistic Regressions: Replication and Correction (Models 1 and 2)

	Replication		Correction	
Variable	**Coeff. (Std. Err.)**	**Odds Ratio**	**Coeff. (Std. Err.)**	**Odds Ratio**
Self-Protective Behavior				
Forceful Physical	.856**	2.35	.497*	1.64
	(.243)		(.236)	
Forceful Verbal	.069		-.628**	.53
	(.220)		(.225)	
Nonforceful Physical	.424		.055	
	(.234)		(.241)	
Nonforceful Verbal	-.291		-1.034*	.36
	(.340)		(.447)	
Demographic Controls				
Offender is Male	.541		.431	
	(.347)		(.359)	
Offender is White	.112		.176	
	(.405)		(.372)	
Offender is Young	.136		.010	
	(.269)		(.265)	
Victim is White	.679		.613	
	(.375)		(.367)	
Victim is Young	-.087		.194	
	(.453)		(.423)	
Situational Controls				
Offender had Weapon	.597		.829*	2.29
	(.460)		(.497)	
Victim had Weapon	.085		.358	
	(.311)		(.296)	
Offender: Drugs/Drunk	.602**	1.83	.571*	1.77
	(.237)		(.232)	
Victim: Drugs/Drunk	-.028		.062	
	(.252)		(.242)	
Bystanders Present	.004		.060	
	(.337)		(.329)	
Child(ren)	-.280		-.283	
	(.272)		(.289)	
Location was Private	.080		.217	
	(.289)		(.297)	

Time of Attack (Day)	-.232	-.113
	(.214)	(.212)
Sexual Assault	.047	-.066
	(.488)	(.482)
Other Controls		
Child Abuse Victim	-.016	-.063
	(.294)	(.293)
Non-dom Victimization	-.082	-.032
	(.350)	(.337)
Perp Domestic Violence	-.369	-.318
	(.268)	(.266)
Perp Non-dom Violence	-.067	-.038
	(.306)	(.290)
Single Incident	-.424	-.394
	(.384)	(.391)
		N=487, **p<.01 *p<.05

Although these two models yielded similar results with regards to forceful physical self-protective behaviors, the results differed for the verbal self-protective behaviors. When temporal sequence was taken into account, forceful verbal and nonforceful verbal behaviors significantly decreased the risk of injury. Therefore, Model 1 actually failed to predict two possible protective factors in a domestic violence situation. In addition, the model with measurement error masked the effects of weapon use by the offender.

Models 3 and 4: Multinomial Logistic Regressions – Replication and Correction

The results of the multinomial logistic regressions to ascertain the effects of self-protective behaviors on the severity of injury are displayed in Tables 10 and 11. In addition, predicted probabilities were calculated for the significant self-protective behaviors for the final model (Model 4). These probabilities are displayed in Figures 4, 5, and 6. They represent the probability of sustaining that particular injury when the

self-protective behavior specified is used, holding all other self-protective behaviors at 0 (the absence of the behavior), and all controls at their respective means. These are compared to a baseline predicted probability model in which no self-protective behaviors are used and all controls are held at their respective means.

Table 10 displays the results of the multinomial logistic regression model when self-protective behaviors were used at any point during the attack. As shown, only one behavior was associated with minor injury. In line with Hypothesis 2a, forceful physical behaviors increased the probability of minor injury when no injury served as the reference category (β=.822, p< .01) by a factor of 2.28. With regards to moderate/severe injuries, one of the alternative hypotheses were supported. Forceful verbal behaviors decreased the probability of moderate/severe injury when compared to both no and minor injuries (β= -.765, p<.05 and β= -1.060, p<.01 respectively).

Table 10. Multinomial Logistic Regression – Replication (Model 3)

	Minor vs None		Mod/Sev vs None		Mod/Sev vs Minor	
Variable	**Coeff. (Std Err)**	**OR**	**Coeff. (Std Err)**	**OR**	**Coeff. (Std Err)**	**O/R**
Self-Protective Behavior						
Forceful Physical	.822**	2.28	.979		.156	
	(.259)		(.530)		(.559)	
Forceful Verbal	.295		-.765*	0.47	-1.060**	0.35
	(.251)		(.335)		(.374)	
Nonforceful Physical	.524		.002		-.522	
	(.237)		(.461)		(.436)	
Nonforceful Verbal	-.260		-.216		.044	
	(.385)		(.525)		(.607)	
Demographic Controls						
Offender: Male	.622		.304		-.318	
	(.369)		(.743)		(.758)	
Offender: White	.445		-1.953**[a]	0.14	-2.397**[a]	0.09
	(.425)		(.664)		(.706)	
Offender: Young	.355		-.952		-1.307*[a]	0.27
	(.271)		(.700)		(.700)	
Victim: White	.475		2.046**[a]	7.74	1.571*[a]	4.81
	(.415)		(.605)		(.629)	
Victim: Young	.084		-32.151**[a]	0.00	-.31.235**[a]	0.00
	(.470)		(.593)		(.642)	
Situational Controls						
Offender: Weapon	-.018		2.141**	8.51	2.159**	8.66
	(.545)		(.718)		(.720)	
Victim: Weapon	.181		-.418		-.598	
	(.339)		(.696)		(.753)	
Offender: Drugs	.396		1.735**	5.67	1.340*	3.82

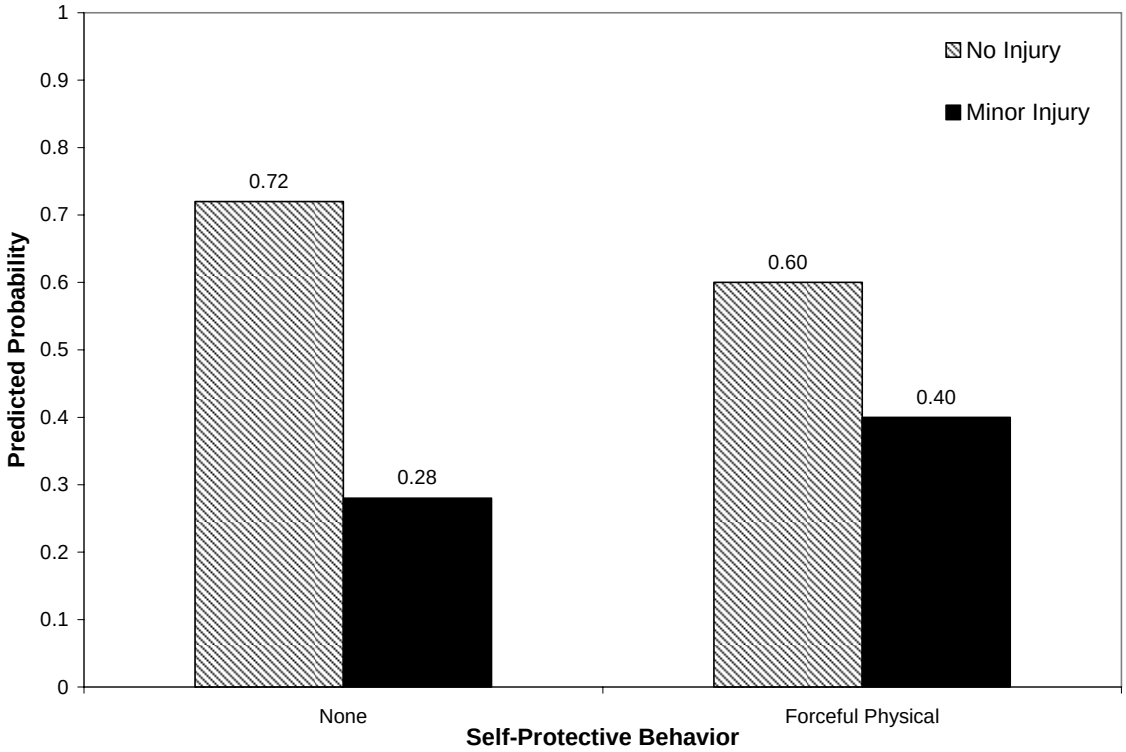
	(.252)	(.605)	(.642)	
Victim: Drugs	-.039	-.251	-.212	
	(.264)	(.385)	(.381)	
Bystanders	.030	-.151	-.181	
	(.367)	(.669)	(.755)	
Child(ren)	-.197	-.414	-.216	
	(.283)	(.509)	(.533)	
Location: Private	-.096	1.224	1.320	
	(.280)	(1.041)	(1.001)	
Time: Day	-.260	-.168	.092	
	(.241)	(.341)	(.393)	
Sexual Assault	-.032	.100	.132	
	(.592)	(.581)	(.651)	
Other Controls				
Child Abuse Victim	-.018	-.041	-.023	
	(.309)	(.543)	(.547)	
Non-domestic Vic.	-.019	-.438	-.419	
	(.345)	(.657)	(.625)	
Perp Domestic Vio.	-.479	.524	1.021*	2.78
	(.272)	(.533)	(.507)	
Perp Non-domestic Vio.	.059	-.767	-.826	
	(.303)	(.650)	(.613)	
Single Incident	-.296	-.778	-.483	
	(.398)	(.786)	(.804)	

Estimates that may be inflated due to small cell sizes are noted with 'a'

n=487, **p<.01 *p<.05

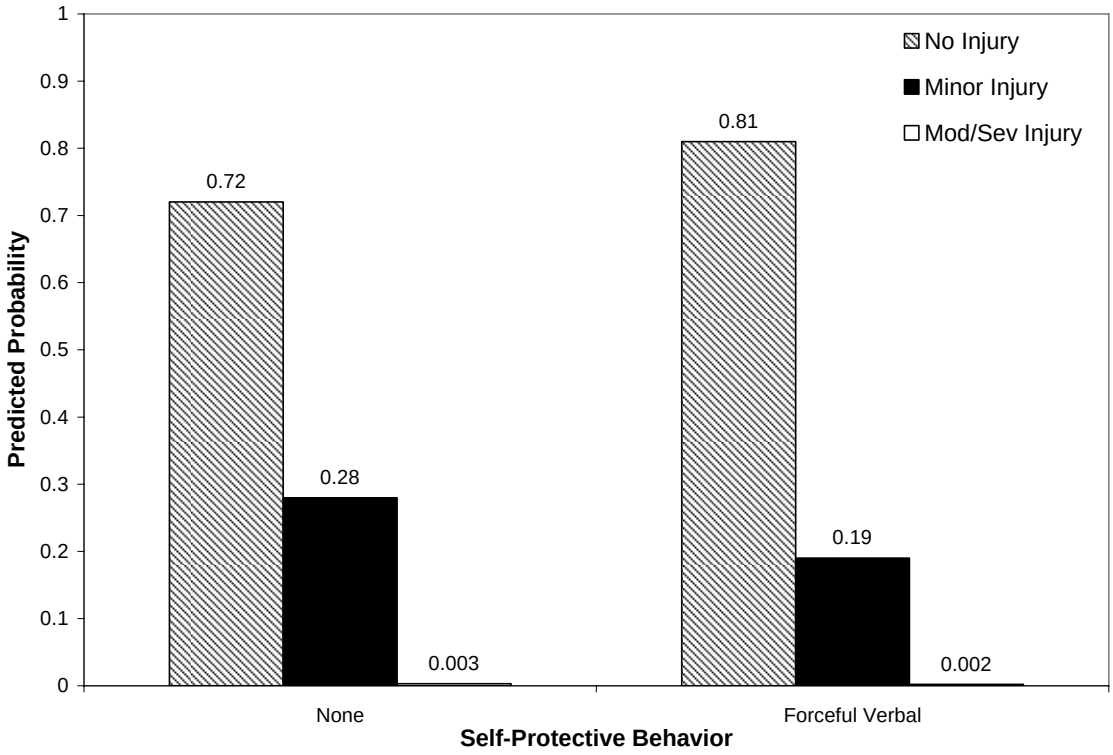
Table 11 presents the results of the final model (Model 4) which disaggregated injury and corrects for measurement error. Similar to Model 3, forceful physical behaviors increased the probability of sustaining minor injuries compared to none, but did not have an impact on moderate/severe injuries in either comparisons (β=.526, p< .05). As displayed in Figure 4, the probability of avoiding injury when no self-protective behaviors are used is .72 and this decreases to .60 when forceful physical self-protective behaviors are used. In addition, the predicted probability of sustaining minor injury when forceful physical self-protective behaviors are used increases from .28 to .40, holding all of the control variables at their means and other self-protective behaviors at 0. This equates to approximately a .10 difference in the predicted probability of injury when forceful physical self-protective behaviors are introduced.

Figure 4. Predicted Probabilities of Injury – Forceful Physical



The alternative hypothesis was supported with regards to forceful verbal behaviors in 2 out of 3 comparisons in the multinomial logistic regression. As shown, forceful verbal behaviors decreased the probability of sustaining both minor (β= -.538, p<.05) and moderate/severe injuries (β=-.973, p<.01) when compared to no injuries, but was unable to distinguish between moderate/severe and minor injuries. In particular, forceful verbal self-protective behaviors decreased the odds of sustaining moderate/severe injuries compared to no injuries by a factor of .58 or 42 percent, holding all else constant. The predicted probabilities for all injury categories and forceful verbal behaviors are displayed in Figure 5. Holding all of the control variables at their means and the other self-protective behaviors at 0, the probability of avoiding any injury when forceful verbal self-protective behaviors are used is .81 which equates to a .09 increase from the predicted probability of avoiding injury compared to when they are not used. With regards to minor injury, the predicted probability decreases from .28 to .19 when they are used. Finally, the predicted probability of sustaining a moderate/severe injury decreases by .001 which is a small but statistically significant result.

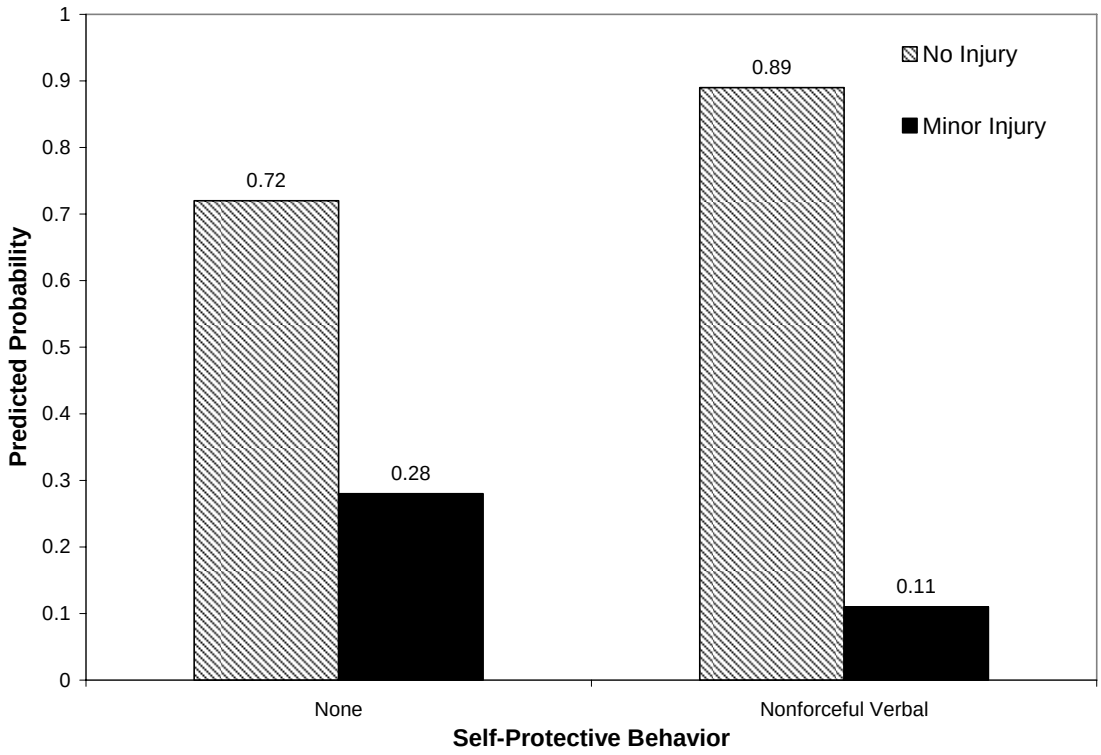
Figure 5. Predicted Probabilities of Injury – Forceful Verbal



Nonforceful verbal behaviors were also negatively associated with injury which partially supports Hypothesis 8. Nonforceful verbal behaviors decreased the odds of sustaining minor injuries compared to no injuries (β=-1.190, p<.05) by a factor of .30. Figure 6 displays the predicted probabilities of nonforceful verbal self-protective behaviors with regards to no and minor injuries. Nonforceful verbal self-protective behaviors increase the predicted probability of avoiding injury by .17 from .72 when they are not used to .89 when victims do engage in these behaviors. Likewise, the predicted probability of sustaining a minor injury when nonforceful self-protective behaviors are used is .11 compared to .28 when they are not. Comparing the predicted probabilities of forceful verbal and nonforceful verbal self-protective behaviors reveals that the greatest

decrease in predicted probability was the result of the nonforceful verbal behaviors (.17 compared to .09) in minor injuries.

Figure 6. Predicted Probabilities of Injury – Nonforceful Verbal



With regards to the demographic controls, the offender and victim being white and the victim being young increased the probability of sustaining moderate/severe injuries compared no and minor injuries; however, it should be noted that these results may be caused by the small number of offenders and victims that meet these conditions and may not necessarily reflect meaningful differences. The effects of some of the situational control variables also significantly differed across injury category. The offender having a weapon was positively associated with sustaining a moderate/severe injury compared to no and minor injury, but had no impact on minor injuries (β=2.178 and β=1.928, p<.01 respectively). In addition, the offending being on drugs/alcohol was

also significantly associated with an increase in moderate/severe injuries compared to no and minor injuries, but had no impact on minor injury (β=1.594 and β=1.224, $p<.01$ respectively). In addition, victims who ever perpetrated domestic violence within the reference period were associated with an increase in moderate/severe injuries compared to minor injury (β=1.012, $p<.05$).

Table 11. Multinomial Logistic Regression – Correction (Model 4)

	Minor vs None		Mod/Sev vs None		Mod/Sev vs Minor	
Variable	**Coeff.** (Std Err)	**OR**	**Coeff.** (Std Err)	**OR**	**Coeff.** (Std Err)	**O/R**
Self-Protective Behavior						
Forceful Physical	.526*	1.69	.382		-.144	
	(.250)		(.577)		(.595)	
Forceful Verbal	-.538*	.58	-.973**	0.38	-.435	
	(.252)		(.354)		(.396)	
Nonforceful Physical	.101		-.133		-.234	
	(.242)		(.508)		(.480)	
Nonforceful Verbal	-1.190*	.30	-.526		.664	
	(.523)		(.600)		(.683)	
Demographic Controls						
Offender: Male	.499		.088		-.410	
	(.373)		(.707)		(.715)	
Offender: White	.456		-1.771**[a]	0.17	-2.228**[a]	0.11
	(.397)		(.671)		(.719)	
Offender: Young	.178		-.943		-1.121	
	(.271)		(.731)		(.735)	
Victim: White	.505		1.661**[a]	5.26	1.154*	3.17
	(.416)		(.595)		(.617)	
Victim: Young	.409		-33.135**[a]	0.00	-36.544**[a]	0.00
	(.438)		(.602)		(.665)	
Situational Controls						
Offender: Weapon	.250		2.178**	8.83	1.928**	6.88
	(.571)		(.720)		(.695)	
Victim: Weapon	.474		-.277		-.751	
	(.319)		(.687)		(.738)	
Offender: Drugs	.370		1.594**	4.92	1.224*	3.40
	(.252)		(.571)		(.620)	

Victim: Drugs	.087	-.249	-.337	
	(.254)	(.387)	(.389)	
Bystanders	.096	-.280	-.375	
	(.367)	(.608)	(.723)	
Child(ren)	-.196	-.457	-.261	
	(.304)	(.512)	(.530)	
Location: Private	.071	1.209	1.138	
	(.285)	(.985)	(.930)	
Time: Day	-.134	-.149	-.015	
	(.235)	(.351)	(.396)	
Sexual Assault	-.207	.063	.270	
	(.584)	(.553)	(.647)	
Other Controls				
Child Vic.(frequently)	-.057	-.112	-.055	
	(.311)	(.520)	(.538)	
Non-domestic Vic.	.005	-.234	-.239	
	(.339)	(.628)	(.608)	
Perp Domestic Vio.	-.457	.555	1.012*	2.75
	(.271)	(.519)	(.500)	
Perp Non-domestic Vio.	.108	-.834	-.942	
	(.291)	(.649)	(.624)	
Single Incident	-.311	-.584	-.272	
	(.409)	(.733)	(.776)	

Estimates that may be inflated due to small cell sizes are noted with 'a'

n=487, **p<.01 *p<.05

Both Models 3 and 4 resulted in forceful physical behaviors increasing the probability of minor injury only; however, the magnitude of this effect was smaller for Model 4 and achieved significance at $p<.05$ compared to $p<.01$. When self-protective behaviors are assessed at any point during the attack, forceful verbal behaviors impacted the probability of sustaining moderate/severe injuries compared to both none and minor. However, when this measurement error was corrected, forceful verbal behaviors decrease the probability of minor and moderate/severe injury compared to none, but did not differentiate between minor and moderate/severe injury. This demonstrates the missed opportunity of Model 3 to capture the effects of forceful verbal behaviors as a protective factor for minor injury. In addition, Model 4 yielded a significant decrease in minor injury for nonforceful verbal self-protective behaviors compared to none; however, these self-protective behaviors failed to reach significance in Model 3. Model 3 and 4 were relatively similar with regards to the control variables. The only notable difference was Model 3 yielded a significant difference between moderate/severe injuries compared to minor injuries when the victim was white, but this effect was not seen in Model 4.

Comparisons between the models which include corrections for the measurement error associated with temporal sequence (Models 2 and 4) yield differences when injury is disaggregated. For example, in the logistic regression, forceful physical self-protective behaviors significantly increased the probability of injury. However, when injury is disaggregated, the effects of forceful physical behaviors are only significant for the comparison of minor injury versus no injury. Likewise, nonforceful verbal self-protective behaviors were associated with a decrease in the probability of sustaining an injury in Model 2; however, this effect was only seen when minor injury was compared to no

injury in Model 4. Both models captured the effects of forceful verbal behaviors adequately as disaggregating injury did not seem to make a substantial impact on the substantive results.

CHAPTER 5: DISCUSSION

Review of Findings and Interpretation of Results

The results of the current study are both methodologically and substantively interesting. Methodologically, assessing the temporal sequencing of events impacts the subsequent results. For example, from the logistic regressions, the measurement error associated with the temporal sequencing masked the effects of both of the verbal self-protective behaviors and inflated the odds of being injured when forceful physical behaviors are used. This would have led to the erroneous conclusion that neither forceful verbal or nonforceful verbal behaviors are associated with injury when in fact these actions may protect women in domestic violence situations.

Also of importance is the necessity to disaggregate the types of injury. Although predicting the overall probability of sustaining an injury is informative, assessing which behaviors predict the probability of serious injury is pertinent when considering women's health. As was demonstrated in this study, when injury was disaggregated, a more complex pattern emerged regarding the effects of self-protective behaviors. For example, forceful physical behaviors only significantly predicted minor injuries compared to no injuries. This suggests that although a woman may be at an increased risk of injury from using forceful physical self-protective behaviors, she is not at an increased risk for subsequent severe injury. This pattern was found in the opposite direction for nonforceful verbal self-protective behaviors. With regards to the forceful verbal self-protective behaviors, they predicted injury for both minor and moderate/severe, but were unable to distinguish between them. Therefore, the effects of forceful verbal behaviors seem to be

consistent across injury type and a logistic regression may have been appropriate, but only for this predictor.

Substantively, these results first show that women are engaging in their own form of situational crime prevention through the use self-protective behaviors in domestic violence situations. In this regard, self-protective behaviors can be thought of as a manifestation of the agency women employ to avoid being helpless victims of assaults. Jordan (2005) recently explored the idea of women's survival strategies in sexual assaults through narratives with victims of a serial rapist and found that women are not passive victims of violence. Instead, women focus on strategies that will maximize survival (both physical and emotional). The narratives in Jordan's (2005) study demonstrated that women weighed the costs and benefits of their actions within their situations and they chose strategies based on their perceptions of the situation. These same concepts of agency and rational choice can be applied to women's use of self-protective behaviors in domestic violence situations. Griffin and Griffin (1981) suggested that women employ self-protective behaviors based on the seriousness of the situation and the opportunities available to them. This suggests that although the offenders may be using rational choice to pick their victims or deciding to attack, women are also assessing their opportunities and choosing actions to avoid injury or thwart an attack. Tark and Kleck (2004) suggested this in their empirical study using the NCVS, arguing that women "do not select their responses to offenders randomly". This is also evident in Skogan and Block's (1983) research on stranger assaults where they found that nonforceful strategies were used more frequently in locations where outside intervention was a possibility.

In other words, women chose self-protective behaviors in accordance with the mechanisms of routine activities theory and situational crime control. Faced with a situation in which they are chosen as an accessible (or deliberate) target and there is a lack of suitable guardians, women will utilize their own strategies to circumvent the crime. These situational crime prevention strategies work on at least one of the three conditions that make a crime likely to occur. For example, nonforceful verbal behaviors attempt to decrease the motivation of the target through appeasing the offender. Forceful physical, forceful verbal, and nonforceful physical behaviors all aim to decrease the suitability of the target. Forceful behaviors attempt to accomplish this by increasing the costs of the incident to the offender so that they outweigh the benefits. Nonforceful physical behaviors decrease the accessibility of the target through escaping the situation. Finally, forceful verbal and nonforceful physical behaviors may increase the possibility of potential guardians by attracting or finding avenues of intervention.

Demographics, prior victimization, and situational characteristics may all impact whether and what type of self-protective behavior a woman uses. Although some research has been done examining the effects of situational characteristics in sexual assaults (Amir, 1971; Atkenson et al., 1989; Clay-Warner, 2002) very little attention has been given to the situational characteristics that impact self-protective behaviors in domestic violence situations. These characteristics are likely to differ because of the unique characteristics of domestic violence. More specifically, the victim is in frequent and unavoidable contact with her offender and most likely absent of capable guardians. In addition, she is likely exposed to repeated victimization and may be able to recognize patterns that indicate victimization is forthcoming. Although beyond the current scope of

the current study, future research should explore the survival strategies of women in these situations.

Despite women's rational choices of which behaviors to use in a given situation, this study has demonstrated that the effects of the behaviors differ in their ability to serve as effective situational crime control. In line with my hypothesis, nonforceful verbal behaviors decreased the risk of injury (minor compared to none). These behaviors may be perceived as deference and therefore may reaffirm dominance of the offender within the relationship and therefore the offender feels that violence is no longer necessary.

With regards to the forceful behaviors, I had hypothesized that they would either lead to an increase in injury due to the offender perceiving a loss of control over the victim (instrumental violence) or a decrease in injury if the behavior was effective in reducing the victim's suitability as a target (expressive violence). Interestingly, these behaviors were both significant predictors of injury, but not consistent in regards to direction. Forceful physical self-protective behaviors were associated with an increase in minor injury. This finding is partially supported with the results of Bachman and Carmody's (1994) analysis of domestic violence assaults which found that forceful self-protective behaviors in general increased the probability of injury, but not the probability of needing medical treatment. Also, Bachman et al. (2002) found that physical behaviors were associated with the probability of sustaining and injury in intimate partner assaults.

Interpreted in line with my hypotheses, the results of the current study suggest that forceful physical behaviors pose a threat to the established control in the relationship and therefore illicit a stronger attack from the offender. An argument could be made for this interpretation using Carmody and Williams's (1987) study which explored the

perceptions of different sanctions for abusive and nonabusive men. Abusive men were more likely to perceive that their victims (their wives) would use retaliatory violence against them. That perceived sanction may also equate to a perceived lack of control over the significant other and therefore a greater probability of using violence to assert dominance.

Interestingly however, the forceful verbal behaviors in the current study serve as an effective mediator. This is contrary to some previous research that has found forceful verbal strategies to be ineffective. For example, Clay-Warner (2002) found that the probability of rape completion was not associated with any verbal strategy. However, if domestic violence is expressive, it may be possible that they serve as an effective deterrent because they increase the costs of a continued attack and make the target less accessible. In addition, it may also be the case that forceful verbal behaviors do not pose a challenge to an offender's dominance within the relationship and therefore do not lead to an escalation in the attack.

Another explanation that may aid in the understanding of the differences in effectiveness of self-protective behaviors is the notion of parity (Griffin and Griffin, 1981; Fisher et al., 2007; Siegel et al., 1989; Ullman and Knight, 1992). According to the parity thesis, the most successful behaviors will be ones that mimic the force or behavior of the actual attack. For example, if the offender is verbally threatening the victim, then the most effective strategy would be forceful verbal recourse. Previous research has cited parity as a decision making strategy for women in assault situations. Siegel et al. (1989) found that sexual assaults in which the offender used force were associated with physical self-protective behaviors whereas the situations in which threats or coercion was used

were associated with verbal resistance. In addition, Fisher et al. (2007) found through their study of different types of sexual crimes that victims seem to respond in line with their offender's attacks and that these behaviors were more effective. For example, victims who were sexually assaulted tended to use forceful physical actions whereas acts of sexual coercion resulted in nonforceful self-protective behaviors. Although not empirically tested, Fisher et al. (2007) speculated that actions that are not in parity with the offender's attacks, specifically those that are more forceful than the original attack, may actually result in the escalation of violence.

The proportions of self-protective behaviors in the current study may also be supportive of the parity thesis. For example, of the incidents in which forceful physical behaviors were used, 87.56% of those were classified as partner violent incidents. However, in incidents in which either of the verbal strategies was used, approximately 79% of those incidents were classified as partner violent. Although this is speculative, it may be that one strategy that women employ during a violent incident is to use behaviors that are on par with the attack. This would suggest that the forceful verbal behaviors were enough to diffuse the situation from the onset of violence, but the forceful physical behaviors may have escalated the violence. It may be that the effects of forceful physical self-protective behaviors in the current study are incidents in which the woman responded to the initial attack with much more force. Although beyond the limits of the current study, future research should explore factors related to incidents in which different self-protective behaviors are utilized and if they are in parity with the initial attack.

Also, some situational characteristics had a significant impact on the likelihood of sustaining injury. One of the biggest predictors of moderate/severe injury was the

offender's drinking or drug use at the time of the incident. This is not surprising in light of previous research regarding sexual assaults that suggests that a high proportion of offenders may be intoxicated during violent offenses (Amir, 1971). In addition, offender alcohol and drug use may also impact the use of self-protective behaviors. For example, Atkenson et al. (1989) found that women used physical resistance more when they thought that the offender was on drugs or alcohol. Substance abuse may lower the offender's inhibitions and therefore the resulting violence is unbridled.

Another factor that was positively associated with moderate/severe injury was the brandishment or use of a weapon on the part of the offender. However, this may in part be due to the fact that some of the injuries that were operationalized as moderate/severe necessitate a weapon. For example, a sharp object is needed to sustain a stab wound. Regardless, this finding is consistent with some prior research. For example, Clay-Warner (2002) found that the probability of rape completion was higher for those situations in which the offender had a weapon. Marchbanks et al. (1990) found that weapon presence resulted in completed rape and/or injuries requiring medical attention. However, caution should be used when interpreting this result because the type of weapon may make a difference with regards to injury. For example, Kleck and DeLone (1993) found that the offender's use of a gun actually decreased the probability of injury in robberies. In addition, Thompson et al. (1999) found that women assaulted when the offender had a gun were less likely to receive injuries, but none of the other weapons were associated with injury. This study was unable to disaggregate the type of weapon used by the offender. With regards to the offender's weapon, 7 incidents featured a gun,

14 featured a knife/sharp object, and 11 featured a blunt object. Therefore, it could be that the use of a gun yields different effects on injury compared to a weapon of convenience.

Although the victim's use of a weapon was not associated with injury, it is interesting to note the frequency at which women brandished a weapon. Indeed, this is unique compared to other samples in which the victim's weapon use was not considered due to its rare occurrence. In fact, women used weapons almost twice as much as their attackers (12.3% compared to 6.6%). It may be that weapons are more accessible to these women and therefore they are more likely to use them. Conversely, it may be a function of the uniqueness of the sample. These high risk women may see weapons as a viable option in situations in which they may be victimized.

Policy Implications

Women are engaging in situational crime control and utilizing self-protective behaviors. Unfortunately, these behaviors do not always have the desired result of avoiding an attack or decreasing injury. Notably, forceful physical self-protective behaviors result in an increased risk of minor injuries. Interventions and policies should be aimed at increasing victims' trust in the criminal justice system, making it a viable alternative in situations where forceful physical behaviors are likely. This is especially pertinent to those women who have had previous exposure to the criminal justice system and therefore may be less likely to seek these types of interventions (Richie, 1999).

Mandatory arrest laws for domestic violence incidents may send the message that the criminal justice system takes these events seriously and is willing to intervene. However, mandatory arrest laws increase the number of men *and* women arrested in domestic violence disputes (Simpson et al., 2006) and, as the current research suggests,

these women's attacks may actually be self-protective behaviors used to thwart or lessen their opponent's attack. Miller (2005) found that among women arrested for domestic violence, most of them were attacking in order to escape the offender, not perpetrate violence. However, police generally use the current situational cues of injury as indicators of who is the perpetrator in an assault (Muftic, Bouffard, and Bouffard, 2007). Although this current study does not have information regarding any injuries to the offender, this is problematic in the case of forceful self-protective behaviors if the injuries sustained by the offender are greater than those of the victim. Indeed, this is plausible given the current research's findings that forceful self-protective behaviors predicted only minor injuries. In addition, police generally do not consider the idea that the current situation at hand may be part of a larger ongoing problem of abuse within that relationship and therefore treat it as an isolated incident (Hirschel and Buzawa, 2002). This may perpetuate the need for the woman to use strategies within the relationship that may not be effective by dissuading her from seeking outside intervention. Therefore, interventions should take into account the context in which the violence occurs, not solely the outcome.

Therefore, policies should also focus on providing viable alternatives to women in domestic violence situations by providing women with many options to escape a violent situation. Future research should assess if the access and utilization of formal services renders forceful physical self-protective behaviors unnecessary or mitigates their undesired effects. This includes police response, domestic violence shelters, and support groups. Public outreach and support for domestic violence victims has grown tremendously in the last couple of decades; however, outreach has not been tailored to all

victims. For example, marginalized populations such as minorities, immigrants, and incarcerated women may distrust outside intervention and therefore the mere presence of social services will not ensure their knowledge or use.

Limitations

This dataset utilizes women's accounts of their violent experiences in the 36 months prior to incarceration. As with any survey, memory decay and participant omissions must be taken into account. This is especially salient when multiple events by one offender are asked to be recalled in detail as is the case with the domestic violence incidents in this study. Despite these limitations, victimization data have been shown to be reliable sources of the victim's experience with face to face violence (Mosher, Miethe, and Phillips, 2002).

However, considering that this sample consists of incarcerated women at a high risk of violence and drug abuse, the self-report accuracy of this particular sample may be called into question. Morris and Slocum (2004) explored the accuracy of this particular sample's ability to recall events by contrasting their recall with official criminal justice records. Their results suggest that this sample's ability to recall the prevalence and frequency of arrest is comparable to previous studies involving other offender samples.[8] Although the women were less accurate with regards to the placement of events on the event calendar, the spacing of events is not a particularly relevant consideration for this study.

[8] Using the 3 year reference period, they found that approximately 60% of the arrests according to the official data were also reported by the respondent. The accuracy of arrests recalled in the year prior to the interview was higher compared to the other two years

The majority of the sample consists of African Americans who were arrested and detained in Maryland. Therefore, these results are not generalizable to all women, or even all women at a high risk of violence. Although there is no reason to suspect that these women would be different from comparable samples in other geographical areas, one must use caution when discussing the violent experiences of women as they may not be applicable to other parts of the country. For example, the differences in state laws regarding domestic violence may impact the use of self-protective behaviors or injury. States with mandatory arrest laws may result in an increase or decrease in the use of self-protective behaviors based on the perception of effectiveness of outside intervention. Despite the limitations of generalizability, this study furthers our understanding of the violent experiences of a marginalized population of women. Nationally representative samples (such as the NCVS) do not capture incarcerated women or women who do not reside at one residence. However, these women may be at an increased risk of violence in their lives (Richie, 1999) and therefore we are missing a crucial population by omitting them.

Due to perhaps the nature of this sample and the rarity of injury, some of the estimates could not be obtained due to small sample sizes in these conditions. Indeed, even those that seem to yield stable results may in actuality be biased. This limitation is not unique to this study, as previous research in this area has noted small sample sizes that prohibit the analysis of certain behaviors, situational characteristics, or types of injury. Therefore, although this study yields more insight than previously possible by being able to disaggregate injury into separate categories based on severity and self-

protective behaviors into two dimensions, the results should be interpreted with caution and replication is necessary to establish the reliability of these findings.

Within one incident, the patterns of self-protective behaviors and interactions thereof are almost endless. As evident from the correlation indices of self-protective behaviors, women sometimes use a combination of strategies to thwart an attack. However, this study did not capture the interactions and sequences of behaviors that lead to injury. It is possible that a combination or interactions of self-protective behaviors yield different results with regards to injury compared to isolating their effects. Although this endeavor has not been accomplished in previous research, future research could begin to explore the combinations of self-protective behaviors and their effect on the types of injury.

This study was able to separate those incidents in which initial injury occurred before the self protective behavior from those in which injury occurs as a response to that behavior. However, this study was unable to ascertain the impact of a self-protective behavior utilized after injury. In other words, it may be that even though a woman used a self-protective behavior after sustaining an injury, she may have thwarted an additional or subsequent attack. Since only the initial injury in the attack is measured, the effect of self-protective behaviors on subsequent injury is missing which may lead to measurement bias. This limitation is also present in the other few studies that have been able to assess temporal sequencing (Bachman et al., 2002; Thompson et al., 1999). Although the temporal measurement in this data is not without error, it does assess the impact of self-protective behaviors on initial injury without the causality conflict of previous studies.

Therefore, it is a necessary first step to begin to disentangle women's responses to domestic violence and their effects on their health.

By using an incident level analysis, the dynamics and evolution of abuse and self-protective behaviors can be controlled for, but not thoroughly explored. It may be that women who experience repeated abuse respond differently than those experiencing their first violent encounter. It is difficult to capture the dynamics and complexities of a violent relationship and that exploration is beyond the realm of the current study. For example, this study cannot investigate how self-protective behaviors vary with regards to the escalation of violence within a relationship over time or take into account the cyclical nature of domestic violence. However, using a participant level analysis would exclude the important contextual subtleties that may impact a woman's use of self-protective behaviors, especially alcohol/drug and weapon use because they vary across situations. Because the situational characteristics and injury in each incident are crucial aspects of this study, an incident level analysis was more appropriate.

Finally, this study cannot examine death as a consequence of self-protective strategies. This may be very important in that some self-protective behaviors may escalate violence to the point of death. Theoretically, injury from self-protective behaviors would range from none to death and it may be that some self-protective behaviors predict intimate partner homicide. Although death as an outcome is extremely relevant when considering the impact of actions on women's health, it is impossible to study death as a dependent variable using this self-reported victimization data.

Conclusion

This study attempted to disentangle the effects of self-protective behaviors on injury for victims of domestic violence. This study contributed to the body of knowledge by examining a portion of the population that is left out of nationally representative surveys. It also demonstrated the importance of research in this area to establish causality through assessing temporal sequence which very few previous studies have been able to accomplish. In addition, this study was one of the only studies to disaggregate injury to analyze the effects of self-protective behaviors on minor injuries versus those that pose a greater risk to a woman's health. The results of the current study suggest that women are engaging in their own forms of situational crime prevention through the use of self-protective behaviors. These behaviors vary in their effectiveness in regards to avoiding or decreasing injury in a domestic assault. Therefore public policy should make take into consideration that women's use of violence may actually be self-protective behaviors and focus on policies that make viable options available to women in situations where self-protective behaviors are likely to be used and yield subsequent injury.

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