Predicting Intimate Partner Violence in Military and Civilian Populations: The importance of context and interpersonal skills

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Recently, the study of intimate partner violence (IPV) has increased exponentially. Many causal theories of IPV have received attention and gained empirical support, yet most are limited in their ability to predict IPV. The proposed study examines the predictive utility of a comprehensive developmental model of IPV proposed by Bell and Naugle (2008) as a way to improve upon past theories. The model, which identifies six categories of risk factors: antecedents, behavioral repertoire, motivating factors, discriminative stimuli, verbal rules, and consequences, is unique in that it allows detailed analysis of proximal variables potentially related to IPV. We will examine whether a military sample will be higher in IPV than a civilian sample, and, if so, will examine which risk factors might discriminate between the two samples. We will also examine how effective the Bell and Naugle model is in predicting IPV. Data will be collected in two phases from 100 heterosexual couples from a military population and 100 heterosexual couples from a civilian population. Couples will complete a battery of measures including demographics, history of IPV, conflict management style, childhood exposure to violence, and attitudes.
toward violence. They will then be asked to complete a packet of daily ratings of IPV, stress, and relationship satisfaction for 30 days. Anyone reporting instances of IPV will be asked to identify the situations, motivations, and consequences of the IPV behavior. We expect that a history of IPV, higher stress levels, and poorer relationship satisfaction (proximal variables) will be the strongest predictors of IPV. We also predict that distal and static variables will moderate between IPV and proximal influences. Hierarchical multiple regression with GEE modeling will be used to analyze risk factors that are most relevant to IPV. This study is an important step toward better detection and prevention of IPV perpetration. We hope that by testing this theoretical model, future research will be directed toward further contextual analysis of IPV, enabling researchers to determine more effective ways to prevent IPV and treat perpetrators.
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Predicting Intimate Partner Violence in Military and Civilian Populations:

The Importance of Context and Interpersonal Skills

Intimate partner violence (IPV), has received increased attention since public awareness has increased about the scope of the problem. IPV, which can be committed by a spouse, ex-spouse, current or former boyfriend or girlfriend, or dating partner, is defined by the Center for Disease Control and Prevention (CDC) as threatened, attempted, or completed physical or sexual violence and emotional abuse in the context of physical or sexual violence (Saltzman, Fanslow, McMahon, & Shelley, 2002). In 1985, the U.S. Surgeon General declared IPV a major public health issue, and in 1994, Congress passed the Violence Against Women Act. Yet despite this increase in awareness and a vast amount of research seeking to understand the nature of the problem, it appears that rates of IPV have not decreased significantly over the past 10 years (Breiding, Black, & Ryan, 2008). Furthermore, research has failed to demonstrate that court-mandated programs significantly reduce the likelihood of batterer re-assault (Julia C. Babcock, Green, & Robie, 2004; Feder & Wilson, 2005).

One possible explanation for the lack of effectiveness is that 80% of batterer programs are aimed at changing attitudes around sex roles (Cavanaugh & Gelles, 2005), and therefore may fail to address the many other potential causes of IPV. Many researchers have hypothesized that accurately identifying the root causes of violence could lead to the creation of more effective rehabilitation programs for batterers (Holtzworth-Munroe, Meehan, Herron, Rehman, & Stuart, 2000). Research has shown
that perpetrators of IPV do not fit a unitary profile (Holtzworth-Munroe & Stuart, 1994), and perpetrate violence based on a wide array of variables including temperament, personal experience, and individual situations. Therefore, to decrease perpetration it is necessary to address the individual rehabilitation needs of batterers.

A fully integrative theoretical model that can be used to assess most of the possible causes of IPV has yet to be tested by researchers. Such a model would allow the development of a comprehensive batterer assessment profile, which could then be used to develop effective intervention programs based on batterer profiles. To improve upon previously existing theories concerning the antecedents of IPV perpetrators, Bell and Naugle (2008) developed one such model for IPV by integrating social learning, typology (Holtzworth-Munroe & Stuart, 1994), and background situational (Riggs & O'Leary, 1996) theories. Bell and Naugle (2008) recognized that many of the existing theories failed to consider variables proximally related to IPV perpetration and sought to develop a framework in which all contributing variables could be analyzed (Bell & Naugle, 2008). The purpose of this proposed study is to examine the efficacy of Bell and Naugle's comprehensive model of IPV perpetration.

Definitions

One problem that consistently arises in research examining IPV is the lack of consensus concerning the definition of violence. Some researchers prefer to examine IPV under broad definitions that include any acts that endanger a partner or contribute to their subordination (Ruiz-Perez, Plazaola-Castano, & Vives-Cases, 2007). Many large scale studies have examined partner violence as a whole (Breiding et al., 2008; Saltzman et al., 2002; Tjaden & Thoennes, 2000), and while these studies have been instrumental
in expanding our understanding of partner violence, it is also useful to study the unique aspects of each specific category of violence. The CDC divides IPV into four categories that include physical violence, sexual violence, threats of violence (physical or sexual) and psychological/emotional abuse (Saltzman et al., 2002). In the current study, I propose to examine contributing factors for physical violence, which is defined here as “the intentional use of physical force with the potential for causing death, disability, injury, or harm (Saltzman et al., 2002, p. 11).”

**Categories of IPV**

As stated before, categories of IPV include physical, sexual, psychological/ emotional, and threats of violence. Physical and sexual IPV are the most widely recognized and studied forms of IPV; however, psychological and emotional forms of IPV are often just as harmful to victims as more overtly expressed aggressive acts (Coker et al., 2002). Sexual violence has been defined as the use of physical force to compel a person to engage in a sexual act against his or her will. Sexual violence also includes sex acts involving those who are unable to understand the act, decline participation, or communicate their unwillingness to participate. Psychological/emotional abuse includes acts, threats of acts or coercive tactics that traumatize victims. Examples of such acts include humiliating the victim, controlling the victim, taking advantage of the victim, or disregarding the victim’s wishes (Saltzman et al., 2002). Many other acts might also fall under the category of psychological or emotional abuse depending on the perception of the victim. It is important to recognize that emotional and psychological abuse may act as contributing factors that can lead to physical altercations (Outlaw, 2009). Therefore, although the goal of the current study is to examine contributing factors for physical
violence, the other types of violence are considered as risk factors within the complete model.

Physical violence is one of the most commonly studied types of partner violence because by nature it is dangerous, often more visible than some other types of IPV (Outlaw, 2009). Yet, despite the abundance of research on the topic of IPV, evaluation of batterer rehabilitation programs have demonstrated that many programs are not widely successful in rehabilitating perpetrators (Feder & Wilson, 2005; Marshall, Panuzio, & Taft, 2005). To develop successful rehabilitation programs it is important to consider and examine all of the factors that potentially lead individuals to become violent.

*Rates*

Rates of intimate partner violence in the United States are high, not changing much over the past decade. In 2000, the National Institute of Justice published a study indicating that from 1995-1996 about 1.3 million women and 835,000 men reported being physically assaulted by an intimate partner in the previous 12 months (Tjaden & Thoennes, 2000). Furthermore, 22% of women and 7.4% of men surveyed reported that an intimate partner had physically assaulted them in their lifetime. In a similar study conducted in 2005, 20.2% of women and 10.7% of men reported having a lifetime experience of completed physical violence by an intimate partner (Breiding et al., 2008).

*Risk Factors*

Certain populations may be at higher risk for experiencing IPV in their lifetime. One controversy that exists in the literature on partner violence involves differing viewpoints concerning sex differences in aggression within intimate relationships. Most research indicates that women are more likely to be the victims of IPV than men.
(Breiding et al., 2008; Tjaden & Thoennes, 2000) and men are more likely to be perpetrators than women (Garcia, Soria, & Hurwitz, 2007). However, some studies have found that in community samples, females may be equally or more likely to perpetrate violence (Archer, 2000; Caetano, Ramisetty-Mikler, & Field, 2005). Despite this discrepancy in the literature, it has also been found that when males are the perpetrators, the victims are more likely to suffer injury and death (Archer, 2000; Bookwala, Sobin, & Zdaniuk, 2005; Garcia et al., 2007; Tjaden & Thoennes, 2000). Gender differences also exist in the rates of IPV related homicides, as men are more likely to kill their partners after an escalation of violence while women generally kill their partners in self-defense or in retaliation to prior abuse. Furthermore, women are significantly more likely to be murdered by an intimate partner than men (Garcia et al., 2007).

Other demographic risk factors for IPV include age and race. Studies have consistently shown that younger individuals are also at a higher risk for experiencing IPV. Breiding et al. (2008) reported that women aged 18-24 reported the highest percentage (3.8%) of IPV when asked about abuse that occurred within the past 12 months. This study also reported that multiracial, American Indian, and Black women reported the highest rates of lifetime IPV while Hispanic and Asian women reported the least. However, Coker et al. (2002) reported that race was no longer significantly associated with IPV after controlling for age, health insurance, and childhood physical and sexual abuse.

Alcohol use has also been consistently associated with higher risk for IPV perpetration (Caetano, McGrath, Ramisetty-Mikler, & Field, 2005; Lipsky, Caetano, Field, & Bazargan, 2005). Caetano et al. (2005) found that men who consumed alcohol
were three times more likely to commit violent acts against their partners than men who
did not consume alcohol. Furthermore, male to female partner violence was positively
associated with drinking five or more drinks on an occasion once a month or more.
Lipsky et al. (2005) found that those with a history of IPV perpetration were 2.5 times
more likely than non-perpetrators to report heavy drinking and more than 4 times more
likely to report illicit drug use.

Other factors that may place certain populations at risk for experiencing IPV
include history, personality variables, and relationship characteristics. For example,
Coker et al. (2002) reported that the strongest risk factor for IPV for both men and
women was being physically assaulted as a child. Witnessing violence from parents or
peers also has been commonly noted as a potential risk factor for later perpetration
(Gwartney-Gibbs, Stockard, & Bohmer, 1987; Mihalic & Elliott, 1997). Certain
personality variables can also act as a risk factor for violence. Caetano, Vaeth &
Ramisetty-Mikler (2008) found that male perpetrators of violence and those in mutually
violent relationships received higher scores on scales measuring impulsivity and
powerlessness. Women in mutually violent relationships also demonstrated higher
impulsivity than women in non-violent relationships. Finally, the dynamics of individual
relationships also can serve as a risk factor. In a meta-analytic review of marital
satisfaction studies, Stith, Green, Smith, and Ward (2008) found that low marital
satisfaction and high levels of marital discord were associated with increased physical
aggression in relationships.

Military. Alarmingly, it has been reported that rates of IPV among veterans and
active servicemen may be up to three times higher than they are in civilian populations
(Marshall, Panuzio, & Taft, 2005). Yet, relatively few studies have directly compared rates of IPV in military versus civilian samples. Heyman and Neidig (1999) found that when demographic risk factors (age and race) were controlled for, rates of husband to wife violence were only slightly but significantly higher in a representative sample of married, active duty, Army respondents. Furthermore, it is important to keep in mind that reports of wider differences in IPV rates between civilians and soldiers may at least partially reflect an overrepresentation of individuals from the populations most at risk for IPV (younger individuals and minorities). Thus, the higher rates of IPV in the military may be a result of the self-selecting sample of individuals who enter the military.

However, a longitudinal study of Navy personnel revealed that for men, the rates of self-reported severe IPV were higher during the second year of enlistment than during the year prior to enlistment. Additionally, while this study did not include a comparison sample of civilians, their reported rates imply that prior to enlistment, rates of severe IPV were comparable for civilians and soldiers (Merrill, Crouch, Thomsen, Guimond, & Milner, 2005). This finding raises the possibility that unique characteristics of the military atmosphere or experience are responsible for the higher rates of IPV in the second year of enlistment. These data reflect the need for future studies of IPV to consider the military as a unique sample and to evaluate possible causes for the inflated rate of IPV in this population. In particular, causal models for IPV should be tested within the military population to evaluate which characteristics of the military population and environment may place soldiers at a higher risk for IPV perpetration.

Consequences
While it is clear that IPV is inherently dangerous to the physical safety of victims, a number of other potential consequences of IPV reinforce the importance of studying and preventing the further occurrence of this dangerous phenomenon. Multiple studies have shown that women with lifetime experiences of physical violence by a partner are significantly more likely to report poor or very poor health (Coker et al., 2002; Ellsberg, Jansen, Heise, Watts, & Garcia-Moreno, 2008). In a worldwide study of women who reported lifetime abuse between 19% and 55% reported experiencing injury (Ellsberg et al., 2008). Possible injuries from IPV include minor injuries such as bruises, cuts, and bites, as well as more severe injuries such as fractures, broken teeth, and loss of consciousness (Ellsberg et al., 2008). Repeated physical assaults increase risk of injuries, chronic pain, osteoarthritis, severe headache, and chronic stress. Stress associated with IPV may affect other acute and chronic health conditions indirectly (Coker et al., 2002). For example, Whittenberg et al. (2007) found that beyond injuries women reported that their emotional and psychological health were most significantly affected by abuse and that the abuse manifested in symptoms such as headaches, fatigue, and high blood pressure.

In extreme cases, violence escalates to murder. Of the 22,540 homicide deaths committed in the United States in 1992, 15% were between intimate partners (Garcia et al., 2007). Furthermore, Garcia et al. (2007) reported that of their sample of female victims murdered by an intimate partner, 81% had been physically abused by the perpetrator in the year prior to the murder, 23% were beaten while pregnant, and 72% had reported victimization of harassment and stalking.
IPV not only places victims at risk for poor physical health, but also is associated with a number of mental health problems. Using a series of in-depth interviews on a small sample of women, Lindgren (2008) found that violence was associated with feelings of fear, uncertainty, shame, and guilt, and caused a range of long-term psychological stress reactions. Both male and female victims of IPV are at risk for developing depression, anxiety, and Post Traumatic Stress Disorder because of their experience (Coker et al., 2002; Lindgren & Renck, 2008; Wittenberg et al., 2007). An international study by Ellsberg et al. (2008) showed that women who experience IPV in their lifetime are more likely to consider ending their lives or attempt suicide.

It is clear from the high rates of IPV in the United States, the serious health consequences associated with it, and the need to improve batterer intervention programs that a comprehensive model with the ability to integrate various underlying causes for IPV is necessary. By integrating social learning, background situational, and typology theories, Bell & Naugle (2008) have proposed such a model. This theory and the models that contributed to its conception are described below.

Theories

Social learning theory. Social learning theory, which is based on the research of Bandura (Bandura, Ross, & Ross, 1963), posits that behavior is initially acquired in childhood through modeling and observational learning. That is, children imitate behaviors after they have seen others perform those behaviors. Imitation is especially likely to occur when behaviors are positively reinforced. Bandura's theory was tested in a classic experiment in which children observed adults behaving aggressively towards a 3-foot "Bobo" doll. The results indicated that children who viewed these aggressive acts
were twice as aggressive when invited to play with the doll as children who did not view aggression (Bandura et al., 1963).

Therefore, according to social learning theory, children learn how to interact with the world by observing role models, such as parents, siblings, or peers. Violence might be learned directly, through physical abuse, or indirectly through observation. If this behavior is reinforced in childhood, it may then be exhibited as a coping response or as a method of conflict resolution later in life (Mihalic & Elliott, 1997). In the case of IPV, children learn methods for settling family conflict by observing their immediate environment. Thus, victims and perpetrators of IPV are believed not only to have witnessed or experienced violence as children, but also to have had this behavior positively reinforced (Bell & Naugle, 2008; Mihalic & Elliott, 1997). Social learning theory has been influential in development of batterer treatment programs, in which emphasis is placed on skills training-teaching batterers to adopt non-violent methods for addressing conflict (Bell & Naugle, 2008).

A number of studies have shown that social learning in childhood has an impact on future displays of aggression. Whitfield et al. (2003) found that women exposed to family aggression and violence had a higher risk of becoming a victim of IPV and men exposed to this type of violence were at higher risk of becoming a perpetrator. Furthermore, as the number of experiences for women and the number of types of experiences (e.g., physical, sexual) increased for men, the risk of becoming victimized or perpetrating also increased. In a study by Gwartney-Gibbs, Stockard, & Bohmer (1987), researchers found that witnessing parental aggression significantly increased the likelihood that male students would inflict courtship aggression on their partners. This
trend was similar for female students; however, the results were not significantly
different. The strongest predictor that a student, male or female, would inflict courtship
aggression was personal experience as a victim of courtship aggression. The study
demonstrates that social learning can occur in many different environments since people
may be influenced by parents, peers, or personal experiences (Gwartney-Gibbs et al.,
1987).

Although research has demonstrated that aggression learned in childhood
contributes to an individual’s risk of becoming a victim or perpetrator of IPV, one major
criticism of social learning theory is that while it is necessary for predicting IPV, it is not
sufficient. Not all students who experience parental or peer group aggression go on to
become victims or perpetrators (Gwartney-Gibbs et al., 1987). Many factors including
the type, severity, and frequency of the violence, the recovery process, the dynamics of
the individual’s current relationship, and the history and behavior of the abused
individual’s partner, affect whether violence experienced in childhood begets future
violence (Whitfield et al., 2003). Social learning theory is valuable because it provides
one explanation for how violence is learned; yet it fails to consider other factors such as
situation and personality that may contribute to an individual’s propensity to use
aggression.

Background situational model. The background/situational model was developed
by Riggs and O’Leary (1996; 1989) as an expansion of the social learning theory. This
model was developed when researchers recognized the need to consider both an
individual’s history and situational triggers that directly instigate violent episodes. In the
model, two components, background and situational factors, are identified as the
contributors to the perpetration of courtship aggression. Background characteristics are factors referring to historical, societal, and individual characteristics that determine who becomes aggressive. Some examples of background factors include a history of witnessing or experiencing abuse, aggressive personality characteristics, arousability, prior use of aggression, psychopathology, and social acceptance of aggression as a way to handle conflict (Riggs & O'Leary, 1996; Riggs et al., 1989).

The second component of the model, situations, set the stage for violence to occur. Examples of situational factors include interpersonal conflict, substance abuse, relationship satisfaction, intimacy level, problem solving skills, personal expectations of violent outcomes, and communication styles (Riggs & O'Leary, 1996; Riggs et al., 1989). The authors propose that the interaction between an individual’s background and current situation affects the intensity of conflict and determines whether physical violence occurs (Riggs et al., 1989). In their 1996 study, the model accounted for 60% of variance in male-female incidents of abuse with situational factors accounting for a larger proportion of variance than background (Bell & Naugle, 2008; Riggs & O'Leary, 1996).

While the background-situational model appears promising, studies have not yet proven it fully effective in predicting incidence of IPV. In their 1996 study evaluating the model, Riggs and O’Leary found that many of the background factors failed to account for a large part of overt aggression. The results show a lack of strong association between the experience of family violence as a child and future attitudes about violence, particularly in men. These results are somewhat surprising given that they conflict with other studies supporting social learning theory (Gwartney-Gibbs et al., 1987; Whitfield et al., 2003). Research on this model has yet to clarify individual effects of background and
situational factors across the duration of relationships. The authors propose that background characteristics are useful in identifying aggressive perpetrators while situational factors serve to predict when violence will occur (Riggs & O'Leary, 1996). While the background/situational and social learning models highlight the importance of history and context, the final contributing theory of Bell & Naugle's model adds yet another dimension by focusing on the heterogeneous nature of IPV.

**Personality/Typology theories.** When studying IPV, researchers have often compared samples of violent men with samples of non-violent men, thus treating each of these groups as homogenous. Typology theorists recognized that this technique could lead researchers to overlook potentially important variables (Neidig, Collins, & Friedman, 1986; Saunders, 1992), since research has shown that batterers vary along a number of dimensions including severity of violence, alcohol abuse, and anger (Holtzworth-Munroe & Stuart, 1994). Many typology theories have been proposed (including those of Hamberger et al., 1996; Gottman et al., 1995; Gondolf, 1988; and Johnson, 1995) but Bell and Naugle focused on two prominent theories in designing their model, Dutton’s Borderline Personality Organization (BPO) and Assaultiveness theory and Holzworth-Munroe and Stuart’s Developmental Model of Batterer Subtypes (Bell & Naugle, 2008). Since many of other theories converge with Holzworth-Munroe and Stuart’s theory, only those theories highlighted by Bell and Naugle will be explained in detail.

Holtzworth-Munroe and Stuart (1994) created a developmental model of marital violence and began by reviewing the existing literature of over 15 batterer typologies. They wanted to identify the batterer subtypes that consistently appeared across
typological models and also to identify descriptive dimensions used to discriminate these subgroups (Holtzworth-Munroe & Stuart, 1994). Based on their review, they identified three descriptive dimensions that could be used consistently to distinguish between batter subtypes: severity and frequency of violence, generality of violence (family-only, extra-familial), and the batterer psychopathology or personality disorders. Using these three dimensions, they proposed three major subtypes of batterers and labeled them family-only (FO), borderline-dysphoric (BD), and generally violent-antisocial (GVA).

Holtzworth-Munroe and Stuart’s theory differs from many previous theories because they attempted to differentiate each subtype based on specific variables that are related to the use of violence by each subtype. They proposed three distal and five proximal correlates of marital aggression. The authors defined distal variables as factors that occurred in childhood or before, while proximal variables were identified as adult characteristics that increased the risk of marital violence. The three distal variables included genetic/prenatal factors, early childhood family experiences, and peer experiences. The five proximal correlates include attachment to others, impulsivity, social skills, attitudes toward women, and attitudes toward violence (Holtzworth-Munroe & Stuart, 1994). Descriptions of the major subtypes of the theory and their related correlates are presented below.

Family-only batterers are described as the least violent subgroup and are expected to show evidence of little or no psychopathology. They are expected to engage in the least amount of marital violence and the least amount of violence outside the home (Holtzworth-Munroe & Stuart, 1994). With regard to the distal variables, they are proposed to be at low genetic risk for aggression and impulsivity, report low or moderate
aggression in family of origin and have little involvement in deviant peer activities. With regard to proximal variables, they can empathize with others but may exhibit preoccupation with or dependency on their partners. They should have low or moderate problems with impulsivity, low to moderate social skills in marital situations, and adequate social skills in non-marital situations. Their attitudes should not be supportive of violence or hostility toward women (Holtzworth-Munroe & Stuart, 1994). The authors hypothesize that physical aggression emerges in this group because of mild impulsivity problems in combination with poor spousal communication skills and partner dependence or preoccupation.

The second subgroup is the borderline-dysphoric group, who are predicted to engage in moderate to severe violence (Holtzworth-Munroe & Stuart, 1994). Their violence is primarily directed towards their partner, but they can also engage in outside violence. They are the most psychologically distressed of the subtypes and may experience delusional jealousy and have low tolerance for separation from their partner (Holtzworth-Munroe & Stuart, 1994). The authors propose that this subgroup may have some genetic loading for psychopathy, impulsivity, and aggression and may have experienced parental rejection, child abuse or deviant peer activity. These batterers are likely to experience high dependency or preoccupation with their partners. They may have moderate impulsivity problems and lack general marital social skills. They often report hostile attitudes toward women and moderately positive attitudes toward violence.

Generally violent-antisocial (GVA) batterers are predicted to be the most violent subgroup of batterers. They engage in high levels of marital violence and often have criminal histories. Furthermore they are the most likely to show characteristics of
antisocial personality disorder (Holtzworth-Munroe & Stuart, 1994). This group is expected to have the highest genetic loading for aggressive, impulsive, antisocial behavior. They likely will have experienced violence in their family of origin and will have had extensive experience with deviant peers. With regard to proximal variables, they will have little empathy for others, be dismissing of relationships, hold rigid attitudes toward women, and positive attitudes about violence. They are expected to lack conflict resolution skills in both marital and non-marital situations and may be impulsive and narcissistic when angered.

Holtzworth-Munroe and Stuart tested their model (Holtzworth-Munroe et al., 2000) in a community-based sample of married and cohabiting couples. Using a number of cluster analyses, they found support for their three hypothesized typological subtypes. Unexpectedly, a forth cluster also emerged, which they named the low-level antisocial (LLA) group. The name for this fourth group came from the interesting finding that these men resembled the extreme violent groups on the antisociality scale while having intermediate scores on most other scales (general violence, fear of abandonment) (Holtzworth-Munroe et al., 2000). The authors believe that this LLA group closely resembles the originally proposed family-only offender while the family only group that emerged from the research is a unique group that has not previously been studied. That is, while the LLA group resembles batterers that have been studied in previous typology studies conducted on clinical samples, the authors believe that the new family only group represents less violent men that are found in community samples. The four subtype model was also validated by Babcock (Babcock, Costa, Green, & Eckhardt, 2004) in a study evaluating a self-report measure designed to assess the likelihood that abuse would
occur in different marital situations. As in Holzworth-Munroe et al.'s study (2000), the subtypes emerged from a cluster analysis on the frequency of marital violence, breadth of general violence, antisocial and borderline personality dimensions.

Despite the apparent support that typology research has received, a number of concerns about typology research have yet to be addressed in the literature. One major criticism of typology theories is that they may ultimately have limited application to treatment (Capaldi & Kim, 2007). Holtzworth-Munroe and Meehan (2004) noted that they could not provide cut off scores for the subtypes of batterers because subgroup means differed by sample. Therefore, though the four subtypes have been consistently reproduced in various samples, the scores used to identify each subgroup differ by sample.

Babcock et al's (2004) study attempted to address another major criticism that typology research has faced. While typologies provide a description of batterer subtypes, they are limited in their discussion of functional differences among batterer types. Babcock notes that typologies might be more useful in clinical settings if they were able to identify the contexts within which IPV occurs. While Holtzworth-Munroe and Stuart's model (1994) attempted to predict contextual details, the measures of social skills, impulsivity, and attitudes used to test the model are indirect attempts to get at proximal components. By directly eliciting information about situation from batterers, Babcock's Proximal Antecedents to Violent Episodes (PAVE) Scale adds an important dimension to the typological approach that was missing in previous studies. In attempting to include the element of context into the typological model, Babcock's goals are similar to those in the current study. I hope that by beginning to test Bell and Naugle's model, which
integrates social learning, context, and the heterogenous personality and behavioral factors from typology models, we can gain a better understanding of how contextual units interact to predict IPV.

Bell & Naugle’s Model

The model proposed by Bell and Naugle (2008) unifies the most important elements of the social learning theory, the background situational model, and typology theories. The model hypothesizes that multiple background and contextual units interact to predict the perpetration of IPV. The authors believe that by examining the impact of particular contextual units and variables within these units, or by investigating interrelationships between contextual units researchers will gain a broader understanding of how certain variables may be proximally related to IPV perpetration. Their model is presented in Figure 1, and displays how the six types of risk factors might interact and lead to the target behavior (IPV). These six types of risk factors are antecedents, behavioral repertoire, motivating factors, discriminative stimuli, verbal rules and consequences. Examples of each of these types of stimuli are presented in Figure 1.

Antecedents. In the model, antecedents are stimuli or events that precede the target behavior (physical violence) and affect the likelihood that the target behavior will occur (Bell & Naugle, 2008). The model distinguishes between distal variables, which are considered more temporally remote and do not necessarily have a direct effect on target behavior, and proximal variables, which are considered to have a greater direct impact on the target behavior. Distal variables may include childhood abuse history, early development attachment to caregivers, and relationship history while proximal antecedents may include partner demands, interpersonal conflict, other aversive
interaction with partner, and current stressors. Another type of antecedent factor, static variables, remain stable over time and can be present under circumstances when the target behavior is either present or absent. Static variables include genetic make-up, personality traits, demographic features, relationship characteristics, and psychiatric disorders. Like distal variables, static variables may have a less direct association with target behavior but may be associated with the behavior through relationships with other contextual variables (Bell & Naugle, 2008).

Proximal antecedents are temporally adjacent to incidences of IPV and may have directly triggered the IPV incident (Bell & Naugle, 2008). Babcock et al. (2004) categorized three types of violence in different typologies of batterers that occurred as reactions to different proximal antecedents. These three types included violence to control the partner, jealous violence, and violence following verbal abuse. Therefore, proximal antecedents such as an exertion of autonomy or control, a threat of divorce, or a revelation of infidelity are examples of situational factors that may trigger the occurrence of IPV.

*Behavioral repertoire.* Behavioral repertoire is defined as a socially adaptive skill set that can be performed under specific conditions to attain a desired consequence successfully (Bell & Naugle, 2008). For example, problem solving, conflict resolution, and emotion regulation skills are necessary to navigate social situations successfully without the occurrence of violence. According to the Bell and Naugle (2008) model, conflict resulting in IPV may be more likely to occur if individuals have deficits in these types of socially adaptive skills. Many batterer treatment programs include anger
management training designed to teach perpetrators about effective emotion-regulation and conflict resolution skills (Bell & Naugle, 2008).

Conflict resolution strategies are one aspect of behavioral repertoire that I hope to examine as an important contributor to IPV. Research has shown that the occurrence of IPV is linked directly to the amount of conflict within an intimate relationship (Stith et al., 2008). Therefore, partners who lack adaptive skills to diffuse conflict situations are at an increased risk of experiencing IPV. Bookwala et al. (2005) conducted a study assessing aggression in marital relationships across the lifespan. They found that men and women differed in the extent that they used different conflict resolution strategies. Women were less likely to use calm discussion and more likely to shout or argue with their partner. Women were also significantly less likely to keep their opinions to themselves. Greeff and Bruyne (2000) came to similar conclusions in their study evaluating the relationship between conflict management and relationship satisfaction. Their study was based on Thomas's (1976) model of conflict management in which he defined five different conflict management styles: competing, collaborating, compromising, avoiding, and accommodating. Greeff and Bruyne's (2000) study demonstrated that collaborative and compromising conflict management styles yielded high levels of marital satisfaction for both men and women while competing and avoidance styles were associated with low marital satisfaction. In this study, males reported using avoidance, compromise, and competition to manage conflict while females were more likely to report using accommodation, compromise, and avoidance.

Motivating factors. Motivating factors are stimuli, events, or conditions that can momentarily affect the likelihood that target behavior will occur (Bell & Naugle, 2008;
Laraway, Sncerski, Michael, & Poling, 2003). Therefore, under a state of hunger for example, food becomes more effective as a reinforcer and a person is more likely to engage in behavior that has resulted in the receipt of food in the past. Examples of motivating factors that may be important in IPV episodes include alcohol or drug influence, and states of emotional or physical distress. When one of these conditions is present, the potency of reinforcers or punishers associated with IPV may increase and physical aggression may be more likely to occur. By decreasing inhibitions for example, alcohol may increase the potency of reinforcers such as feelings of empowerment and control that accompany IPV (Bell & Naugle, 2008; Laraway et al., 2003).

Verbal rules. Stimuli that influence the target behavior (IPV) by describing potential outcomes of engaging in a specific behavior are referred to as verbal rules in Bell and Naugle's (2008) model. For example, an individual who believes that it is acceptable to express anger by hitting another person may be more likely to act aggressively towards his partner in order to communicate the feeling of anger. Examples of verbal rules that can affect IPV include beliefs about violence, beliefs about women, and beliefs about how to solve conflicts (Bell & Naugle, 2008).

Discriminative stimuli. Bell and Naugle (2008) describe discriminative stimuli as a specific type of antecedent that involves the stimuli, events, or conditions that signal that IPV may be more likely to be reinforced. Such stimuli could include things like the presence of the partner, the location (private or public), and the availability of weapons (Bell & Naugle, 2008). For example during a heated discussion between intimate partners, IPV may be more likely to occur if the couple is alone and in the privacy of their own home.
Consequences. Consequences of an action can be classified as either reinforcement or punishment (Bell & Naugle, 2008). Reinforcing consequences are outcomes that increase the likelihood that the target behavior (IPV) will occur under similar conditions in the future. Reinforcers may be additive or subtractive in nature. Examples of additive reinforcing consequences are receiving praise from others, increasing the stability of the relationship, or increasing the partner's compliant behavior. Subtractive reinforcers may include avoiding verbal arguments or reducing emotional distress. In contrast, punishing consequences decrease the likelihood that the target behavior will occur under similar circumstances in the future. These types of consequences are often considered unpleasant or distressing to the individual. Examples of punishment include arrest and imprisonment, termination of the relationship, or increased criticism by others (Bell & Naugle, 2008).

Evidence. Bell and Naugle’s model is unique in that it allows us to examine a multiplicity of causes for IPV within a single model. Since the model was created by combining unique aspects of theories such as the social learning theory, background/situational model, and typology theories, all of which have demonstrated at least some level of success, I believe that Bell and Naugle's model is an important next step to forming a comprehensive model of IPV. Such a comprehensive causal model is necessary since it has been demonstrated that IPV and IPV perpetrators cannot be singularly categorized (Archer, 2000; A. Holtzworth-Munroe & Stuart, 1994; Rosen, Kaminski, Parmley, Knudson, & Fancher, 2003). If proven effective in predicting IPV, Bell and Naugle's model will allow researchers to examine IPV comprehensively. Thus, it may become possible to determine the importance of certain causal factors, the
influences that affect one gender more, and to identify factors that only have minimal 
effects on the likelihood of perpetration. Such information may serve to increase the 
effectiveness of batterer treatment programs and may lead to effective IPV prevention as 
well.

Current Study

The purpose of the current study is to test the predictive utility of Bell and 
Naugle’s (2008) comprehensive model of IPV. In a two-part experiment, we will 
evaluate couples first using a variety of measures designed to determine their risk of 
experiencing IPV. The second part of the experiment involves a daily diary that couples 
will complete over a period of one month. This second phase should allow researchers to 
test whether factors from Bell and Naugle's model that are thought to increase the 
likelihood of IPV were accurate predictors.

An important and unique aspect of this study is that we will examine the model in 
both military and civilian populations. As noted before, previous studies have found an 
increased risk for IPV in military populations. Since the appeal of Bell and Naugle's 
(2008) model is its comprehensive nature, we feel it is necessary to test the utility of the 
model in both high and low risk populations. In our study, we expect to replicate the 
finding that military couples are at a higher risk for experiencing IPV (Marshall et al., 
2005). Some studies have implied that unique aspects of the military environment may 
be contributing factors in the higher rates of IPV (Merrill et al., 2005; Rosen et al., 2003). 
Therefore, we also hypothesize that military couples may differ from civilian couples in 
showing a higher tolerance for violence as a means of problem solving, and a more 
combative conflict management style.
Because of the extensive and detailed nature of Bell and Naugle's model, we can only test each risk factor at a relatively superficial level. Future research should examine the individual contextual units of Bell and Naugle's model in greater detail. We expect that Bell and Naugle's model will be effective in identifying and predicting which couples are most at risk for experiencing IPV. Specifically, we expect a previous history of IPV will predict current IPV in the study. However, controlling for a previous history of IPV we expect that higher stress levels, and poorer relationship satisfaction (proximal variables) will serve as the strongest individual predictors. We also believe that childhood experiences with violence, maladaptive conflict management style, and higher acceptance of violence will increase the likelihood that IPV will occur. However, we expect these variables will act as moderators, strengthening the relationship between IPV and the other variables.
CHAPTER II-
Methods

Participants

For this study, we will recruit heterosexual couples who are either married or cohabiting. Participants will be recruited by flyers and newspaper ads distributed through community centers and other public places. To recruit military personnel, we will seek permission from the base commander at a local army base to post flyers in public places. Professionals who work with potential study participants such as therapists, military chaplains, and other military and community leaders will also receive information on the study. The flyers will indicate that participants should be couples who are married or living together and that the study is a comparison study of military and civilian romantic relationships. The flyer will instruct interested individuals to contact the research lab where they will receive more information and further instruction on how to participate. Participants will also be required to provide informed consent before the study begins. We hope that at least 100 military and 100 civilian couples will ultimately participate in the study. In order to encourage participation, we will offer monetary incentives for completing each phase of the study. Couples will receive $30 for completing Phase one of the study and $50 for completing Phase two.

Measures
Phase one. The following measures will be administered to participants during the first phase of the experiment in order to assess their risk of experiencing IPV.

Demographic information. Demographic information gathered from each participant will include self-reported race/ethnicity (e.g., Caucasian, African American), age, gender (male or female), education level (e.g., less than high school diploma, college), marital status (e.g., single, married, living with partner), employment status (employed full time, employed part time, unemployed) and whether or not they are currently in the U.S. military (yes/no). Participants who are in the military will also be asked to indicate their rank and the number of years that they have been in the armed forces.

Revised Conflict Tactics Scale. The Revised Conflict Tactics Scale (CTS2) (Straus, Hamby, Boney-McCoy, & Sugarman, 1996) has been widely used in IPV research to assess the type, severity and, frequency with which aggressive behaviors are used in conflict situations between intimate partners. In our study, the CTS2 will be used to assess whether each couple has experienced IPV in the 12 months prior to the study. The CTS2 is a 78- item questionnaire that assesses the frequency of physically, sexually, and psychologically abusive acts that have occurred in the past year. For our study, the perpetration of minor (five items) and severe (seven items) physical assault subscales, and reported injury subscale (6 items) will be used. Participants will respond on an 8-point scale from 0 to 7 (never to more than 20 times in the past year, 7 indicates "not in the past year, but it did happen before"). The CTS is scored by computing the sum of the midpoints for the response categories chosen by the participant. The internal consistency reliability of the CTS2 has ranged from .79 to .95 (Straus et al., 1996).
**Thomas-Kilmann MODE Instrument.** The Thomas-Kilmann Management of Differences Exercise (MODE) Instrument (Kilmann & Thomas, 1977) will be used to measure conflict management style. This instrument has been used in a number of studies that provide support for its use (Greeff & de Bruyne, 2000). The instrument has 30 pairs of statements describing modes of handling conflict. The five modes (competing, collaborating, compromising, avoiding, and accommodating) describe conflict management styles that differ in the concentration of primary dimensions such as assertiveness and cooperativeness. In the instrument, subjects are asked to choose the statement in each pair that best describes their behavior in conflict situations. The subject's conflict management profile is derived from the number of times that the subject endorses a particular mode. Competing, avoiding, and accommodating conflict management styles have been associated with lower relationship satisfaction (Greeff & de Bruyne, 2000) and will therefore be coded as maladaptive in this study. Test-retest reliabilities have been moderately high for this measure, and are consistent across modes (Greeff & de Bruyne, 2000). The average test-retest coefficient for the MODE instrument is .64 (Kilmann & Thomas, 1977) and the average coefficient alpha has been reported as .60 (Morris-Conley & Kern, 2003).

**Childhood Exposure to Violence.** A modified version of the original Conflict Tactics Scale (Straus, 1979) will be used to evaluate childhood exposure to violence. This method has been used previously by Whitfield et al. (2003) as part of the Adverse Childhood Experiences Study. The response categories are on a 5-point scale (never, once or twice, sometimes, often, very often). Two questions will be used to evaluate childhood physical abuse. They will state, "Sometimes parents or other adults hurt
children. In your first 18 years of life, how often did a parent, stepparent, or adult living in your home 1) push, grab, slap, or throw something at you? or 2) hit you so hard that you had marks or were injured"(Whitfield et al., 2003).

Four questions will be used to evaluate whether participants witnessed violence as a child. As in Whitfield et al. (2003), the questions will be preceded with the statement "Sometimes physical blows occur between parents. In your first 18 years of life, how often did your father (or stepfather or mother's boyfriend) do any of these things to your mother (or stepmother): 1) push, grab, slap, or throw something at her, 2) kick, bite, hit her with a fist or with something hard, 3) repeatedly hit her for at least a few minutes, or 4) threaten her with a knife or gun, or use a knife or gun to hurt her?" The same four questions will be repeated in regards to the mother's behavior towards the father (Whitfield et al., 2003).

*Attitudes toward violence.* The Acceptance of Violence Questionnaire (AVQ) will be completed by participants regarding their own attitudes. The AVQ was developed by Riggs and O'Leary (1996) based on a scale by Stets and Pirog-Good (1987). Subjects indicate on a 4-point scale (0=never, 3=always) the extent to which each of three aggressive acts (pushing, slapping, punching) was a justified and effective problem solution (e.g., If a man pushes his girlfriend during an argument, is it justified? Will the man's pushing solve the problem between him and his girlfriend?) Each question is repeated with both the man and woman identified as the aggressor resulting in two 6-item scales: justification and problem solving (Riggs & O'Leary, 1996). Higher scores on this scale indicate greater acceptance of violence (Riggs & O'Leary, 1996). This measure was
also used by Holtzworth-Munroe et al. who reported coefficient alphas ranging from \( \alpha = .84 \) to \( \alpha = .92 \) (Holtzworth-Munroe et al., 2000).

*Phase two. Individual diaries.* The daily diary portion of the experiment contains the following measures and items.

*Stress.* We will assess daily stress using a modified version of a technique used by McNulty and Hellmuth (2008). Participants will be asked to report the extent to which 11 domains in their lives have been stressful on that particular day. As in McNulty and Hellmuth's study, each participant will rate each domain on a Likert-type scale; however, we have elected to use a more standard 7 point scale (1 = not at all stressful, 7 = extremely stressful) instead of the previously used 11-point scale. The 11 stress domains are as follows: parenthood, living conditions, finances, school, work, homemaking, unemployment, health, partner's health, own family, partner's family (McNulty & Hellmuth, 2008).

*Relationship satisfaction.* A revised version of the Relationship Assessment Scale (Hendrick, 1988) will be included in the daily diary to measure relationship satisfaction. The scale is composed of seven items (e.g. "How well does your partner meet your needs?"), each rated on a scale of 1 (most negative) to 5 (most positive). Hendrick (1988) reported a mean inter-item correlation of .49 and a coefficient alpha of .86. Thus, the scale has demonstrated adequate reliability and validity (Hendrick, 1988; Shi, 2003). The wording of the scale will be revised slightly so that participants can respond daily to their current views on the relationship.

*Conflict.* To assess our target variable, IPV, an edited version of the original CTS for physical aggression (Straus, 1979) will be included in the daily diary (dCTS). Using
the time frame of the past 24 hours, the diary version asks participants to indicate whether they have thrown something at partner; pushed, grabbed, or shoved partner; slapped, kicked, bit, hit with a fist, hit with an object, beat up, threatened to use a knife or gun, or used a knife or gun against their partner (yes/no). Participants will also be asked to indicate whether their partner has performed any of these actions toward them in the past 24 hours. Each question in the two scales (minor vs. severe physical assault) will be dummy coded and the daily scores on minor and severe physical assault will be summed across their respective items to create a daily score for each scale. Past studies have reported an internal consistency of $\alpha = .56$ (Babcock et al., 2004).

**Situation.** After the CTS, the diary will contain items asking about situational factors. If the participant answers positively to any of the items on the CTS, they will be asked to indicate whether the violence occurred in any of 20 common situations. These 20 situations are derived from the PAVE Scale (Babcock et al., 2004) and include situational options such as "my partner threatens to divorce me or my partner comes home late." Participants who experience IPV will answer yes or no to each of the situations provided. These items will be used descriptively and will be dummy coded for statistical analysis.

**Discriminative stimuli/ motivating factors (DS/MF).** Participants responding "yes" to any of the CTS items will also answer a short series of items concerning discriminative stimuli and motivating factors (DS/MF variables). These items were created for the purpose of this study to address unique elements of Bell and Naugle's model (2008). The items will read as follows: "When the aggressive act occurred, were other individuals present? (yes/no) Were you in your home? (yes/no) Had your partner
consumed any alcohol that you were aware of? (yes/no) How many drinks? (0, 1, 2, 3 or more) Had you consumed any alcohol? (yes/no) How many drinks? (0, 1, 2, 3 or more)."

Like the situational factors, these items will also be used for descriptive purposes.

Consequences. Finally, participants will be asked to indicate whether any of the following consequences resulted from the violence for themselves or for their partner. As with the discriminative stimuli and motivating factors, these items were created for this study in order to address unique aspects of Bell and Naugle's model. Participants will be asked "Did the aggressive act result in any of the following consequences: reduce distress for you/your partner, escaped argument, police became involved, partner complied with you, you complied with your partner, the relationship ended, you or your partner received praise from peers?" Participants will respond yes or no to each of the consequences provided.

Procedure

Participants will be recruited through flyers, newspaper ads, and referrals from members of their community familiar with the study. Once a couple expresses interest in participation by calling the research lab, they will be informed that both individuals must agree to participate in the experiment as a couple, and must agree to attend the introductory session of the experiment together. If a couple agrees to these conditions, they will be asked to come into the research lab to sign an informed consent form, learn more about the experiment, and complete a battery of measures.

At the introductory session, couples will be given the opportunity to ask questions and will be informed that they are participating in a study examining romantic relationships in military and civilian populations. Next, couples will be informed about
the two-part structure of the experiment. The first phase involves a battery of assessments, while the second phase involves completing a series of diary entries over the course of one month. The couples will be told that for each part of the experiment that they complete, they will receive compensation. They will also be told that participation is strictly voluntary and that they may choose to discontinue participation at any time. Those who wish to continue will sign the informed consent and will complete the battery of assessment measures for the first phase of the experiment. Couples will complete their packet of assessments on a computer in separate, private rooms to insure privacy. The battery of measures includes assessment of demographic information, history of abuse and violence, conflict management style, and beliefs about violence.

After completing the battery of measures, husbands and wives will be given separate packets to take home with them each containing the materials for the second phase of the experiment. Each packet contains a set of instructions, 30 questionnaires and 30 self-addressed envelopes. The instructions inform the participant that they are to fill out one questionnaire daily for a month independently of their partner. The questionnaires are designed to assess daily conflict, relationship satisfaction, emotional distress, and situational factors associated with IPV.

*Data Reduction*

For analytic purposes, each variable measured will be coded as either a distal, proximal, or static variable. Table 1 shows each measure, and clarifies its variable category and the outcome variables for each measure.

*Phase one variables.* History of physical assault and injury, a distal variable, will be measured with the revised CTS. The subscales used for the current study will provide
interval data for three variables associated with the subject's history of IPV: minor IPV, severe IPV, and reported injury.

As described in Measures (above) the MODE instrument identifies the conflict management style that the subject is most comfortable and most likely to employ. The final variable will be coded so those with competing, avoiding, or accommodating styles will be coded as having a maladaptive style (1) and all other styles (compromising and collaborating) will be coded as adaptive (0) (see Table 1).

When evaluating childhood experience of physical abuse, we used a revised version of the CTS. For analysis, the two questions on childhood physical abuse will be dummy coded (0 = no physical abuse, 1 = physical abuse) based on participants response. A participant will be defined as physically abused if they responded "often" or "very often" to the first question or if they responded "sometimes", "often," or "very often" to the second question. For the questions evaluating exposure to parental violence, responses will be categorized into no exposure to violence, exposure to battered mother, or exposure to a battered father based on how participants respond. A response of sometimes, often, or very often to the first two questions, or any response other than never to the last two questions will define the participant as having a battered parent. A final dummy coded variable will indicate whether the participant was exposed to a battered parent (regardless of the gender of the batterer).

For the Acceptance of Violence questionnaire (AVQ), three questions will evaluate the participants’ acceptance of violence. These items will be summed to form a score with higher scores indicating a greater acceptance of violence.
**Phase two variables.** Phase 2 is designed specifically to measure our target variable, IPV as well as proximal variables associated with IPV. The daily CTS ratings (dCTS) will be scored similarly to the RCTS collected at Phase 1 except they will be dummy coded rather than reflecting the frequency of each act (creating two variables - minor IPV and severe IPV for each day reflecting the sum of the items on each scale). Two final scores for the month will be created from the sums of each of the two daily variables indicating the frequency and diversity of IPV across the month. Two dummy coded variables will be created that indicate the presence of minor IPV during the month and the presence of severe IPV during the month during the month. A final dummy coded variable will indicate the presence of any IPV (1 = yes on either of the variables at any point during the month, 0 = no on both variables throughout the month). This variable will be used to divide the sample between those who experienced IPV in the month and those who did not. For the target variable, IPV, scores on the CTS will yield a score for minor and severe IPV.

For our measure of stress, we will average participant's stress ratings for each of the 11 domains. We will also average these individual averages in order to provide a general rating of monthly stress for each participant.

The RAS, which measures relationship satisfaction, also will be administered daily. Thus, as with stress, we will average daily scores on the RAS across the month in order to obtain a single score for each participant.

Three of our measures, situational factors, discriminative stimuli/motivating factors, and consequences, are descriptive data that will only be collected if the participant reports IPV. For the situational data, the 20 possible situations will be dummy
coded as a categorical variable (0= no, 1= yes). To create a situation variable for each participant, we will add the number of situations that they indicate are present. Similarly, we will also code discriminative stimuli as absent (0) or present (1) and we will sum these in order to create a variable for DS/MF. We will exclude the number of drinks items for this portion of the analysis. Consequences will be categorized as negative reinforcement (0), positive reinforcement (1), and punishment (2).
CHAPTER III-
Analytic Plan

The purpose of this study is to evaluate the predictive utility of Bell and Naugle's model (2008) for IPV perpetration. Descriptive analyses will be conducted first. We will calculate the means, standard deviations on all interval data, and frequencies on all categorical variables. In particular, we will examine the Phase two variables (minor and severe IPV, MF/DS, situation, stress, and relationship satisfaction) descriptively in order to note the frequencies of specific IPV situations and the contexts surrounding IPV episodes. First order correlations for RCTS variables (minor physical assault, severe physical assault and reported injury), childhood physical abuse and parental violence (using polyserial correlations), attitudes toward violence, daily stress, relationship satisfaction, and our target variable, IPV (derived from the dCTS, again using a polyserial correlation) will be conducted. A separate correlational analysis will be used for those in the sample that report an occurrence of IPV in the past month and will include scores from the situational, DS/MF, and consequences variables, as well as variables from the first correlation table.

Next, we will test the hypothesis that the military sample is at higher risk for IPV. To detect group differences we will first conduct three \(\chi^2\) tests of independence using IPV in past month, and examining group differences on the presence/absence of minor and severe physical assault. In addition, we will conduct independent samples \(t\)-tests on the military vs. civilian sample using the two summed scores from the dCTS.
(minor and severe physical assault). Then, we will conduct independent samples $t$-tests on the predictors’ history of IPV, exposure to violence, attitudes toward violence, stress and relationship satisfaction to see whether the two groups differ on the risk factors.

Finally, we will use hierarchical multiple regression analysis to test our predictions regarding the factors that increase the likelihood of IPV. For this analysis, we will combine the military and civilian populations to increase power. We chose to use hierarchical multiple regression because it will allow us to evaluate the influence that distal, proximal, and static variables have on the occurrence of IPV. We also plan to use generalized estimating equations (GEE; Zeger & Liang, 1986; Zeger, Liang, & Albert, 1988) models in conjunction with hierarchical multiple regression. These models are typically used to analyze data from longitudinal studies with discrete or continuous outcomes (Homish & Leonard, 2007; Zeger et al., 1988). GEE models are useful since longitudinal data sets contain repeated observations of the same participants over time; thus the data are often correlated and require specialized analytic tools. GEE models will be used to assess the longitudinal relationship between variables that are both time-varying and time-invariant as well as the outcome variable (Twisk, 2004). GEE models not only can appropriately handle correlated data structures, but they are also useful when individual observations are missing. GEE modeling allows participants with information from only one assessment to be included in analyses as long as the missing data is missing at random (Twisk, 2004; Schumacher, Homish, Leonard, Kears-Bodkin, & Quigley, 2008).

We have stated that we expect childhood exposure to violence (CEV), conflict management style (CM), and attitudes about violence (AV) will moderate the relationship
between the proximal variables (stress and relationship satisfaction [RS]) and IPV. To test this hypothesis, two hierarchical multiple regression analyses will be conducted and the main and interactive effects will be examined. Table 2 presents the order and structure of the two regression analyses. The first regression analysis will examine predictors for minor IPV while the second analysis will examine predictors for severe IPV. In both regressions, demographic information and history of IPV (RCTS) will be entered in the first step. Childhood exposure to violence, conflict management style, and attitudes toward violence will be entered second. Stress and relationship satisfaction will be entered third. Finally, the two-way interaction terms (CEV*stress; CM*stress; AV*stress; CEV*RS; CM*RS; AV*RS) will be entered in the final step. $R^2$ statistics will be used to indicate the proportion of variance explained by the statistical model.
CHAPTER IV-

Discussion

Expected Results and Implications

We predict that by applying Bell and Naugle's model to the data that we gather in Phase one of the experiment that we will able to predict the couples who are most at risk for experiencing IPV. We expect that the strongest predictor of IPV will be experience of IPV in the past year as reported by the revised CTS. We also expect childhood experiences of violence, maladaptive conflict management, and acceptance of violence will act as moderators, increasing the risk of IPV perpetration when combined with other risk factors. High levels of stress and poor relationship satisfaction should also increase the risk if IPV perpetration, particularly as these characteristics are compounded.

We hypothesize that the overall risk of IPV perpetration will be greater in the military than in civilian populations. We expect to find greater acceptance of violence, a more maladaptive conflict management style, and more general stress in this population among couples with IPV. Furthermore, since some studies have reported a greater acceptance of alcohol use in military populations (Rosen et al., 2003), we think that this motivating factor could play a role in increased risk of IPV for military personnel. Since motivating factors will only be gathered for those who reported IPV we will examine the frequency with which alcohol use occurred in conjunction with an IPV episode. Future studies using Bell and Naugle's (2008) model should seek to examine alcohol use in both violent and non-violent samples.
This study is unique in that it is the first study to test Bell and Naugle's (2008) comprehensive model of IPV perpetration. We hope that this study validates the use of this model and encourages future researchers to examine the model's contextual framework closely. We hope that by studying two different populations, military and civilian, we can demonstrate the importance of examining multiple causal factors for IPV. This model for IPV has the potential to influence future treatment of IPV perpetrators greatly. If researchers can identify the factors that are most important for predicting IPV perpetration, they may also be able to design treatments that effectively reduce the effects of those factors. The current study is an important first step toward that goal and we hope that future research continues to examine the effectiveness of the model.

Limitations of the study

Although this study has a number of advantages over previous studies of IPV, a number of limitations are important to consider. Since the experiment is divided into two phases and since Phase two is longitudinal in nature, some participants may discontinue participation before the study is completed. To address this risk, we hope to over-sample from both populations and to offer enough compensation to reduce dropout rate. In addition, the use of GEE strategies will allow maximum use of the collected data.

Another limitation is that, because of the complex nature of the Bell and Naugle's theoretical framework, each contextual unit will be assessed at a relatively superficial level. For example, while we would like to evaluate behavioral repertoire fully by testing not only conflict management style but also emotion regulation, anger management and problem solving skills, we are limited in both time and resources. We hope that the
preliminary findings from the current study will direct researchers toward the most fruitful elements of the model and that future studies will delve further into each contextual unit.

Conclusion

Clearly, more effective education, prevention, and treatment programs are needed to combat IPV. The developmental model for IPV proposed by Bell and Naugle (2008) offers an opportunity to understand better how multiple causal factors interact and lead to an escalation of violence. The study we have proposed is a first step in validating this model and laying the groundwork for future studies. In particular, this study examines the proximal correlates of IPV in a way that few previous studies have attempted. The use of daily ratings allows us to prospectively examine the onset of IPV and is a strength. This study can provide insight into the factors that influence IPV episodes, so that information can be used to influence the development of effective batterer rehabilitation and victim education. IPV consequences are considerable and costly. Only by continuing to expand our understanding of this problem will we finally be able to limit its prevalence.
References


Table 1. Measures and Associated Variables.

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>Variable Type</th>
<th>Variables</th>
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<tbody>
<tr>
<td>Demographics</td>
<td>Distal</td>
<td>Race/ethnicity, Age, Gender, Education level, Marital status, Employment status, Military status and Rank</td>
</tr>
<tr>
<td>RCTS</td>
<td>Distal</td>
<td>Physical Assault- minor Physical Assault- severe Reported Injury All are interval variables</td>
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<tr>
<td>MODE</td>
<td>Static</td>
<td>Categorical Style - adaptive vs. maladaptive 0 = Compromising 0 = Collaborating 1 = Competing 1 = Avoiding 1 = Accommodating</td>
</tr>
<tr>
<td>CTS</td>
<td>Distal</td>
<td>Childhood physical abuse 0 = no 1 = yes Parental Violence 0 = none 1 = battered parent</td>
</tr>
<tr>
<td>AVQ</td>
<td>Static</td>
<td>Acceptance of Violence Interval variable (summed score)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phase 2</th>
<th>Variable Type</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTS*</td>
<td>Target variable</td>
<td>Physical assault a) Daily minor assault b) Sum of minor assault (monthly score - interval) b) Sum of severe assault (monthly score- interval) dummy coded variables c) Minor assault dummy code (0) c) Severe assault dummy code (1) d) IPV during month dummy code No (0) / Yes (1)</td>
</tr>
<tr>
<td>Stress</td>
<td>Proximal</td>
<td>a) Daily stress- averaged across domains b) Domains individually averaged across month c) Averaged across averages (variable b) for monthly stress</td>
</tr>
<tr>
<td>RAS</td>
<td>Proximal</td>
<td>Relationship satisfaction - interval variable</td>
</tr>
<tr>
<td>Situation</td>
<td>Proximal</td>
<td>Situational description</td>
</tr>
<tr>
<td>DS/MF</td>
<td>Proximal</td>
<td>Situational description</td>
</tr>
<tr>
<td>Consequences</td>
<td>Proximal</td>
<td>Additive Reinforcement Subtractive Reinforcement Punishment</td>
</tr>
</tbody>
</table>
Table 2. Proposed Data Analysis: Hierarchical Multiple Regression.

<table>
<thead>
<tr>
<th>Step</th>
<th>Regression 1: Minor IPV</th>
<th>Regression 2: Severe IPV</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Demographics</td>
<td>Demographics</td>
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<tr>
<td></td>
<td>History of IPV (RCTS)</td>
<td>History of IPV (RCTS)</td>
</tr>
<tr>
<td>2</td>
<td>Childhood Exposure to Violence (CEV)</td>
<td>Childhood Exposure to Violence (CEV)</td>
</tr>
<tr>
<td></td>
<td>Conflict Management Style (MODE)</td>
<td>Conflict Management Style (MODE)</td>
</tr>
<tr>
<td></td>
<td>Acceptance of Violence (AVQ)</td>
<td>Acceptance of Violence (AVQ)</td>
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<tr>
<td>3</td>
<td>Stress</td>
<td>Stress</td>
</tr>
<tr>
<td></td>
<td>Relationship Satisfaction (RAS)</td>
<td>Relationship Satisfaction (RAS)</td>
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<tr>
<td>4</td>
<td>Stress*CEV</td>
<td>Stress*CEV</td>
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<tr>
<td></td>
<td>Stress*MODE</td>
<td>Stress*MODE</td>
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<tr>
<td></td>
<td>Stress*AVQ</td>
<td>Stress*AVQ</td>
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<tr>
<td></td>
<td>RAS*CEV</td>
<td>RAS*CEV</td>
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<tr>
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<tr>
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<td>RAS*AVQ</td>
<td>RAS*AVQ</td>
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Figure 1. Bell and Naugle's (2008) Model of IPV Perpetration.