

TRAIT MINDFULNESS AS A PREDICTIVE FACTOR FOR INTIMATE PARTNER  
VIOLENCE PERPETRATION AMONG YOUNG ADULTS

by

KYLE CURTIS HORST

B.F.A., Chapman University, 2006

M.A., Chapman University, 2010

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

School of Family Studies and Human Services  
College of Human Ecology

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

2013

## ABSTRACT

Recent literature has highlighted the importance of considering personal and relationship factors in predicting IPV perpetration. The present study sought to investigate whether trait mindfulness is associated with IPV, as well as the mechanisms by which mindfulness might predict IPV. Utilizing longitudinal data collected from 247 undergraduate students, the study tested a hurdle model of IPV occurrence and frequency at Time 3 being predicted by trait mindfulness at Time 1 and other known risk factors at Time 2. Results indicated that trait mindfulness at time 1 was associated with IPV perpetration at Time 3; however, when controlling for other known risk factors at time 1, the association between mindfulness at Time 1 and IPV at Time 3 was no longer significant. Finally, results from the mediational analysis revealed a significant indirect effect of trait mindfulness on IPV through relationship satisfaction and conflict resolution while all variables were measured at the same time point, but no indirect effect of trait mindfulness at time 1 on IPV at time 3. These results indicate that although mindfulness might not be a significant direct predictor of IPV when other known risk factors are controlled for, it is important since mindfulness indirectly predicts IPV through other relationship processes when measured at the same time point. Suggestions for future research and clinical intervention are offered.

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Approved by:

Major Professor  
Sandra Stith

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## Chapter 1 – Introduction

Intimate Partner Violence (IPV) is a significant social problem in the U.S. with some rates reported as high as one in four people experiencing IPV within their lifetime (Breiding, Black, & Ryan, 2008). Consequences for those experiencing IPV can include an increase in psychological and physical problems (Coker, Davis, & Arias, 2002). Estimates have placed the overall societal cost of IPV at up to \$5.8 billion dollars (Center for Disease Control, 2003). Furthermore, women are more likely to be murdered by their intimate partner than by anyone else, which resulted in 1,247 fatalities in 2001 (Stover, 2005).

Rates of violence among young adult couples are equally concerning. Straus (2004) conducted a large multinational study including 31 universities from 16 nations and found that on the average university, 29% of students had experienced physical violence from a partner within the last year. Likewise, relationship violence among young adults can have negative impacts on physical health (Amar & Alexy, 2005), mental health (Kaura, & Lohman, 2007), and relationship quality (Kaura, & Lohman 2007). Furthermore, IPV among younger couples can negatively influence the trajectory of future relationships (Furman & Buhrmester, 1992). Given these consequences, the need for a comprehensive understanding of the etiology and mechanisms influencing IPV among young adults is imperative.

Much research has been devoted to understanding factors that lead to perpetration of IPV (see Stith, Smith, and Penn, 2004). Risk factors for IPV have been found on every ecological level, and have led to the development of various causal models and theories of IPV development (e.g., O’Leary, Slep, & O’Leary, 2007). Although traditional theories of IPV have focused on larger socio-political influences (i.e., societal patriarchy) on the etiology of IPV, recent literature has suggested the importance of considering personal and relational factors that

might be associated with IPV perpetration (Lawrence & Bradbury, 2007). Furthermore, researchers have noted that certain relationship factors, such as level of satisfaction and conflict behavior, are possible mediators between known risk factors and IPV (Fals-Stewart, Kashdan, O'Farrell, & Birchler, 2002). Thus, further understanding of how different relationship-level variables influence IPV perpetration is an important endeavor.

Considering the need for further understanding of factors related to IPV, the present study suggests that trait mindfulness might also be associated with IPV. Mindfulness has been described as “paying attention in a particular way: on purpose, in the present moment, and non-judgmentally” (Kabat-Zinn, 1994, p. 4) and involves both a cultivation of awareness and an attitude of acceptance. Scholars have suggested that individuals who naturally display an “attention to and awareness of present moment experience in daily life” show higher levels of trait-mindfulness (Baer, Smith, & Allen, 2004, p. 192). Trait-mindfulness describes the innate characteristic of an individual, whereas in other areas, the term mindfulness refers to a state of present-moment awareness and acceptance, usually as a result of mindfulness meditation. Scholars have suggested that the practice of mindfulness meditation does increase one’s level of trait-mindfulness (Brown & Ryan, 2003). Evidence has begun to suggest that higher levels of trait mindfulness are associated with higher levels of relationship satisfaction (Burpee, & Langer, 2005), higher regulation of attachment anxiety (Saavedra, Chapman, Rogge, 2010), and a decrease in emotional reactivity and hostility toward one’s partner (Wachs & Cordova, 2007). No literature has yet to directly associate mindfulness and IPV. Given that some of the relationship factors associated with low levels of mindfulness are also known risk factors for IPV (i.e., low relationship satisfaction, low emotional regulation, negative interaction and hostility, etc), I suggest that levels of trait mindfulness might be directly associated with IPV.

Beyond linking mindfulness and IPV through similarly associated relationship processes, neurobiological research also suggests that mindfulness may be associated with IPV. Recent literature has explored how particular neurobiological factors might play a part in IPV (Siever, 2008) by linking certain brain structures (e.g., middle prefrontal cortex) and functions (e.g., low levels of serotonin) to perpetration of IPV (Dutton, 2002). Similarly, research has demonstrated how neurobiological factors involved in mindfulness buffer against violent and aggressive behavior (Cahn & Polich, 2006). For example, mindfulness has been associated with an increase in executive function in the middle prefrontal cortex which in turn helps with greater emotional regulation and impulse control, two factors related to IPV (Travis, Tecce, & Guttman, 2000). This evidence suggests that more mindful individuals may be less likely to perpetrate IPV; however, direct associations are still yet to be explored.

Given this gap in evidence, the present study uses interpersonal neurobiology as a theoretical lens to explore the potential association between trait mindfulness and IPV perpetration (Cozolino, 2010). The reciprocal relationship between our relationships and our brain development highlights the importance of considering relational processes in addition to brain function when considering the mechanisms behind IPV. Furthermore, given the related association of IPV and mindfulness to other relationship variables (e.g., relationship satisfaction, negative conflict behavior and interactions, and relationship beliefs), this study will consider the mechanisms by which mindfulness might predict IPV. Mindfulness, a process that has been related to both neural and relational processes, may be an important link in understanding perpetration of IPV.

Based on the aforementioned evidence and theory, the current study explores possible associations between trait mindfulness and IPV perpetration. Using longitudinal data collected

from young adults over the period of one academic semester, this study will investigate if the relationship between IPV and mindfulness is be mediated by relationship satisfaction, conflict behavior, negative interaction, and relationship efficacy while also controlling for other known personal risk factors including depressive symptoms, alcohol use, and IPV attitudes.

## Chapter 2 - Literature Review

Intimate partner violence (IPV) is also known as domestic violence, spousal or partner abuse, marital violence, relationship aggression or violence, and dating violence. IPV is usually defined as a pattern of abusive and coercive behaviors used by a partner in an intimate relationship to gain power and control over the other person (Dobash & Dobash, 1979).

However, this definition has changed over the years as ideological influences have changed. The above definition is one that highlights a particular feminist perspective; however, others have suggested definitions of IPV from different theoretical perspectives. For example, Capaldi and colleagues (2012) use a dynamic developmental systems perspective to define IPV as “an interactional behavior that is responsive to the conjoint developmental characteristics and behaviors of each partner, as well as contextual factors and relationship influences and processes” (p. 1). This definition highlights the interactional and relational qualities of IPV. Further investigation of the ideological factors involved in understanding IPV will be discussed in more detail below.

The present study utilizes a simpler understanding of IPV as “physical, sexual, or psychological harm by a current or former partner or spouse” (CDC, 2010). This definition is preferred as it places emphasis on the behavior and does not necessitate a specific motive, context, or degree of severity. The present studies focuses particularly on physical and psychological aggression, as these were the items included in the survey. Physical violence can include, but is not limited to, slapping, punching, kicking, biting, choking, shoving, burning, or using a weapon against one’s partner. Psychological harm can include humiliation, controlling, withholding information, embarrassing, isolating from friends and family, and denying one’s partner access to money or other basic resources.

Understanding perpetration of IPV has become increasingly complex as empirical findings continue to be published. Much of how IPV perpetration is understood begins with recognizing the variety of theoretical assumptions made by different scholars.

### ***Ideological Issues and Typology***

Much like other fields, ideology has had a significant impact on IPV research. Much of the debate among IPV scholars is the degree to which IPV is perpetrated primarily by men or equally among men and women (Archer, 2006). What underlies this understanding of empirical evidence is an ideological framework.

The problem of IPV received significant attention in the 1970's, coinciding with the women's movement. During this time, IPV was often understood as a function of a patriarchal society where cultural and societal norms, attitudes, and behaviors condone and perpetuate men's violent acts against women (Dobash & Dobash, 1979; Sugarman & Frankel, 1996). Furthermore, any use of violence by women was often seen as reactive or in self-defense of their partner's behavior (Tjaden & Thoennes, 2000). Programs that focus solely on the male perpetrator's (or "batterer's") use of violence to control and gain power from his partner are the preferred intervention of this ideology. Research regarding the effectiveness of these programs, however, is inconclusive (see Scott, 2004).

Others in the field have taken issue with this "asymmetric" perception of IPV and propose that men and women commit domestic violence equally and that female aggression should not always be categorized as self-defense (Dutton, 2006; Hines & Saudino, 2002; O'Leary et al., 1989; Straus & Gelles, 1990; Straus et al., 1980, Wright & Benson, 2010). Their research suggests that men and women perpetrate relationship violence at similar rates. Furthermore, some studies have even indicated women perpetrate IPV at a higher rate (Cui,

Gordon, Ueno, & Fincham, 2013). Furthermore, they see the current standards of IPV treatment as limited and one-dimensional, using a “one-size-fits-all” intervention approach. Instead of focusing on the large societal forces propelling IPV, these scholars instead see IPV as an interpersonal issue and have developed micro-level theories of understanding IPV.

Given this division in the field, some have suggested a more heterogeneous theoretical understanding of IPV. Most popular among these is the IPV typology developed by Michael Johnson and colleagues (Johnson, 1995, 2005, 2006; Johnson & Ferraro, 2000; Johnson & Leone, 2005). Johnson suggests that the evidence regarding IPV is not necessarily contradictory, but rather describing two different phenomena. They propose two distinct patterns of IPV, one of which can be understood as more gender symmetrical and the other as primarily perpetrated by men against women. The first pattern is referred to as Situational Couple Violence, or violence that is a result of relational conflict and heavily dependent upon situational factors. This type of violence is understood as more common in couples and usually involves less severe acts. The second pattern is referred to as Intimate Terrorism, or violence that is characterized by high levels of coercion and fear that are typically used over a longer period of time in an attempt to control the partner. Johnson suggests this type of violence involves more severe acts of violence and is less common among couples. Empirical evidence suggesting the validity of these typologies is limited but growing (e.g. Johnson, 2006). Despite the limited evidence of these specific operational definitions, an apparent distinction between patterns of violence does exist.

Of the couples who are violent, the majority experience only mild-to-moderate levels of violence (e.g., pushing, grabbing, shoving; Demarais, et. al., 2012). Furthermore, the majority of couple violence is considered bi-directional, meaning both partners use violence toward one another (Langhinrichsen-Rohling, Misra, Selwyn, & Rohling, 2012). Despite the relatively low

level of severity, this pattern of “common couple violence” can have a significant negative impact on both individuals and relationships (Whitaker, Saltzman, Haileyesus, & Swahn, 2007).

Compared with other patterns of violence, it has been suggested that relational processes and conflict contributes more directly to the perpetration of “common couple violence” (Johnson, 1995). In this study, I examine violence in college student relationships which is most frequently common couple violence. Growing attention is being given to understanding individual and relational factors that might influence the perpetration of IPV. Understanding how these relational/personal variables interact with other known risk factors for violence will propel a more holistic understanding of violence. Furthermore, investigation of other yet unknown associated variables might help to fill in the gaps of our understanding of IPV perpetration.

### ***Risk Factors***

Much of the IPV literature has been devoted to understanding the factors that are associated with an individual or couple perpetrating IPV, or becoming a victim to IPV. Empirical support for a wide range of factors highlights the inherent complexity of IPV. The magnitude of literature available reaches beyond the boundaries of this study, instead, risk factors appropriate to the present study will be given most attention. Many studies considering risk factors for IPV do so from a specific theoretical perspective and usually only consider a few factors at a time. Several meta-analysis and systemic reviews have been conducted that provide a manageable view of the available literature regarding risk and protective factors for IPV (for reviews see Schumacher, Feldbau-Kohn, Slep, & Heyman, 2001; Stith, Smith, & Penn, 2004, Capaldi et al., 2012).



Attention to relationship violence among young and emerging adults is also receiving more attention. Scholars have estimated that as many as 45% of undergraduate students have experienced some form of relationship violence (Katz, Kuffel, and Coblenz, 2002; Straus, 2004). Violence among college students can have a significant detrimental impact on their personal and relational development (Amar & Alexy, 2005; Kaura & Lohman, 2007). Beyond this evidence, adolescence and young adulthood represents a developmental period where primary attachment and affective ties move from family to peer romantic partners, and represents a period of time where salient healthy or unhealthy interpersonal patterns may emerge, especially with romantic partners (Furman, 1999). More specifically, negotiating issues related to conflict and aggression in intimate relationships can have a critical impact on future healthy relationship development (Furman & Buhrmester, 1992). Thus, understanding the factors that propel violence, specifically among young adults, is important.

Risk factors for IPV perpetration and victimization exist on every ecological level: macrosystem (e.g., minority group membership, socio-economic status, etc.), exosystem (e.g., employment status, exposure to violence, etc.), microsystem (e.g., relationship factors such as levels of conflict and satisfaction), and ontogenetic (e.g. depression, substance abuse, etc.; see Capaldi et al., 2012). In light of this, scholars have begun to suggest consideration of “an integrative, meta-theoretical model of violence that considers multiple variables operating at different times in a probabilistic fashion” (Crowell & Burgess, 1996, p. 69). Thus, the present study considers not only the direct association between certain factors and IPV, but also how the relationships between different factors contribute to the perpetration of IPV over time. The present study will include several known risk factors as controls: depression, alcohol abuse, and attitudes justifying IPV. Adding these variables to the model will help with understanding the

relative strength of the predictability of trait mindfulness on IPV compared with other known personal factors.

**Depression.** A large amount of empirical evidence suggests an association between depression and relationship conflict and IPV. Stith and colleagues (2004) found an overall effect size of  $r = .23$  in the relationship between depression and IPV. In light of these results, several others have suggested that this relationship may in fact be reciprocal rather than unidirectional (Whisman, Uebelacker, & Weinstock, 2004). Evidence does exist, however, to suggest that depressive symptoms do lead to relationship conflict (Atkins, Dimidjian, Bedics, & Christensen, 2009). Atkins and colleagues (2009) studied two samples, individuals being treated for depression and couples being treated for relationship distress. Although levels of depression and relationship distress were associated in both samples, couples seeking treatment had a more reliable change in association between their levels of distress and subsequent depression.

**Alcohol use.** Another relatively robust association found in the literature is that between alcohol abuse and IPV. Three different meta-analyses have found small-to-moderate effect sizes ( $r = .22$  to  $.24$ ) for alcohol abuse and IPV (Ferrer, Bosch, Garcia, Manassero, & Gili, 2004; Foran & O'Leary, 2008; Stith et al., 2004). One study by White and Chen (2002) utilized longitudinal data collected by the Rutgers Health and Human Development Project to look at the relationship between problematic drinking, IPV, and several other factors. Their results indicated an effect of alcohol use on later IPV perpetration (White, & Chen, 2002).

**IPV Attitudes.** Another factor associated with IPV is an individual's attitudes about the acceptability of violence in the relationship. Several studies have indicated that attitudes of acceptance and justification of violence are strongly correlated with acts of IPV (Price & Byers, 1999; Riggs and O'Leary 1996). A study by Cauffman and colleagues (2000) indicated that

although general acceptability of IPV is low, individuals who were able to justify violence had greater levels of IPV. Much like many of the other factors associated with IPV, the temporal order between accepting and using violence is not confirmed. It stands to reason that individuals who use violence will become more accepting of violence in an attempt to relinquish any cognitive dissonance (Capaldi & Crosby, 1997). Furthermore, Malik and colleagues (1997) found in their study that acceptance of violence is a predictor of later relational aggression in young adults.

Although alcohol use, depression, and IPV attitudes represent three well-known factors associated with IPV, there are many other potential factors that might influence IPV perpetration. The present study suggests that trait mindfulness might also be a factor associated with IPV. The proposed model uses the aforementioned variables as controls in examining the potential impact of trait mindfulness on IPV. The following section outlines a brief description of mindfulness as well as a theoretical understanding of how mindfulness is related to IPV perpetration.

## **Mindfulness**

The present study suggests that mindfulness may play a role in the perpetration of IPV. Based on literature, I suggest that mindfulness itself might have a direct influence on IPV perpetration in addition to influencing other relationship processes related to IPV (Wachs & Cordova, 2007). The following section provides a basic overview of the literature around mindfulness, specifically as it relates to different relationship variables and violence.

Several definitions of mindfulness have been suggested leading to some confusion in the field. Despite this confusion, most conceptualizations of mindfulness include two concepts, one regarding attention to present experience and the other regarding orienting to that experience with openness and acceptance (Bishop et al., 2004). Bishop and colleagues (2004) define the

first concept as “the self-regulation of attention so that it is maintained on immediate experience, thereby allowing for increased recognition of mental events in the present moment” (p. 232).

These same authors also highlight the importance of self-regulation in the development of attention. Throughout the mindfulness literature, other authors have referred to this concept as attention, awareness, focus, attunement, and others labels (Baer, Smith, Allen, 2004; Bishop et al., 2004; Shapiro, Carson, Astin, & Freedman, 2006). Bishop and colleagues (2004) label the other concept as “acceptance” and define it as “adopting a particular orientation toward one’s experiences in the present moment, an orientation that is characterized by curiosity, openness, and acceptance” (2004, p. 233). Although the authors use the terms “curiosity, openness, and acceptance”, delineation between each of these concepts is vague. It seems, however, they refer to a particular way of approaching one’s experience. A more detailed conceptualization and practical application of these concepts is outlined below.

In reviewing the mindfulness literature, confusion often arises from a failure to delineate mindfulness as a trait or a practice. At times mindfulness is referred to as a personal quality that is innate in individuals. The Mindfulness Attention Awareness Scale (MAAS) was developed with the intention of measuring an individual’s level of mindful characteristics and has been used in research to correlate innate mindfulness with a variety of disorders (Brown & Ryan, 2003). This is one of the most widely used measures of mindfulness. In addition to constructing the measure, this study compared levels of trait mindfulness with other measurements of well-being. Their findings indicated positive associations between mindfulness and multiple measures of self-esteem. They note that those with higher levels of trait mindfulness “are less likely to be self-conscious, socially anxious, and ruminative than low scorers, and are also slightly less likely to enter absorptive states of consciousness” (Brown & Ryan, 2003, p. 832). Mindfulness is also

used to refer to a specific practice, most often mindfulness-meditation. Much of the empirical literature related to mindfulness has centered on the efficacy of mindfulness skills training toward specific clinical issues (Baer, 2003). The present study is interested in the association of trait mindfulness and IPV. Thus, the literature presented focuses on the influence of trait mindfulness on certain variables unless otherwise indicated. It is important to note, however, that scholars have indicated mindfulness practice is associated with higher levels of trait mindfulness (Brown, Ryan, & Creswell, 2007).

### ***Mindfulness and IPV***

Considering the promising influence of mindfulness on individual well-being, scholars have begun to suggest that mindfulness might also influence intimate relationships (e.g., Gambrel & Keeling, 2010). Several studies have suggested that trait mindfulness is associated with relationship satisfaction, increased empathy, attachment, and decreased emotional reactivity and hostility (Barnes et al. 2007; Wachs & Cordova, 2007; Walsh et al., 2009).

Although no studies have considered the relationship of trait mindfulness with physical or psychological IPV, one study examined the role of mindfulness on sexual aggression (Gallagher, Hudepohl, & Parrott, 2010). This study surveyed 167 heterosexual males on their levels of trait mindfulness, sexually aggressive behavior toward their partner, and alcohol use and abuse. Results from the study indicated a significant negative association between trait mindfulness and sexual aggression toward partner ( $r = -.20$ ). Additionally, mindfulness served to moderate the relationship between quantity of alcohol use and sexually aggressive behavior toward one's partner. Based on these results the authors note "mindfulness may decrease the likelihood of aggression toward intimate partners by promoting greater cognitive flexibility and self-awareness..." (Gallagher, Hudepohl, & Parrott, 2010, p. 410).

Despite little evidence connecting mindfulness with IPV, evidence does exist to suggest mindfulness might be associated with less violent and aggressive behavior in general. Heppner and colleagues (2008) conducted two studies that looked at the role of both trait and state mindfulness in aggressive behavior. Their first study surveyed participants about their levels of trait mindfulness and aggression, and results indicated higher levels of trait mindfulness were associated with lower levels of aggression. Their second experimental study involved splitting a group of sixty undergraduates into two groups, one receiving mindful training and the other as a control group. Researchers then had participants in both groups receive social rejection feedback and subsequently measured levels of aggressiveness and aggression related behavior. Results indicated that mindful individuals were less likely to display aggressive behavior (Heppner, Kernis, Lakey, Campbell, Goldman, Davis, & Cascio, 2008).

In addition to basic research, several treatment approaches have been developed using mindfulness and mindfulness-based interventions in the treatment of IPV. Tollefson and colleagues (2009) studied the use of a “Mind-Body Bridging” (MBB) in the treatment of domestic violence perpetration. MBB focuses on mind-body dysregulation as a primary motivator for IPV. Although similar to mindfulness, MBB emphasizes participants learn to become keenly aware with their bodies, using different contemplative techniques to bridge an individual’s awareness with body sensations (Tollefson et al., 2009). The program focused on treating 82 court-ordered domestic violence offenders and aimed to reduce rates of re-offending. Of the participating offenders, only 7% reported re-offending at an average of 18-month follow-up (Tollefson et al., 2009). The program integrated mindfulness exercises into other interventions, and although they did not outline specifically how mindfulness itself played a part in the effectiveness, they did mention how theoretically mindfulness helps individuals receive

signals from their body that they are tense and feeling emotionally dysregulated. Furthermore they suggest that recognition of these signals can help an individual take steps to re-establish emotional regulation.

A program, Domestic Violence Focused Couples Therapy (DVFCT), developed by Stith, McCollum, & Rosen (2011) also utilizes mindfulness exercises in a similar manner. Although not a central theoretical tenet of the treatment program, the developers have noted that mindfulness is a crucial skill taught in the early stages of treatment to “assist in self-soothing and in becoming more aware of their physiological, emotional, and cognitive experiences so that they can identify escalation signals more readily and earlier in the escalation process” (Stith, McCollum, & Rosen, 2011, pg. 75). After first teaching mindfulness, subsequent sessions usually begin with a mindfulness exercise. Although the developers have reported data indicating that the program is effective in reducing IPV, the specific influence of mindfulness on outcomes has not yet been studied.

Although Dialectical Behavior Therapy (DBT) was developed for the treatment of borderline personality disorder, Fuzzetti and Levensky (2000) suggest it might also be a suitable choice for treating IPV. Central to DBT is the practice of mindfulness. Others suggest that because DBT has achieved success in treating other populations with emotional dysregulation and behavioral problems (e.g. borderline personality disorder and substance abuse) it would also be an appropriate treatment for IPV offenders (Rathus et al., 2006). Rathus and colleagues suggest that mindfulness skills teach perpetrators to be more aware of potential cues to violence and to be less emotionally reactive in the face of certain triggers.

Beyond the scope of relationships, research indicates an association of mindfulness with aggressive, hostile, and violent behavior in general. For example, one study offered a

mindfulness intervention to inmates (N = 1,350) at the Massachusetts Department of Corrections (Samuelson, Carmody, Kabat-Zinn, & Bratt, 2007). Results from this study found a 7% decline in hostile behavior for inmates who participated in the mindfulness program (Sonkin, 2007). Victims of violence and trauma may also benefit from mindfulness. Thompson, Arnkoff, and Glass (2011) reviewed the trauma literature and found a strong association between trait mindfulness and better adjustment after experiencing a traumatic event, buffering the impact and onset of PTSD. Similarly, they found that antithetical concepts to mindfulness (experiential avoidance, emotional disengagement, etc.) were associated with greater vulnerability to the development PTSD. If mindfulness buffers the impact of trauma in victims, it might also present as a buffer to perpetration of trauma such as IPV.

Beyond the aforementioned evidence, the association between mindfulness and IPV may also be understood through a interpersonal neurobiological framework. The following section outlines how neurobiological research and a theory of interpersonal neurobiology might help in understanding the association between mindfulness and IPV.

## **Theoretical Framework**

In the following section, I outline a theoretical framework in which the study variables and their relationship can be understood. The theory of interpersonal neurobiology blends traditional understanding of systems theory with newer understanding of neurobiology. In the following section I first outline the rationale for using this theory, followed by a brief examination of the neurological elements of IPV and mindfulness, and finally an explanation of how interpersonal neurobiology is utilized to understand the present study.

The previously presented literature suggests that mindfulness may have some role in helping to prevent the perpetration of IPV. However, how exactly mindfulness influences IPV is



still not fully known. Some have suggested that trait mindfulness and mindful practices are associated with greater emotional regulation, which in turn is associated with less reactivity in a relationship, and thus less anger and hostility (e.g., Wachs and Cordova, 2007). If an individual's level of mindfulness can indeed decrease conflict and emotional reactivity in his or her relationship, it stands to reason that higher levels of mindfulness can also protect against incidents of IPV.

Recent gains in neurobiology have allowed researchers to understand the more complex functions of the brain. Literature has emerged that has begun to explain how different human behavior is impacted by the brain's structure, actual brain size and shape, and function, the electrochemical mechanism that impact our behavior, mood, emotions, etc. More specifically, scholars have suggested how the brain may play an important role in the perpetration of IPV (see Siever, 2008). Additionally, research has also considered the brain structures and functions involved in mindfulness. Based on these two bodies of literature, I suggest that mindfulness is associated with IPV perpetration based on the influence of similar brain structure and function (e.g., Raz & Buhl, 2006).

Beyond the direct influence of mindfulness over brain processes associated with IPV, I suggest that mindfulness and IPV perpetration might be mediated by other relationship processes. Several scholars have begun to suggest ways in which our brains are impacted in interpersonal relationships. This theory of interpersonal neurobiology outlines how brain structure and function plays an important role in our relationships, and also how our relationships have the ability to change our brain. Based on this theory, I suggest that trait mindfulness influences the brain in a way that directly impacts brain structure and function related to IPV perpetration. Additionally, this theory outlines how brain structures and functions associated

with mindfulness also have an impact on several relationship processes (relationship satisfaction, relationship efficacy, negative interactions, and conflict resolution) which in turn impact IPV perpetration.

In the following section I briefly outline the neural processes involved in both IPV and mindfulness and how the two might be connected. I also further explain interpersonal neurobiology and how mindfulness might serve as a buffer between relational processes and IPV.

### ***Neurobiology of Violence***

Breakthroughs in medical technology have begun to allow researchers to peek into the complex workings of the brain; the unexplored “frontier” of medical science. Instruments such as functional magnetic resonance imaging (fMRI) and positron emission tomography (PET) scan have allowed neuroscientists new insight into the functioning of the brain. Researchers have begun to consider how specific aspects of brain structure and function are related to specific behaviors. Furthermore, collection and analysis of this data have led to the creation of theoretical assumptions of how brain structure and function might interact in interpersonal dynamics (Cozolino, 2010).

There is some evidence to suggest that the brain may influence violent and aggressive behavior (see Volavka, 2002). In his review of the available neurobiological research, Siever (2008) suggests that violent behavior might be a result of a “top-down” failure, or the inability of the executive functions of the brain to regulate the emotional functions. Specifically he states, “excessive reactivity in the amygdala, coupled with inadequate prefrontal regulation, serves to increase the likelihood of aggressive behavior” (Siever, 2008, p. 437).

Furthermore, some evidence also suggests that neurobiological factors may be associated with the perpetration of IPV. Dutton (2002) reviewed the available literature and suggested certain brain structures and functions related to intimate partner homicide. He suggests that abandonment from a partner may trigger particular brain functions that are associated with extreme violent behavior. He notes that orbitofrontal cortex development as well as low levels of serotonin (5-HT) and high levels of norepinephrine (NE) are involved in partner violence, particularly homicide (Dutton, 2002). In his concluding remarks, Dutton (2002) points out that studying the neurobiological factors associated with IPV does not denigrate the vast amount of previous literature on other factors leading to IPV. He recognizes that contextual factors, such as relationship processes, are still important considerations:

“Bandura (1979) pointed out that Delgado’s famous work on hypothalamic stimulation produced different responses in animals of different social stature. This review should not be read as an attempt to remove the contextual features from intimate rage but merely to suggest that those very features may trigger intense neurobiological reactions in men with certain brain features.” (Dutton, 2002, p. 418)

### ***Neurobiology of Mindfulness***

Similar research has looked into the neurobiological factors involved in mindfulness. One notable study scanned the brains of sixteen participants in a mindfulness group and compared changes in their brain structure with those in a control group. Results indicated those that partook in the mindfulness practice had an increase in gray matter in “brain regions involved in learning and memory processes, emotion regulation, self-referential processing, and perspective taking” (Holzel, Carmody, Vangel, Congleton, Yerramsetti, Gard, & Lazar, 2011). Similarly, another study found expert mindfulness meditators had an increased middle prefrontal

thickness and enlargement of the right insula, an area responsible for translating signals from the body to the brain (Lazar et al., 2005).

Beyond an increase in brain structure, some evidence suggests that mindfulness may be associated with similar mechanisms involved in violent behavior. Mindfulness practice has been associated with executive attention, a process related to regulation of thoughts emotions and habitual action (Raz & Buhl, 2006). The anterior cingulate cortex (ACC) is a critical region responsible for executive attention. Scholars have found that diminished or damaged ACC has been shown to increase aggressive behavior and blunt emotions (Devinsky, Morrell, & Vogt, 1995). Mindfulness meditation has also been shown to activate the middle prefrontal region more than other forms of meditation (Cahn & Polich, 2006). As stated above, middle prefrontal activation might play a part in regulating processes that lead to violence (Siever, 2008). Others have also indicated that mindfulness training enhanced executive functions that help inhibit impulsivity and gain greater cognitive flexibility (Zyłowska et al., 2008) Furthermore, Siegel (2007) suggests mindfulness practice helps to integrate different levels of the brain, specifically the prefrontal cortex, subcortical limbic, and brainstem areas. This brain integration is seen as a central role in what many cognitive scientists understand as self-regulation (Siegel, 2007). As noted above, brain structure and function associated with emotional regulation play an important role in violence perpetration.

Davidson (2004) found that meditators had a left anterior shift in function during emotion-provoking stimuli tests, and suggested that mindfulness practice enable individuals to regulate through approach rather than withdraw. He felt these findings confirmed his suggestion in previous research that:

“...perhaps an important part of psychotherapy with perpetrators may include teaching certain clients mindfulness techniques in the service of developing more effective affect regulation strategies. If emotion begins in the body, then training the mind (the prefrontal cortex in particular) to be more mindful of the body and its changes will help a person be more aware of their emotions (Davidson, 2000, p. 1).

### ***Interpersonal Neurobiology – The Influence of Mindfulness on IPV***

As discussed previously, recent literature has begun to suggest that the phenomena of IPV might not just be an individual problem, but in fact there might be relationship factors that contribute to the propagation of violence in couples. Traditional neurobiological understanding might not fit this notion of violence as product of a maladaptive system. Newer theories of neurobiology, however, suggest that our brains are more “social” than previously thought (Cozelino, 2010).

Interpersonal neurobiology is concerned with how our brain structure and function is influenced by our interpersonal interactions and vice versa. Up until recently, neuroscience saw brain development as a fixed pattern that eventually stopped in young adulthood. Recent evidence, however, suggests that the brain is in a constant state of fluctuation and change, throughout the course of life. Furthermore, this neural “plasticity” is thought to be heavily influenced by our interpersonal interactions. Neuroscience has to some degree always inferred that our relationships are influenced by our brain’s development, but evidence is now indicating that our relationships also help to determine the course of how our brains develop (Cozelino, 2010). Thus, adding to the importance of investigating these variables among young adults, who’s brains are at a critical stage of development.

As discussed above, brain structure and function influences IPV perpetration; however, different interpersonal interactions (e.g., relationship processes such as couple conflict, negative interaction, etc.) might also influence how the brain develops – which then in turn may predict further incidents of IPV. The reciprocal relationship between interpersonal interaction and brain development complicates the plausible cause and effect relationship between the brain and IPV. Regardless, this theory does highlight the importance of considering relational processes in addition to brain structures in function when considering the mechanisms behind IPV.

Mindfulness represents a neural process that may enhance executive attention and decrease emotional reactivity. In his book, Siegel (2007) outlines also how these neural processes might influence interpersonal processes. Siegel (2007) notes that mindfulness represents a form of “intrapersonal attunement,” and is a process that mirrors attunement for others – “a process that is at the heart of caring for others” (p. 16). He later explains that mindfulness involves a neural process that is also used in the awareness of others. He states, “As we become aware of our own intentions and attentional focus, we may be utilizing the very circuits of the brain that first created maps of the intention and attention of others” (Siegel, 2007, pg. 26). Mindfulness as a relationship with oneself mirrors the relationship we have with others.

Others have noted that mindfulness training employs executive function over attention via a set of neural circuits that connect cortex with limbic regions which are responsible for social engagement (Rueda, Posner, Rothbart, 2005). Based on these findings, Siegel suggests “mindfulness involves a form of internal attunement that may harness the social circuits of mirroring and empathy to create a state of neural integration and flexible self-regulation (2007, pg. 132).

Based on this understanding of mindfulness as a neural process that influences interpersonal relationships via increased empathy and attunement and decreased emotional reactivity, I suggest that the influence of mindfulness on these specific relational processes will in turn impact IPV perpetration. Specifically, the influence of mindfulness on IPV perpetration is proposed to be mediated by relationship satisfaction, conflict management, negative interactions, and relationship efficacy.

### **Relationship Processes as Mediators**

Despite the magnitude of factors associated with IPV, some have begun to question whether or not all of these factors indeed have a direct causal role on IPV perpetration. One of the subsequent effects of developing different typologies of IPV has been the investigation of what relational or interactional patterns may influence IPV perpetration. If some individuals engage in violent behavior toward their partner outside the motivation of fear, control, or coercion, then other factors may be at play, which might include other individual or relational factors. Significant associations between different relationship factors, including relationship satisfaction, conflict management, negative interaction, and relationship efficacy and IPV have been found and will be included as potential mediators between trait mindfulness and IPV in this study.

**Relationship satisfaction.** Several studies have shown that relationship satisfaction is related to both trait mindfulness and IPV. One of the most often considered relational factor associated with IPV is relationship/marital satisfaction. Stith and colleagues (2008) conducted a meta-analysis of 32 studies considering the relationship between marital satisfaction and IPV. Their results indicated a significant negative relationship with a moderate effect size ( $r = -0.27$ ) between marital satisfaction and IPV. One issue with considering marital satisfaction as a

predictor of IPV is the inherent reciprocal relationship between the variables. Do couples engage in violence because they are dissatisfied with the relationship or are couples dissatisfied with the relationship because of violent behavior? Despite the above mentioned findings, one study found no significant association between IPV and relationship satisfaction across the first 4 years of marriage for newlywed couples (Hellmuth & McNulty, 2008). The authors suggest that this finding is due to their within-subjects analyses design compared with the between subject design of most other studies considering this association. They suggest that, although other studies have found comparing couple's global levels of satisfaction is associated with IPV, couples are not more likely to be aggressive during less satisfying moments in the relationship. Several researchers have suggested that in order to better understand the relationship between satisfaction and IPV, other relationship variables should also be considered (Rauer et al., 2008). For example, Shortt, Capaldi, Kim, and Laurent (2010) considered the relationship between IPV and satisfaction and suggest "the salience of IPV may have been greater in couples whose relationship satisfaction was not already impaired by high levels of contempt, belligerence, and defensiveness" (p. 146). Based on this finding, the present study also includes several variables related to relationship conflict in understanding the association between trait mindfulness and IPV.

Studies have found that trait mindfulness is also associated with relationship satisfaction. Jones, Welter, Thorburn, & Oliver (2011) surveyed 104 married couples regarding their levels of mindfulness, marital satisfaction, and attachment style. Results indicated a positive association between mindfulness and relationship satisfaction. Furthermore, they indicated this relationship might be partially mediated by attachment anxiety. Based on these findings they suggest, "mindful attunement to one's partner may promote the activation and growth of neural circuitry



associated with safety, security, and positive affect within the romantic relationship” (Jones et al., 2011, p. 4). A study by Burpee and Langer (2005) surveyed 95 participants on their level of mindfulness, relationship satisfaction, and other demographic variables. Results of the analysis found a positive relationship between trait mindfulness and marital satisfaction, while also controlling for spousal similarity and other demographic variables. These authors noted a positive association between mindfulness and beliefs about how similar one’s partner is to the participant. In addition to these findings, they suggest that an individual’s degree of mindfulness may also increase “psychological flexibility” which aids in buffering couple conflict.

**Negative interaction.** Beyond satisfaction, one of the most robust findings across research is that a high level of negative affect is predictive of IPV, even after controlling for levels of stress and relationship satisfaction (Gordis, Margolin, & Vickerman, 2005; Jacobson et al., 1994). A multitude of studies have indicated that higher state and trait levels of anger in an individual are associated with IPV perpetration (e.g. Dutton, 1995). A meta-analysis from Schumacher, Feld-bau-Kohn, Slep, and Heyman (2000) confirmed that higher levels of anger do predict IPV, and that effect sizes range from small ( $r = 0.18$ ) to large ( $r = 0.52$ ). However, evidence suggests that beyond general anger, hostility directly related to one’s partner and the relationship is a better predictor of IPV. Compared with individuals in non-violent relationships, individuals who perpetrate relationship violence express more anger and hostility toward their partner (Schweinle & Ickes, 2007). Affect regulation is one of the most frequently targeted mechanisms for change in the treatment of IPV perpetration (Dutton, 1998; Ganley, 1981; Sonkin & Durphy, 1997).

Trait mindfulness is also associated with hostility in couples. Barnes and colleagues (2007) collected both survey and observational data from couples using mindfulness meditation

before a conversation about conflict in their relationship. Results indicated that higher mindfulness predicted a less severe emotional stress response during emotional conflict. Their results also suggest that after a conflict, those with higher levels of trait mindfulness held less hostility toward their partner and were less anxious. Results from the experimental study also indicated that mindfulness levels predicted changes in levels of commitment and love (Barnes et al., 2007). Another study by Saavedra, Chapman, & Rogge (2010) also considered both hostile conflict and mindfulness. The aim of this study was to investigate if hostility and/or mindfulness moderated the relationship between attachment and relationship quality. Using data from 1,702 online survey respondents, results indicated that hostility and mindfulness moderated the relationship between attachment anxiety and relationship satisfaction. Although this study was not directly concerned with the association between hostility and mindfulness, it did indicate that both variables share a similar impact on relationship quality. Beyond conflict, mindfulness is also associated with less negative emotion and better emotional regulation. Thus, in this study a measure of negative couple interaction will be examined as a potential mediator of the relationship between trait mindfulness and IPV.

**Conflict resolution.** Several studies have also suggested that conflict behavior and lack of conflict management skills in a relationship are also associated with IPV perpetration (e.g., Berns, Jacobson, & Gottman, 1999). Whereas the aforementioned variable of “negative interaction” measures the degree of hostile conflict in the relationship, “conflict resolution” measures the level of resolution skills employed during couple conflict. Utilizing longitudinal data, a recent study of newly married couples suggests that partners who were most conflictual early in marriage had IPV trajectories with the most fluctuations over 4 years, whereas the IPV trajectories remained stable for couples that were initially not or moderately conflictual

(Lawrence & Bradbury, 2007). This data suggests that unresolved conflict early in a relationship can have a long term detrimental effect and may be associated with later incidents of IPV. A study by Marshal, Jones, and Fienberg (2011) tested an actor-partner model that considered as part of the model the direct effects of level of conflict resolution on IPV. Results indicated that levels of conflict resolution were predictive of both actor and partner IPV occurrence (Marshal, Jones, & Fienberg, 2011). Therefore, in this study a measure of relationship conflict is used as a potential mediator of the relationship between trait mindfulness and IPV.

Levels of trait mindfulness have also been associated with conflict resolution. One recent study considered how trait mindfulness relates to emotional reactivity and regulation during couple conflict. Wachs & Cordova (2007) surveyed thirty-three married couples about their levels of mindfulness, marital satisfaction, and different emotional repertoires. Their results indicated that mindfulness was positively predictive of relationship satisfaction. Beyond this, results also indicated that much of how mindfulness impacted satisfaction was through its influence on anger-related skills and emotional reactivity. They state, “more mindful couples apparently exercised better control over aggressive impulses, and indicated a tendency to keep aggressive behaviors—especially hostility—to a minimum (Wachs, & Cordova, p. 476, 2007). Thus, not only is mindfulness related to less hostile feelings, it also may aid in resolving conflict in the relationship. Thus, conflict resolution is also considered a mediator between trait mindfulness and IPV.

**Relationship efficacy.** Beliefs about the relationship may also impact IPV perpetration. Relationship efficacy can be understood as an individual’s belief that he or she can carry out the behavior needed to resolve conflict in intimate relationships (Doherty, 1981). Doherty (1981)

proposed that conflict among couples activates two cognitive processes, attributions and efficacy.

Although no evidence relates mindfulness with relationship efficacy directly, research from a mindfulness-based program suggests that mindfulness skills may influence beliefs about one's relationship and ability to resolve conflict. To date, only one formal intervention has been designed for couples using mindfulness, Mindfulness-Based Relationship Enhancement (MBRE; Carson, Carson, Gil, & Baucom, 2004). MBRE is an adaptation of Mindfulness-Based Stress Reduction, one of the most popular mindfulness-based treatment approaches, and targets overall relationship improvement in non-distressed couples (Kabat-Zinn, 1994). The authors of this program point out that mindfulness skills help an individual "gain insight into patterns in their thoughts, feelings, and interactions with others, and to skillfully choose helpful responses rather than automatically reacting in habitual, overlearned ways" (Carson, Carson, Gil, & Baucom, 2004, p. 472). The program developers suggest that mindfulness skills, when applied to relationship conflict, may buffer the impact of emotional reactivity and foster greater acceptance for one's partner. In turn, higher levels of mindfulness skills can increase the level of confidence one has in resolving conflict, thus building efficacy regarding one's relationship. One randomized waitlist controlled study from this program indicated the program was effective at impacting couples' levels of relationship satisfaction, closeness, acceptance of one another, and relationship distress and was maintained at 3-month follow-up (Carson, Carson, Gil, & Baucom, 2004). Based on these findings, it is suggested that mindfulness impacts an individual's attitudes, beliefs, and confidence about the relationship. In the current study, a measure of relationship efficacy is used to measure participants' attitudes about their relationships and is used as a potential mediator between trait mindfulness and IPV perpetration.

Despite the growing evidence that suggests micro-level relationship variables are associated with increased IPV perpetration, there is still a need to further understand how and why these factors lead to violence in a relationship (Lawrence & Bradbury, 2007). Furthermore, it is also important to understand how modifying these relationship variables might contribute to the reduction of IPV. Unlike other macro-level demographic variables, relationship processes are often modifiable with treatment and intervention; however, less is known about what factors might influence these different relational processes that might in turn reduce relationship violence. Additionally, these factors may also help in understanding how other personal factors, such as trait mindfulness, might influence relationship violence perpetration. Thus, the present study utilizes the above mentioned relationship factors (i.e., relationship satisfaction, conflict resolution, negative interaction, and attitudes about the relationship) as potential mediators between trait mindfulness and IPV.

### **Purpose of the Study**

Research regarding factors that contribute to the perpetration of IPV is growing rapidly. Empirical evidence suggests that risk factors for IPV exist on every ecological level. Recent literature has suggested the important role relationship processes might play in predicting IPV perpetration (e.g. Lawrence, Orengo-Aguayo, Langer, & Block, 2012). Factors such as relationship satisfaction, conflict resolution, and negative interaction have been associated with IPV perpetration. Additionally, newer research regarding neurobiology has suggested that certain brain structures and functions might also be associated with IPV perpetration (Dutton, 2002). Given the association between relationship processes and mindfulness, as well as the neurobiological impact of mindfulness on similar brain structures and functions related to IPV, it

would suggest that levels of mindfulness in of itself is associated with IPV perpetration. Despite this suggestive evidence, direct evidence associating IPV and mindfulness does not yet exist.

The majority of factors investigated in relationship to IPV are static with little opportunity for change (e.g. Grekin, Sher, & Larkins, 2004). The variables presented in this study are modifiable and potential targets for change in treatment. Specifically, research has shown that mindfulness practice has been associated with an increase in trait mindfulness (Brown & Ryan, 2003). My interest in examining the influence of trait mindfulness on IPV and other relationship processes related to IPV perpetration is to build evidential support for the use of mindfulness interventions in the prevention/treatment of relationship violence.

Beyond the direct association between mindfulness and IPV, I am also interested in examining how trait mindfulness might influence other relationship variables associated with IPV. Research has demonstrated a relationship between relationship satisfaction, conflict resolution behavior, negative interaction, and belief in relationship efficacy and IPV perpetration (Gordis, Margolin, & Vickerman, 2005). Similarly, research has shown an association between these processes and mindfulness (Wachs & Cordova, 2007). Thus, I am interested in examining how these relationship variables might mediate the relationship between mindfulness and IPV perpetration.

The research questions guiding this study are as follows: Do certain relationship factors measured at Time 2: relationship satisfaction, conflict resolution, negative interaction, and relationship efficacy, mediate the relationship between trait mindfulness at Time 1 and the occurrence and frequency of IPV at Time 3 while controlling for depressive symptoms, alcohol use, and IPV attitudes at time 1? I hypothesize that the relationship between trait mindfulness at Time 1 and IPV perpetration at Time 3 will be partially mediated by relationship process

variables: relationship satisfaction, conflict resolution, negative interaction, and relationship efficacy at Time 2. Trait mindfulness at Time 1 will be significantly predictive of the relationship process variables at Time 2 as well as IPV frequency and occurrence at Time 3. Furthermore, relationship process variables measured at Time 2 will be predictive of IPV at Time 3. Mediation analysis via bootstrapping will be show a partial mediation of the relationship process variables at Time 2 between trait mindfulness at Time 1 and IPV frequency and occurrence at Time 3.

## **Chapter 3 - Method**

### **Sample and Procedure**

Participants were recruited through an Introduction to Family Relations course in a large public Southeastern U.S. university in the spring of 2011 and offered course credit for completion of the study surveys. Participants completed an online survey which included a variety of measures about the participants individually and relationally. Participants were given one week to finish the survey. Participants' time in completing each survey was recorded and control questions were included within the survey as a way to increase confidence in participants' reports. After completing the survey, participants were given unique ID numbers and identifying information was removed. Prior to analysis, participants were removed if they: missed 3 or more control questions (e.g. "mark yes here"), spent less than 10 minutes on any of the surveys, or didn't attempt all three surveys. Participation in the study was provided as one of several options to receive course credit. Surveys were given to students at three time points: At the beginning of the semester, eight weeks later at the mid-point of the term, and at the end of term (16 weeks from the start). Slight variations were present in each survey; however, all the items used in the present analysis remained constant over the three surveys.

Sample participants included 979 undergraduate students enrolled in these courses. The present study only included participants who indicated they were currently involved in a romantic relationship over the course of the semester ( $N = 275$ ), 28% of the total participants. The majority of the participants were White (72%), although African American (9.5%) and Latino (12.4%) participants were also represented. The majority of our sample was between 18 - 21 years old (89.8%), with mean age of 20 years ( $SD = 2.7$ ). In this sample, 80% was female ( $N = 220$ ) and 20% percent male ( $N = 55$ ). The average length of relationship for our sample was 23 months and ranged from 1 month to over 71 months. The distribution of relationship length was as follows: 1 to 6 months, 13%; 6 months to one year, 18%; 1 to 2 years, 32%; 2 to 3 years, 19%; and over 3 years, 18%.

## Measures

**Mindfulness.** Sample participants completed four items from the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003). The original MAAS included 15- items and is one of the more popular measures of mindfulness. Recently, an item response theory analysis suggested that only 5 of the 15 items included provide the majority of the information regarding the construct, items that were most closely related to attention and awareness (Van Dam, Earleywine, & Borders, 2010). Due to the nature of the survey, the fewest number of items per scale was preferable. Although only 4 of the items identified by the above mentioned study were included, some information about a participant's level of trait mindfulness is obtained through this altered measure. More discussion on the limitations of this measure will be discussed below. On these 4-items, participants indicated their level of mindful awareness on a six point scale, ranging from *almost always* (1) to *almost never* (6) in response to such items as "I find myself doing things without paying attention." Scores on individual items were summed to give a total



mindful score. Thus, higher scores indicate more mindful attention. The alphas on this measure were .91 at Time 1, .92 at Time 2, and .95 at Time 3.

**Intimate partner violence occurrence and frequency.** Perpetration of IPV was measured with the Revised Conflict Tactics Scale (CTS-2; Straus et al. 1996). The CTS-2 has been used extensively to assess IPV. Specifically, items from the physical assault and psychological assault subscales are utilized to assess how frequently these tactics were used in romantic relationships in the preceding 2 months. Thirteen items were used to assess the frequency of IPV toward a partner. Of these items, six measured physical aggression and included behavior such as grabbing, slapping, throwing objects, pushing/shoving, twisting arm/hair, and destroying something belonged to a partner. The other eight items measured psychological aggression and included behavior such as demeaning, shouting or yelling, stomping out of the room, belittling, and other acts toward one's partner. Results from an exploratory factor analysis using maximum likelihood estimation indicated that, although these items are from two subscales of the CTS-2, they were indicative of one factor and accounted for 38% of the variance. Participants were asked to indicate how often they have perpetrated the above mentioned behavior: from *once in the past eight weeks* to *more than 20 times in the past eight weeks*. In order to convert these scores from ordinal to count data, the frequency indicated by the participants was used. If the item they indicated was a range (i.e., *3 to 5 times in the past eight weeks*), the middle integer was used as the count for that individual. All items were summed to create a total frequency of IPV count over the past eight weeks. The alpha was .82 at Time 1, .78 at Time 2, and .81 at Time 3.

**Alcohol use.** Two items were used to assess the level of alcohol use by participants, namely: "Within the last 30 days, on how many days did you have a drink containing alcohol?"

and then asked, “How many drinks containing alcohol did you have on a typical day when you were drinking?” Responses to both were multiplied to create a score that reflects quantity and frequency of alcohol use. This index is both efficient and accurate, and is widely accepted by many substance abuse researchers (see Dawson & Room, 2000).

**Depression.** Participant depressive symptoms were measured using ten items from the Center for Epidemiologic Studies Depression Scale (CES-D). Participants were asked to rate how frequently they experienced different depressive symptoms (i.e. “I had trouble keeping my mind on what I was doing.”) on a ranging from *Rarely or none of the time (less than 1 day) (1)* to *Most or all of the time (5-7 days) (4)*. Individual items scores were summed so that higher scores indicated experiencing more frequent depressive symptoms. The alpha for these items was .77 at Time 1.

**IPV attitude scale.** Attitudes regarding IPV were assessed using 17-items from the Intimate Partner Violence Attitudes Scale—Revised (IPVAS–R; Fincham, Cui, Braithwaite, & Pasley, 2008). The five point likert scale asks participants to rate their agreement from *strongly disagree* to *strongly agree* on items measuring disapproval of violence, control, verbal abuse against a romantic partner (e.g., “It would never be appropriate to hit or try to hit one’s partner with an object”). Items were coded so that larger values indicated greater approval of intimate partner violence and summed to create one total score. The alpha was .72 at Time 1.

**Conflict resolution.** These items were derived from The Resolution subscale of the Children’s Perception of Interparental Conflict Scale (Grych, Seid, & Fincham, 1992). The items used for this study were modified to focus on partner conflict. Items required participants to indicate *true (1)*, *sort of true (2)*, or *false (3)* to statements relating to certain conflict behaviors pertaining to the relationship. Items included: “When we argue, we usually work things out,”

“Even after we stop arguing we stay angry at each other,” “When we disagree about something, we usually come up with a solution,” and “When we argue, we usually make up right away.”

Items were coded such that higher scores indicate higher levels of conflict resolution and summed to create one final score. The alpha was .87 in our sample at Time 2.

**Negative interaction scale.** Four items from the Communication Danger Signs Scale (Stanley & Markman, 1997) were used to measure negative interaction. These items asked participants to note how frequently “arguments escalate into ugly fights with accusations, criticisms, name calling, or bringing up past hurts,” how often their partner “criticizes or belittles [their] opinion, feelings, or desires.” The items also asked participants how often they view their partner’s “words or actions more negatively than [they] meant them to be,” and how often “one [partner] withdraws; . . .that is, does not want to talk about it anymore or leaves the scene.” Item responses ranged from *never or almost never (1) to frequently (3)*, indicating that higher scores mean more use of negative interaction. Items were summed to create final score. The alpha was .73 at Time 2.

**Relationship satisfaction.** Relationship satisfaction was measured with three items taken from the Couple Satisfaction Index (CSI, Funk & Rogge, 2007): “In general, how satisfied are you with your relationship?”, “I have a warm and comfortable relationship with my partner”, and “How rewarding is your relationship with your partner?” Responses for each item ranged from *not at all (1) to completely (6)*; indicating that higher scores reflect high levels of satisfaction. Items were summed to create final score. The alpha for this measure with our sample was .92 at Time 2.

**Relationship efficacy.** Participants completed six items on relationship efficacy, which measures the extent to which an individual believes he or she has the ability to effectively

address conflict in the relationship (Fincham, Harold, & Gano-Phillips, 2000). Whereas the conflict resolution variable focuses on behaviors related to conflict resolution, relationship efficacy is focused on beliefs and attitudes regarding conflict in the relationship. Items were scored from *strongly disagree* (1) to *strongly agree* (7), meaning higher scores indicate a higher degree of perceived relationship efficacy. Items were summed to create final score. The alpha coefficient for our sample with this measure was .90 at Time 2.

### **Plan of Analysis**

The data was analyzed using path modeling with Mplus 6.1 software (Muthen & Muthen, 1998). The nature of the survey was one that produced little missing data (less than 3%), however, missing data was handled using full information maximum likelihood in Mplus. Bivariate correlations were analyzed to examine the individual associations across all variables. Each of the proposed models was tested for goodness of fit, however, traditional fit indices (e.g. RMSEA) are not provided with count models. Instead, our analysis compared Akaike Information Criterion (AIC) fit indices for several different count models including: Poisson, Negative Binomial, Zero-Inflated Poisson (ZIP), Zero-Inflated Negative Binomial (ZINB), and Zero-Truncated Hurdle models (Coxe, West, & Aiken, 2009). Although the Hurdle model is suspected to be the best fit for the data, this analysis indicated whether another count model may be more appropriate.

Historically, research that uses non-clinical samples to examine IPV perpetration have positively skewed distributions. Thus, I did not expect for IPV frequency to be normally distributed. However, normality of variables is an underlying assumption of maximum likelihood estimation used in path analysis (Green, 1998). Many studies have overcome this skewness by using one of several transformative techniques (e.g., log-linear transformation),

however, when the modal response is zero, these transformation are usually not an appropriate solution. One solution would be to dichotomize the variable, examining individuals who had perpetrated violence at least once versus not at all. This however might leave out important information about the frequency of IPV (Atkins & Gallop, 2007). Another solution is to utilize a count response model to capture IPV perpetration (Hilbe, 2007). Although several count response models exist, I suspected that a hurdle model would be most appropriate. Hurdle models combine a binary (e.g., logit) model with a zero-truncated count (e.g., Poisson or Negative-Binomial) model. The benefit of a hurdle model is that it will account for both the frequency of IPV perpetration as well as predicting whether or not IPV occurred (Atkins & Gallop, 2007).

Odds ratios (OR) coefficients were utilized to examine the predictability of variables on occurrence of IPV perpetration. IPV frequency was estimated through a truncated count regression, which only considers nonzero responses, which would represent variability in IPV frequency only in those who perpetrated IPV. Incidents rate ratios (IRR) are utilized to estimate the predictability of model variables on frequency of IPV perpetration.

The research question guiding the study is: Do certain relationship factors measured at Time 2: relationship satisfaction, conflict resolution, negative interaction, and relationship efficacy, mediate the relationship between trait mindfulness at Time 1 and the occurrence and frequency of IPV at Time 3 while controlling for depressive symptoms, alcohol use, and IPV attitudes at Time 1?

To answer this question a path model was tested for the impact of mindfulness on relationship variables and IPV occurrence and frequency (see Figure 1). The model also considered the direct influence of the relationship process variables on IPV occurrence and

frequency as well as the predictability of the control variables. Prior to testing the model, AIC among several count models was considered in order to determine which model is the best fit for the data (Coxe, West, & Aiken, 2009). In this model, trait mindfulness measured at Time 1 is utilized to predict relationship satisfaction, conflict resolution, negative interaction, and relationship efficacy at Time 2 as well as IPV frequency and occurrence at Time 3. Additionally, relationship satisfaction, conflict resolution, negative interaction, and relationship efficacy at Time 2 are predictive of IPV frequency and occurrence at Time 3. Trait mindfulness and the control variables (Depression, Alcohol Use, and IPV Attitudes) are measured at Time 1.

In order to test for mediation, the analysis followed the process outlined by Preacher & Hayes (2008). The advantage of this method is it allows for the consideration of multiple mediators, as our model outlines, as well as a bootstrapping method of sample distribution. Results from the bootstrapping will present 95% confidence intervals which can be utilized to determine if indirect paths are present.

## **Chapter 4 - Results**

The research question guiding the study is: Do certain relationship factors measured at Time 2 (i.e., relationship satisfaction, conflict resolution, negative interaction, and relationship efficacy), mediate the relationship between trait mindfulness at Time 1 and the occurrence and frequency of IPV at Time 3, while controlling for depressive symptoms, alcohol use, and IPV attitudes at Time 1?

Table 1 provides descriptive statistics (means, standard deviations, alphas, and ranges) for all the variables used in the analysis. The means of trait mindfulness were compared over the three time points to test for any significant changes in participants' reported levels of mindfulness. Results from a repeated measures ANOVA indicated a near significant difference

among the means of trait mindfulness over the three time points,  $F_{(2, 490)} = 2.85, p = 0.059$ .

Means indicated the highest level of trait mindfulness at Time 1 and lowest level at Time 2 with Time 3 levels falling in between. Of the study participants, 61% reported at least 1 incident of IPV (physical or psychological) at Time 3 ( $N = 95$ ) with frequency ranging from 1 single incident with one behavior to up to 80 reported incidents over multiple behaviors of IPV. Although the modal response in our sample was 0 incidents, the mean frequency of incidents of IPV of our sample was between five and seven incidents of IPV among the three time points.

Prior to examining model results, correlations between trait mindfulness, IPV frequency, and other study variable were conducted and outlined in Table 2. Results indicated a significant negative associations between trait mindfulness at Time 1 and IPV at Time 3 ( $r = -.13, p < .05$ ). Furthermore, both IPV frequency and trait mindfulness were significantly associated with the other study variables, with the exception of alcohol use, which was only negatively associated with Time 1 trait mindfulness ( $r = -.25, p < .01$ ), but not Time 3 IPV frequency ( $r = -.13, p = ns$ ). These results indicated an initial relationship between trait mindfulness and IPV.

A preliminary step to our analysis was to consider which count model would be most appropriate for our data (Atkins & Gallop, 2008). Coxe, West, and Aiken (2009) suggest a comparison of Akaike Information Criterion (AIC) fit indices for comparing different count models. This involves running the purposed path model structure with each count model and comparing each AIC. The smallest AIC indicates the model that fits the data best (Coxe, West, & Aiken, 2009). The count models tested include: Poisson, negative binomial, zero-inflated poisson (ZIP), zero-inflated negative binomial (ZINB), and zero-truncated hurdle models. Utilizing the proposed path model, comparison of the AIC indices of the count models indicated that the zero-truncated hurdle model was the best fit (AIC = 6086.4) compared to the poisson

(AIC = 7217.6), negative binomial (AIC = 6165.4), zero-inflated poisson (AIC = 6848.2), or zero-inflated negative binomial (AIC = 6153); thus, giving further support in utilizing the zero-truncated hurdle model. As suspected, the hurdle model was the best fit model for our data. As previously mentioned, the hurdle model first tests the model for the occurrence of IPV using logistic regression, and then tests the model for the frequency of the outcome in those participants that indicated any IPV using zero-truncated negative binomial regression. Thus, model results provided two sets of outcomes, one predicting the likelihood of someone using IPV at all, and the other predicting the frequency of IPV.

Results of the model are displayed in Figure 2. The figure includes odds ratios (OR) for all the variables predicting IPV occurrence, and incident rate ratios (IRR) for all variables predicting IPV frequency. The odds ratios describe the change in odds of an individual perpetrating IPV given a one unit increase in that particular variable. Incident rate ratios describe the change in the rate of IPV incidents given a one unit change in the predicting variable. Both ORs and IRRs were derived from exponentiated coefficients. The odds ratios were inverted as the hurdle model predicts the likelihood of achieving zero (no incidents of IPV) and our analysis is interested in predicting IPV. Regular regression coefficients were listed for the paths between trait mindfulness and the relationship process variables. All regression coefficients presented are standardized.

Model results indicated that trait mindfulness at Time 1 was not a significant predictor of IPV frequency at Time 3 ( $IRR = .99, p = ns$ ) or occurrence at Time 3 ( $OR = .96, p = ns$ ). Trait mindfulness at Time 1, however, was a significant predictor of all four relationship process variables at Time 2: relationship satisfaction ( $\beta = .15, p < .05$ ), relationship efficacy ( $\beta = .19, p < .05$ ), conflict resolution ( $\beta = .13, p < .05$ ), and negative interaction ( $\beta = -.15, p < .05$ ). This



indicates that the more mindful an individual is the more likely they will be more satisfied with their relationship, utilize more conflict resolution, believe more in the efficacy of their relationship, and engage in fewer negative interactions with their partner.

Of the eight included predictor variables in our model, only conflict resolution was a significant predictor of IPV frequency ( $IRR = .62, p < .05$ ). Therefore, while holding the other predicting variables constant, a one unit increase in conflict resolution changed the rate of IPV incidents by a factor of .62, or in other words the expected count of IPV incidents dropped by 38%. Likewise, of the eight included predictors, only three were significant predictors of IPV occurrence: conflict resolution at Time 2 ( $OR = .80, p < .05$ ), negative interaction at Time 2 ( $OR = 1.53, p < .05$ ), and alcohol use at Time 1 ( $OR = 1.12, p < .05$ ). This indicates that while holding other variables constant, a one unit increase in conflict resolution at Time 2 was associated with the odds of perpetrating IPV at Time 3 by a factor of .80, which can also be understood to mean an individual is 20% less likely to perpetrate IPV. Likewise, a one unit increase in negative interaction at Time 2 changes the odds of perpetrating IPV at Time 3 by a factor of 1.53, meaning the individual is 53% more likely to perpetrate IPV. A one unit increase in alcohol use at Time 1 indicates an individual is 12% more likely to perpetrate IPV at Time 3.

Given results from the correlation table that suggested an association between trait mindfulness and IPV, as well as the significant paths between mindfulness, conflict resolution, negative interaction, and IPV frequency and occurrence in this model; the study also sought to determine if the relationship processes at Time 2 mediated the relationship between trait mindfulness at Time 1 and IPV frequency and occurrence at Time 3. In order to test for mediation, the analysis follows the process outlines by Preacher & Hayes (2008), utilizing a specific macro designed for SPSS. This program allows for the consideration of multiple

mediators as our model outlines as well as utilizes bootstrapping method of sample distribution. Also, this method is preferred in using the hurdle model, as we are testing for mediation with a count and binary outcome variable.

Results of the mediation analysis are presented in the first part of Table 3. Assumptions of normality of sampling distribution of total and specific indirect effects is questionable with sample sizes under 500, thus bootstrapping method of resampling was employed (bootstrap = 1,000). In order to determine mediation, the analysis generated a 95% confidence interval. Confidence intervals that contain a value of zero indicate an unreliable estimate. Results of the 95% confidence intervals (CI) are provided in Table 3.

An examination of the 95% CI reveals the neither the total nor specific indirect effects met criteria to qualify as mediation, for both the model of IPV occurrence and frequency. Each of the CI's listed in the first column of Table 3 contains a value of zero. Therefore, the prediction of trait mindfulness at Time 1 on IPV occurrence and frequency at Time 3 was not mediated by any of the relationship process variables at Time 2.

## **Post-hoc**

In light of these results, post-hoc consideration was given to the impact of the longitudinal nature of the data. Although inclusion of longitudinal data into the model adds inherent strength to the analysis, I wondered would these results stay consistent if all the variables were measured at the same time point. Thus in order to investigate this potential influence, the model was run with all of the variables measured at Time 1.

Results of this model are displayed in Figure 3. The path model structure is kept the same; however, all variables used were measured at the concurrent time point. Similar to the above mentioned findings, trait mindfulness at Time 1 was not significantly predictive of IPV

occurrence and frequency at Time 1. Unlike the previous model, trait mindfulness at Time 1 significantly predicted three of the four relationship process variables at Time 1: relationship satisfaction ( $\beta = .14, p < .05$ ), relationship efficacy ( $\beta = .27, p < .05$ ), and conflict resolution ( $\beta = .27, p < .05$ ). Trait mindfulness at Time 1 was not predictive of negative interaction at Time 1 ( $\beta = -.10, p = .09$ ).

Unlike the first examined model, more of the included variables in this model were significant predictors of both IPV frequency and occurrence. Relationship satisfaction (IRR = .83,  $p < .05$ ), conflict resolution (IRR = .82,  $p < .05$ ), negative interaction (IRR = 2.17,  $p < .01$ ), and IPV attitudes (IRR = 1.32,  $p < .05$ ) were significant predictors of IPV frequency at Time 1. Furthermore, conflict resolution (OR = .94,  $p < .05$ ), negative interaction (OR = 1.30,  $p < .05$ ), depressive symptoms (OR = 1.05,  $p < .05$ ), and IPV attitudes (OR = 1.50,  $p < .05$ ) were significant predictors of IPV occurrence.

As with the above model, test for mediation followed the process outlines by Preacher & Hayes (2008) using the same program in SPSS. Results of the mediational analysis for this model are displayed in the second portion of Table 3. As mentioned above, the analysis generated a 95% confidence interval for the total indirect effect as well as for each specific mediated path. Confidence interval ranges that contain a value of zero indicate an unreliable estimate of indirect effects and thus does not represent mediation. The second column in Table 3 outlines the CI's for the model measuring all variables at Time 1.

Analysis of these CI's reveals that relationship between trait mindfulness at Time 1 and IPV frequency at Time 1 was mediated by relationship satisfaction at Time 1 (95% CI = -.181, -.016). Thus, because trait mindfulness at Time 1 has no direct effect on IPV frequency, relationship satisfaction at Time 1 fully mediates the effects of trait mindfulness on IPV

frequency. Similarly, the relationship between trait mindfulness at Time1 and IPV occurrence at Time 1 was mediated by conflict resolution at Time 1 (95%CI = -.065, -.004). Conflict resolution also fully mediates the relationship between trait mindfulness at Time 1 and IPV occurrence at Time 1.

## **Chapter 5 - Discussion**

Despite the extensive literature reviewing factors predicting intimate partner violence, understanding risk factors for perpetration of IPV is increasingly complex. Recent literature has found that it is the important to include personal and relational factors when understanding risk factors for IPV (Lawrence & Bradbury, 2007). The present study sought to investigate the relationship between an individual's trait mindfulness and incidents of intimate partner violence, as well as to test a multivariate model of risk factors for IPV. Although little to no previous research has directly associated trait mindfulness with IPV, several studies have shown that both processes are associated with similar variables (e.g. alcohol use, depression, relationship satisfaction, etc.). Furthermore, literature regarding the neurobiological mechanisms of mindfulness and IPV also indicate similar processes that might suggest an association (Dutton, 2002).

To examine the relationship between trait mindfulness and IPV, a mediational model was tested to determine if certain relationship processes at Time 2 (relationship satisfaction, relationship efficacy, negative interaction, and conflict resolution) mediate the relationship between trait mindfulness at Time 1 and IPV frequency and occurrence at Time 3. Additionally, three known predictors of IPV were added to the model as control variables: depressive symptoms, alcohol use, and IPV attitudes. The model was tested using longitudinal data collected from 275 undergraduate participants at three time points throughout the course of a 4

month academic semester. Post-hoc tests of the same model with all variables measured at Time 1 was also tested.

Correlations indicated that trait mindfulness at Time 1 is negatively associated with future IPV frequency, consistent with previous research findings (Gallagher, Hudepohl, & Parrott, 2010). This means lower levels of trait mindfulness are significantly associated with more future incidents of IPV. Although, these results are similar to the association between trait mindfulness and sexual aggression found by Gallagher, Hudepohl, & Parrott (2010), this finding directly links trait mindfulness with IPV, as defined as both physical and psychological aggression toward one's partner. Given these results, more information regarding the nature of the relationship between trait mindfulness and IPV is desired.

Results from the first model indicated that trait mindfulness at Time 1 does not directly contribute to the prediction of IPV occurrence and frequency at Time 3 when accounting for depressive symptoms, alcohol use, and attitude regarding IPV at Time 1 and relationship processes at Time 2. These findings mirror the literature that states depressive symptoms, alcohol use, and IPV attitudes are all robust predictors of IPV (Atkins, Dimidjian, Bedics, & Christensen, 2009; Riggs and O'Leary 1996; White, & Chen, 2002). Based on these results, in the presence of stronger predictors, the predictive value of trait mindfulness on IPV frequency and occurrence is diminished. Model results did, however, indicate trait mindfulness was significantly correlated with all of the control variables at time 1.

Although this model indicated no direct effect of trait mindfulness at Time 1 on IPV at Time 3, it did indicate trait mindfulness at Time 1 had a significant direct effect on the relationship process variables at Time 2. These results are consistent with the previous mentioned findings that found an association between trait mindfulness and relationship

satisfaction, conflict, hostility, and relationship confidence (Jones, et al., 2011; Saavedra, Chapman, & Rogge, 2010; Wachs & Cordova, 2007). For example, high levels of trait mindfulness at Time 1 predicted lower levels of negative interaction at Time 2. The present findings further confirm the effect of trait mindfulness on future important relationship processes. Furthermore, by utilizing longitudinal data, one can better ascertain the directionality between the relationship between mindfulness and these variables. So although trait mindfulness might not directly impact IPV, these findings do suggest high levels of trait mindfulness do play a part in overall relationship health.

Based on the direct effects of trait mindfulness on these relationship process variables, there seemed to be evidence that indicated an indirect effect of trait mindfulness on IPV. Mediation analysis was conducted using bootstrapping (Preacher & Hayes, 2008). Contrary to the originally proposed hypothesis, results of the mediational analysis indicated that the relationship between trait mindfulness at Time 1 and IPV frequency occurrence at Time 3 was not mediated by the relationship process variables at Time 2.

In light of these results, questions arose about the predictability of trait mindfulness on IPV over time. The original hypothesis was that trait mindfulness would be predictive of IPV frequency and occurrence over time, however, results indicated otherwise. Considering these findings, I was interested if the diminished predictive value of trait mindfulness on IPV frequency and occurrence was due to the longitudinal nature of the data. Thus, I decided to test the same purposed model but with all of the variables measured at Time 1.

Results of this model indicated more significant predictors of IPV frequency and occurrence, however, trait mindfulness was still not a significant predictor. Despite this finding, the relationship between trait mindfulness at Time 1 and IPV frequency and occurrence was

mediated by relationship satisfaction and conflict resolution. This means that trait mindfulness at Time 1 does indirectly impact IPV frequency and occurrence at the same time point. Trait mindfulness indirectly influences the frequency of IPV incidents via the effect trait mindfulness has on one's level of relationship satisfaction. Similarly, trait mindfulness indirectly predicts whether or not IPV occurred via the effect of trait mindfulness on an individual's use of conflict resolution skills. This raises questions about how trait mindfulness would indirectly predict IPV at the concurrent time point but not IPV at future time points. Understanding the variability of these findings might be related to the variability between *trait* and *state* mindfulness.

### **State versus Trait Mindfulness**

One of the inherent advantages of the present study is the utilization of longitudinal data, which allows for the consideration of variables over a period of time. Although the primary reason for utilizing this data in the present study was to strengthen the assertions about the directionality of the relationship among variables, several other notable findings emerged. One notable finding was that when mean levels of trait mindfulness were compared over the three time periods, near significant differences existed. This suggests that, as it is measured in this data, trait mindfulness may not be a static trait. The first model presented utilized trait mindfulness measured at time 1 and other variables at later time points. Given the fluctuation in levels of trait mindfulness, one might wonder whether the same results would be found utilizing a measure of trait mindfulness at time 2. Furthermore, when the model included variables only at Time 1, results varied and trait mindfulness was found to have an indirect effect on IPV frequency and occurrence. Thus, based on comparison of these results, trait mindfulness is predictive of IPV when measured at the same time.

The present study utilized a conceptualization and measurement of mindfulness as a personal characteristic or *trait*. The Mindful Attention Awareness Scale, the most popular measurement of mindfulness, is primarily aimed at measuring an individual's level of innate mindfulness, also referred to as dispositional mindfulness (MAAS; Brown & Ryan, 2003). Although research has shown that trait mindfulness as measured by the MAAS is associated with multiple clinical and relational outcomes, it may not be the only way to conceptualize and measure mindfulness in an individual. Scholars have begun to highlight the limits of measuring mindfulness as a trait (Sauer, Walach, Schmidt, Hinterberger, and Lynch, 2013). Conceptually, mindfulness highlights bringing one's attention to the present; a process that involves a conscious movement from distracting thoughts and emotions to awareness of the present (Kabat-Zinn, 1994). Mindfulness involves the continual awakening and reawakening of one's awareness to the present. By nature, mindfulness is not a static process. Instead, mindfulness represents a certain state in which an individual is aware and open to their present experience. Thus, measuring mindfulness as a trait falls short in capturing this fluid process of awareness. Instead, trait mindfulness might be better understood as a measurement of one's aptitude toward being mindful at a given moment.

An alternative would be to measure an individual's level of mindfulness in that given moment, or a measurement of *state* mindfulness. Several studies have compared the influence of trait and state mindfulness over certain variables. For example, Heppner and colleagues (2008) conducted two studies that looked at the role of both trait and state mindfulness in aggressive behavior. Although their results indicated similar effects of both trait and state mindfulness, the research design pointed out the strength of considering both conceptual understandings of mindfulness.



Although the present findings do not mirror these other studies by testing both state and trait mindfulness, recognizing the difference between these two concepts may help in understanding the results. The first model found no direct or indirect effects of trait mindfulness on IPV frequency and occurrence at a future time point. The second model found an indirect effect of trait mindfulness on IPV occurrence and frequency at the concurrent time point. This indicates that an individual's level of trait mindfulness will indirectly impact IPV perpetration in that present state. Thus, the buffer effects of mindfulness on IPV perpetration might relate more to the impact of mindfulness on a certain state-of-mind rather than through personality characteristic.

### **Strengths and Limitations**

The present study is one of the first to report an association between trait mindfulness and IPV. Although many questions remain about the nature of this relationship, the evidence presented suggests that trait mindfulness might be linked to IPV through certain relationship processes. Beyond these findings, the present study offers several other strengths. By utilizing longitudinal data, confidence regarding the directional influence of the model variables is increased. Although these results indicated no direct effect between trait mindfulness and IPV, it did indicate a direct effect on other important relationship process variables. This lends support to considering trait mindfulness as a factor in studying relationships. Furthermore, beyond bivariate analysis, the present study considers the relationship between mindfulness and IPV in the presence of other relevant variables. Utilization of the hurdle model allowed for a more robust understanding of IPV, including predictions of both IPV frequency and occurrence. Overall, little research has considered the association between trait mindfulness and relationships, let alone IPV. Thus, although the present findings did not fully support the

purposed hypothesis, it did add to the understanding of how mindfulness might influence relationships while also raising more questions to be considered.

In light of these strengths, several limitations to the study were also present. Many of these limitations relate to the nature of secondary-data analysis. Although the variables measured were sufficient to conduct the proposed analysis, follow-up analysis was limited. For example, after examining results of the post-hoc analysis, one might want to further understand whether these results were indicative of “state” mindfulness instead of “trait” mindfulness. Unfortunately, measurement of state mindfulness was not included. Another limitation was the relative homogeneity among the study participants. The majority of the participant’s surveyed were young, college-educated, white, women between the ages of 19 and 21 years old. Thus, generalizability of the results is limited, even among the emerging adult population. Also, consideration of how gender might moderate the relationship among the variables was not possible due to the limited number of male participants.

Another limitation to the study involves the measurement of mindfulness. The present study utilized four items from the MAAS to measure trait mindfulness (Brown and Ryan, 2003). The items selected were chosen based on a recently published item response theory that indicated 5 of the 15 total MAAS items contributed to roughly 75% of the information measured (Van Dam, Earleywine, & Borders, 2010). Although the MAAS is one of the more widely utilized measures of mindfulness, it represents a specific conceptualization of mindfulness that emphasizes awareness and attention control. Many scholars might argue that concepts of acceptance, self-compassion, or non-judgment are equally integral parts of mindfulness and missing from the measurement (Baer, Smith, Allen, 2004). Especially considering this study used a shorten version of the MAAS, the present findings are more indicative of mindful

*awareness*, that is to say the present awareness portion of mindfulness, than mindfulness as a complete concept. Future studies should consider how the other elements of mindfulness, such as acceptance, also help predict IPV perpetration.

## **Implications**

Results from the present study have potential implications on both future research and clinical practice. The primary purpose of the study was to investigate the relationship between IPV perpetration and trait mindfulness. Findings indicate that trait mindfulness is associated with IPV perpetration. Furthermore, trait mindfulness is indirectly predictive of IPV at the same time via how trait mindfulness influences relationship processes. Previous scholars have highlighted the importance of considering different relationship processes when examining IPV perpetration (Lawrence, Orengo-Aguayo, Langer, & Block, 2012). This study not only affirms this notion, but also shows how an individual characteristic, such as trait mindfulness, might indirectly influence IPV through certain relationship processes.

Beyond affirming the consideration of relationship processes, this study introduces a new potential variable of consideration in the IPV research literature. Not only do the results connect trait mindfulness with IPV, but also connect other important relational factors with trait mindfulness. Questions as to how and why mindfulness might influence IPV are still unanswered, and future studies should consider a variety of methodologies to further investigate this association. For example, as mentioned above, observational or experimental studies might help to better understand the association of state levels of mindfulness on IPV as well as further unravel the mechanisms in which mindfulness is acting to prevent or propel IPV perpetration.

Beyond basic research, these results also infer potential benefit of utilizing mindfulness-based treatment approaches and techniques in the treatment of IPV. Although the present study

focused on trait mindfulness, research indicates that mindful practices can increase an individual's level of dispositional mindfulness (Brown & Ryan, 2003). Furthermore, our results indicate that mindfulness might have a more immediate impact on IPV when compared to the impact overtime. Thus, clinicians can utilize these findings not only to understand how these variables influence IPV, but also that increasing levels of trait mindfulness through mindful practice may have a positive impact on reducing the occurrence or frequency of IPV. Furthermore, helping to increase an individual's level of trait mindfulness through mindful practice may also positively influence other important relationship processes related to couple conflict. This is especially important for couple therapists who might encounter low to moderate levels of IPV in their client's but are unsure of how to address this issue. As mentioned previously, one treatment model has already successfully implemented mindfulness practice into their approach; and although no studies have been conducted on the impact of mindfulness on treatment outcomes, the present findings lend support to this practice (Stith, McCollum, & Rosen, 2011). Beyond mindfulness, these findings might also indicate considering the use of other contemplative or spiritual practices in treating or preventing relationship violence and aggression.

The present study considered the relationship between trait mindfulness and IPV, while also considering this relationship in the presence of other important variables. Although the results indicated no direct effect of trait mindfulness on IPV, it did indicate an effect of trait mindfulness on other important relationship processes. Furthermore, follow-up analysis indicated a possible indirect effect of trait mindfulness on IPV while being measured at the same time point. Overall, this study generates new understanding about how mindfulness might influence relationships, while also raising questions for further investigation.



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## Appendix A - Tables and Figures

Table 1: Descriptive Statistics among study Variables ( $N = 247$ )

	<i>M</i>	<i>SD</i>	$\alpha$	Range
1. Mindfulness t1	16.81	4.15	.91	5-24
2. Mindfulness t2	16.30	4.17	.92	7-24
3. Mindfulness t3	16.50	4.32	.95	4-24
4. IPV Frequency t1	6.28	13.01	.82	0-80
5. IPV Frequency t2	6.65	12.38	.78	0-62
6. IPV Frequency t3	5.21	11.11	.81	0-80
7. Depressive Symptoms t1	17.10	4.38	.77	10-31
8. Alcohol Use t1	11.35	7.76	-	1-42
9. IPV Attitudes t1	27.10	6.28	.72	17-46
10. Relationship Satisfaction t2	16.00	2.35	.92	7-18
11. Relationship Efficacy t2	34.19	6.68	.90	13-42
12. Conflict Resolution t2	27.08	5.37	.87	13-40
13. Negative Interaction t2	5.84	1.73	.73	3-12



Table 2: Correlations among all model variables

	1	2	3	4	5	6	7	8
1. Mindfulness T1	-							
2. IPV T3	-.13*	-						
3. Depression T1	-.37**	.28**	-					
4. Alcohol Use T1	-.25**	.13	.08	-				
5. IPV Attitudes T1	-.20**	.17**	.26**	.13	-			
6. Rel.Satisfaction T2	.15*	-.26**	-.16*	-.06	-.24**	-		
7. Rel. Efficacy T2	.18**	-.40**	-.28**	-.10	-.31**	.46**	-	
8. Conflict Resolution T2	.13*	-.32**	-.25**	-.12	-.24**	.32**	.39**	-
9. Negative Interaction T2	-.14*	.42**	.22**	.18**	.33**	-.46**	-.53**	-.40**

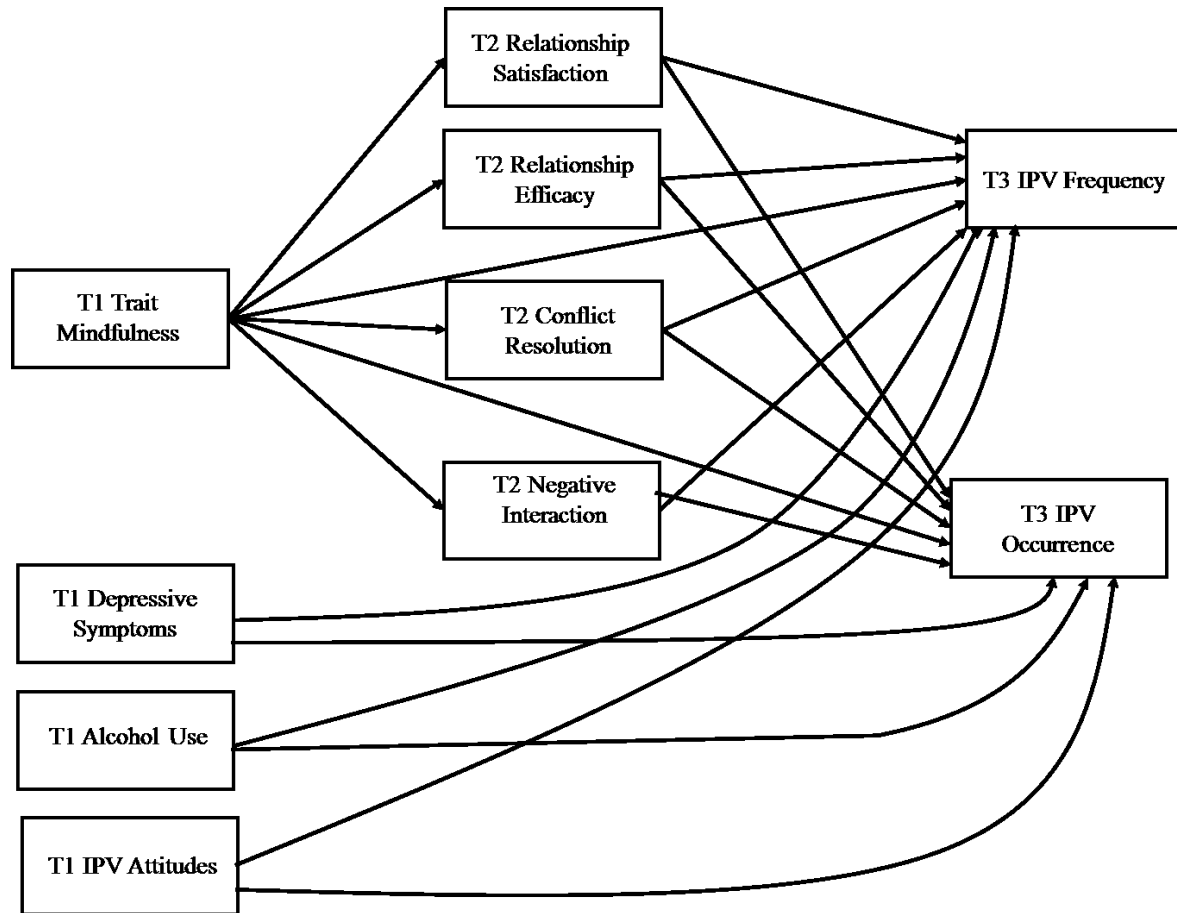
\*  $p < .05$ . \*\*  $p < .01$ .

Table 3: Mediation Effect of Conflict Resolution, Negative Interaction, Relationship Efficacy, and Satisfaction on the Relationship between Trait Mindfulness and IPV Frequency and Occurrence using Bootstrapping

Mediators for IPV Frequency	Bootstrapping – Bias Corrected Confidence Intervals			
	Trait Mindfulness at T1, Mediators at T2, IPV at T3		All Variables at T1	
	Lower 95%	Upper 95%	Lower 95%	Upper 95%
Total	-.163	.127	-.261	.430
Conflict Resolution	-.053	.084	-.031	.155
Negative Interaction	-.076	.071	-.177	.338
Relationship Efficacy	-.124	.019	-.061	.188
Relationship Satisfaction	-.040	.051	<b>-.181</b>	<b>-.016</b>
Mediator of IPV Occurrence				
Total	-.048	.044	-.138	.023
Conflict Resolution	-.014	.027	<b>-.065</b>	<b>-.004</b>
Negative Interaction	-.040	.032	-.083	.040
Relationship Efficacy	-.016	.005	-.059	.008
Relationship Satisfaction	-.012	.016	-.015	.039

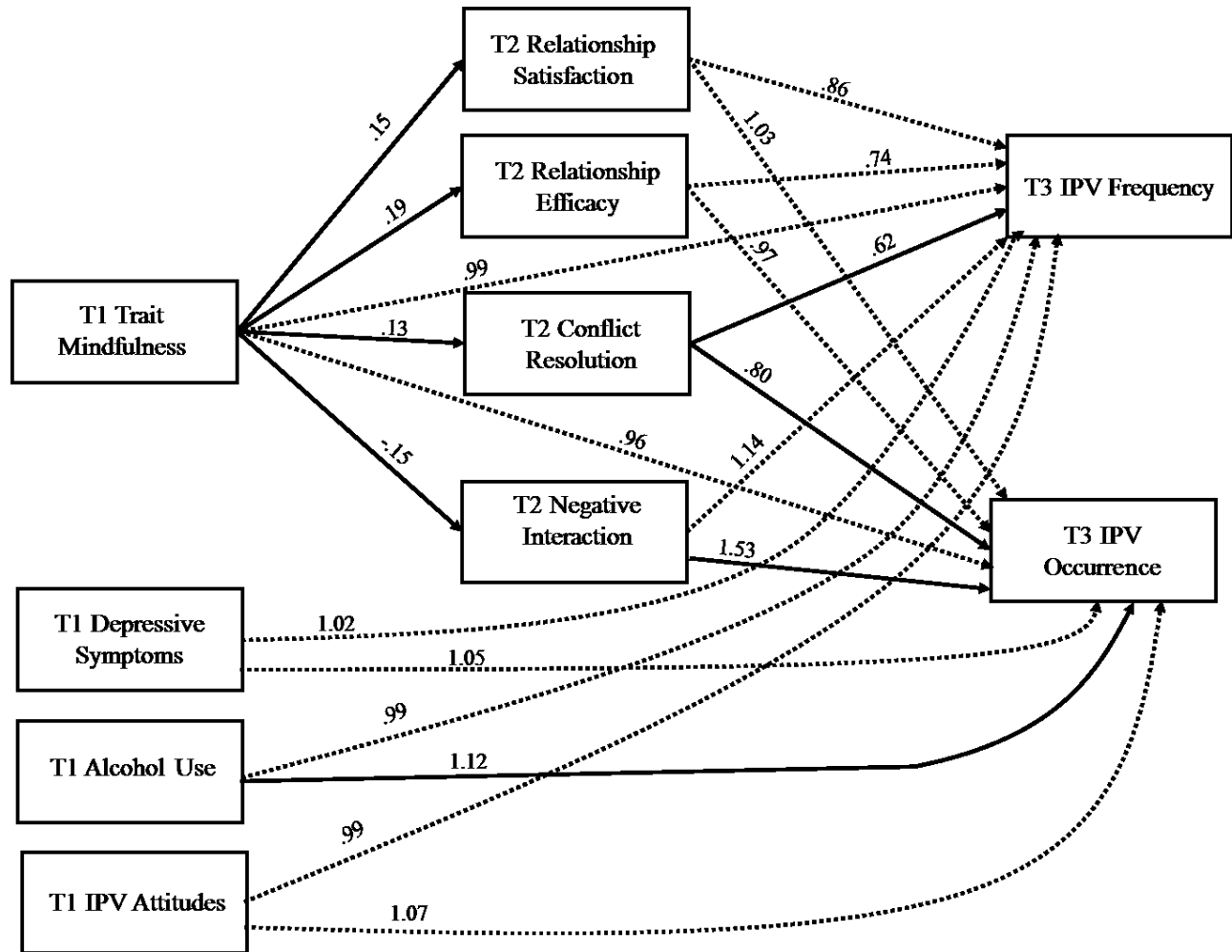
1,000 bootstrap sample. Bolded CI's indicate range does not include zero.

Figure 1: Proposed Model of the mediating effect of relationship processes on mindfulness and IPV with control variables.



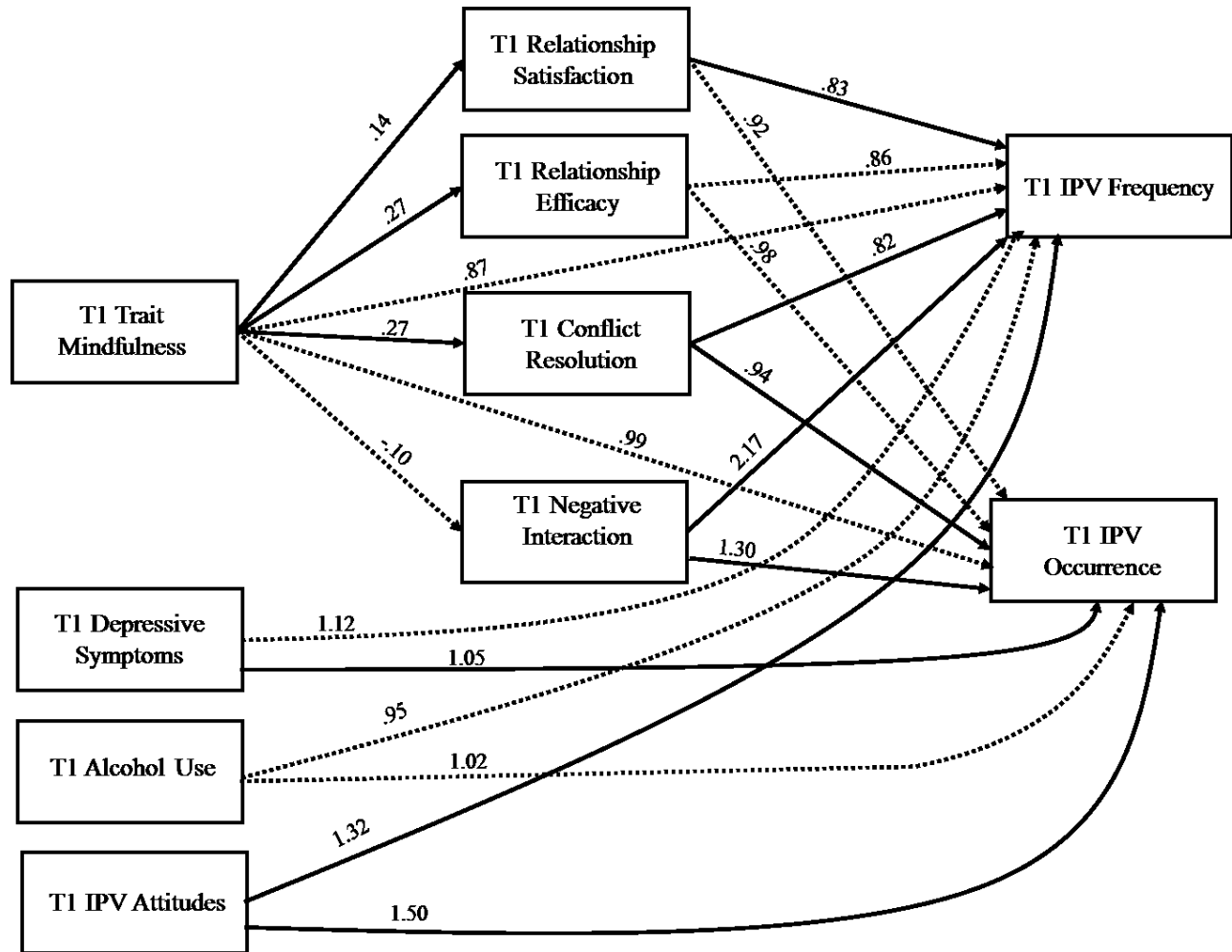
Note: All exogenous variables are correlated. All relationship process variables are correlated.

Figure 2: Results of Mediating Hurdle Model Predicting IPV Occurrence and Frequency at Time 3



Standardized regression coefficients are presented for the paths from mindfulness to the mediating variables at t2. Odds Ratios are presented for paths predicting IPV Occurrence at t3. Incident Rate Ratios are presented for path predicting IPV Frequency at t3. Dashed paths are statistically non-significant, solid paths =  $p < .05$ .

Figure 3: Results of Mediating Hurdle Model Predicting IPV Occurrence and Frequency at Time 1



Standardized regression coefficients are presented for the paths from mindfulness to the mediating variables at t2. Odds Ratios are presented for paths predicting IPV Occurrence at t3. Incident Rate Ratios are presented for path predicting IPV Frequency at t3. Dashed paths are statistically non-significant, solid paths =  $p < .05$ .

## Appendix B - Measures

### Intimate Partner Violence

Instructions: No matter how well a couple gets along, there are times when they disagree, get annoyed with the other person, want different things from each other, or just had spats or fights because they are in a bad mood, are tired or for some other reason. Couples also have many different ways of trying to settle their differences. This is a list of things that might happen when

you have differences. Please mark how many times you did each of these things in the past 8 weeks, and how many times your partner did them in the past 8 weeks. If you or your partner did not do one of these things in the past 8 weeks, but it happened before that, mark "Not in the past eight weeks, but it did happen before"

Items:

1. I insulted or swore at my partner
2. I threw something at my partner that could hurt
3. I called my partner fat or ugly
4. I destroyed something belonging to my partner
5. I twisted my partner's arm or hair
6. I shouted or yelled at my partner
7. I pushed or shoved my partner
8. I stomped out of the room or house or yard during a disagreement
9. I accused my partner of being a lousy lover
10. I did something to spite my partner
11. I grabbed my partner
12. I threatened to hit or throw something at my partner
13. I slapped my partner

Item responses:

1. *Once in the past eight weeks*
2. *Twice in the past eight weeks*
3. *3 to 5 times in the past eight weeks*
4. *6 to 10 times in the past eight weeks*
5. *11 to 20 times in the past eight weeks*
6. *More than 20 times in the past eight weeks*
7. *Not in the past eight weeks, but it did happen before*
8. *This never happened*

### **Trait Mindfulness**

Instructions: Below is a collection of statements about your everyday experience. Please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be.

Items:

1. It seems I am “running on automatic” without much awareness of what I am doing
2. I rush through activities without being really attentive to them
3. I do jobs or tasks automatically, without being aware of what I am doing
4. I find myself doing things without paying attention

Item Responses:

1. *Almost always*
2. *Very frequently*
3. *Somewhat frequently*
4. *Somewhat infrequently*
5. *Very infrequently*
6. *Almost never*

### **Alcohol Use:**

1. Within the last 30 days, on how many days did you have a drink containing alcohol?
2. How many drinks containing alcohol did you have on a typical day when you were drinking?

### **Depressive Symptoms:**

Instructions: Below is a list of some of the ways you may have felt or behaved. Please indicate how often you have felt this way during the past week by checking the appropriate space.

Items:

1. I was bothered by things that don't usually bother me
2. I had trouble keeping my mind on what I was doing
3. I felt depressed
4. I felt everything I did was an effort
5. I felt hopeful for the future

6. I felt fearful
7. My sleep was restless
8. I was happy
9. I felt lonely
10. I could not “get going”

Item Responses:

1. *Rarely or none of the time (less than 1 day)*
2. *Some of or little of the time (1-2 days)*
3. *Occasionally or a moderate amount of time (3-4 days)*
4. *Most of or all the time (5-7 days)*

### **Intimate Partner Attitudes:**

Instructions: Please indicate whether you agree or disagree with the following statements according to the following scale:

Items:

1. I would be flattered if my partner told me not to talk to someone of the opposite sex
2. I would not like for my partner to ask me what I did every minute of the day
3. It is okay for me to blame my partner when I do bad things
4. I don't mind my partner doing something just to make me jealous
5. I would not stay with a partner who tried to keep me from doing things with other people
6. As long as my partner doesn't hurt me, “threats” are excused.
7. During heated argument, it is okay for me to bring up something from my partner's past to hurt him or her.
8. I would never try to keep my partner from doing things with other people
9. I think it helps our relationship for me to make my partner jealous
10. It is no big deal if my partner insults me in front of others
11. It is okay for me to tell my partner not to talk to someone of the opposite sex
12. Threatening a partner with a knife or gun is never appropriate
13. I think it is wrong to ever damage anything that belongs to my partner
14. It would not be appropriate to ever kick, bite, hit a partner with one's fist
15. It is okay for me to accept blame for my partner doing bad things



16. During a heated argument, it is okay for me to say something to hurt my partner on purpose

17. It would never be appropriate to hit or try to hit one's partner with an object

Item Responses:

1. Strongly disagree
2. Disagree
3. Neither agree or disagree
4. Agree
5. Strongly agree

### **Conflict Management:**

Instructions: Please respond to the following statements.

Item Responses:

1. Being able to admit that you might be wrong when a disagreement with a close companion begins to build into a serious fight
2. Being able to put begrudging (resentful) feelings aside when having a fight with a close companion
3. When having a conflict with a close companion, really listening to his or her complaints and not trying to "read" his/her mind
4. Being able to take a companion's perspective in a fight and really understand his or her point of view
5. Refraining from saying things might cause a disagreement to build into a big fight
6. Being able to work through a specific problem with a companion without resorting to global accusations ("you always do that")
7. When angry with a companion, being able to accept that s/he has a valid point of view even if you don't agree with that view
8. Not exploding at a close companion (even when it is justified) in order to avoid a damaging conflict.

Item Responses:

1. *I'm poor at this: I'd feel so uncomfortable and unable to handle this situation, I'd avoid it if possible*

2. *I'm only fair at this; I'd feel uncomfortable and would have lots of difficulty handling this situation*
3. *I'm OK at this; I'd feel somewhat uncomfortable and have some difficulty handling this situation*
4. *I'm good at this; I'd feel quite comfortable and able to handle this situation*
5. *I'm EXTREMELY good at this; I'd feel very comfortable and could handle this situation very well*

**Relationship Satisfaction:**

1. In general, how satisfied are you with your relationship?
  1. Not at all
  2. A little
  3. Somewhat
  4. Mostly
  5. Almost Completely
  6. Completely
2. I have a warm and comfortable relationship with my partner
  1. Not at all true
  2. A little true
  3. Somewhat true
  4. Mostly true
  5. Almost completely true
  6. Completely true
3. How rewarding is your relationship with your partner?
  1. Not at all
  2. A little
  3. Somewhat
  4. Mostly
  5. Almost Completely
  6. Completely

### **Negative Interaction:**

Items:

1. Little arguments escalate into ugly fights with accusations, criticisms, name calling, or bringing up past hurts. Is that...
2. My partner criticizes or belittles my opinions, feeling, or desires. Is that...
3. My partner seems to view my words or actions more negatively than I mean them to be. Does that happen...
4. When we argue, one of us withdraws...that is, does not want to talk about it anymore, or leaves the scene. Does that happen...

Item responses:

1. *Never or almost never*
2. *Once in a while*
3. *Frequently*

### **Relationship Efficacy:**

Instructions: Please indicate the extent to which you agree or disagree with the following statements concerning the disagreements and conflicts that arise between you and your partner.

Items:

1. I have little control over the conflicts that occur between my partner and I
2. There is no way I can solve some of the problems in my relationship
3. I often feel helpless in dealing with the problems that come up in my relationship
4. Sometimes I feel that I have no say over issues that cause conflict between us
5. I am able to do the things needed to settle our conflicts
6. There is little I can do to resolve many of the conflicts between my partner and I

Item Response:

Likert Scale with 7 item: *Strongly Disagree (1) to Strongly Agree (7)*.