DISSERTATION

COMMUNICATION PATTERNS AND CONFLICT: EFFECTS OF FORGIVENESS ON RUMINATION, SLEEP, AND RELATIONSHIP EVALUATIONS

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ABSTRACT

COMMUNICATION PATTERNS AND CONFLICT: EFFECTS OF FORGIVENESS ON RUMINATION, SLEEP, AND RELATIONSHIP EVALUATIONS

A research method commonly used in relationship science involves asking participants to engage in a conversation with their partner regarding an area of conflict within their relationship. It was predicted that for participants who engage in conflictual or withdrawal communication patterns, asking couples to further explore their conflict in a laboratory could lead to short-term increases in stress. It was further predicted that engaging in a forgiveness writing intervention may circumvent additional negative short-term outcomes compared to those in a control writing condition. Results showed that while controlling for baseline levels of serial conflict, short-term stress, and initial baseline levels of stress, men's conflict communication patterns, as opposed to withdrawal communication patterns, predicted increased stress for women. The forgiveness intervention mitigated some of the effects of withdrawal communication patterns as opposed to conflict communication patterns on several outcomes. Specifically, men's withdrawal scores predicted decreased stress and negative mood for themselves and increased perceived support from their partner after engaging in the forgiveness writing condition. Unexpected patterns emerged for the moderated effect of condition and withdrawal on sleep, as women slept less, and men had decreased sleep quality after having been in the forgiveness condition and experienced withdrawal patterns from their partner. The significance of the study and future directions are discussed.

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A research method commonly used in relationship science involves asking participants to engage in a conversation with their partner regarding a problem area that presents continuous disagreement, tension, or conflict (e.g., Barnes et al., 2007; Gordon & Chen, 2016; Gottman & Levenson, 1985; McNulty, 2008). Though the implementation method of what will be referred to as the *conflict discussion paradigm* has varied across many studies, the conversation remains the same: couples engage in a conflictual discussion for the purpose of psychological and communication research. I begin this dissertation by reviewing some of the ways in which this conflict paradigm is introduced to participants. I then discuss the various communication elements researchers code within the interactions to assess their impact on numerous physiological and psychological outcomes for participants. I will then argue that given the negative effects of poor communication and conflict on individual health and interpersonal relationships, a new writing intervention could help mitigate the negative outcomes of conflict that may be perpetuated by the conflict discussion paradigm.

There are two aims of the current study. First, this study aims to assess the presence of possible negative outcomes of the conflict discussion paradigm (i.e., stress, mood changes, rumination, sleep disruptions, and poorer relationship evaluations). Second, this study aims to test whether a short and unobtrusive forgiveness intervention can mitigate these consequences by assessing various outcomes during the lab session and the following day (e.g., assessments of stress, mood, and perceived support).

The Conflict Discussion Paradigm

Though the conflict discussion paradigm is widely used, the exact directions given to participants vary. In some implementations, participants are first asked to engage in a neutral conversation to allow them to become comfortable with the laboratory setting (Gordon & Chen, 2016; Gottman & Levenson, 1985) before individually listing several topics they consider to be major conflictual issues within their relationship (Barnes et al., 2007; Gordon & Chen, 2016). If topics cannot be brainstormed, the participants are offered a list of commonly discussed topics of conflict and are asked to rate the extent to which each topic is relevant to their own relationship (Barnes et al., 2007; though sometimes this problem inventory is initially given in lieu of the brainstorming activity; e.g., Levenson & Gottman, 1983). In some manipulations, one partner is randomly assigned to choose the final topic from the list generated (Gordon & Chen, 2016). In others, the partners are asked to rank the severity of each disagreement and discuss the topic they agree is most severe or important (Heffner et al., 2006; Levenson & Gottman, 1983). While some versions of the paradigm ask that participants simply discuss the selected area of conflict (e.g., Barnes et al., 2007; Gottman & Levenson, 1985), others ask that participants work to solve the problem (e.g., Gordon & Chen, 2016; McNulty, 2008; Salvatore et al., 2011).

Most of these studies assess the type of communication patterns present in the conversation for each individual. Researchers have recorded verbal aggression (Barnes et al., 2007), positive and negative communication/affect (Barnes et al., 2007; Gordon & Chen, 2016; Haydon et al., 2017), positive and negative escalation sequences (Kline, Julien, et al., 2004; Kline, Stanley, et al., 2004), dominance or withdrawal patterns (Heffner et al., 2006), criticism or hostility (Barnes et al., 2007; Haydon et al., 2017; McNulty, 2008), and even facial expressions (Haydon et al., 2017). Most studies involving this paradigm assess the negative outcomes of poor

communication on various aspects of psychological functioning, though few also implement assessments of personality factors or mind-states that could mitigate the effects of, or make the presence of, negative communication less likely (e.g., Barnes et al., 2007). Although many of these studies focus on negative communication and negative outcomes, it is important to note that not all conflict is negative, and positive outcomes can result from conflict as well (Baron, 1991; Carnevale, 2006; Stanley et al., 2002). For example, using I-language and communicating understanding of the other person's perspective during conflict reduces hostility and prevents negative escalation (Rogers et al., 2018); when couples engage in creative thinking, it allows for more effective problem-solving (Carnevale, 2006), in addition to conflict positively affecting creativity (Jung & Lee, 2015); and when the couple works together cooperatively during conflict, relationship quality increases (Julien et al., 2003).

Outcomes and Implications of the Conflict Discussion Paradigm

The conflict discussion paradigm is used to assess many outcomes related to communication's impact on stress, health, and relationship evaluations. Studies have even measured these outcomes in response to imagined or recalled transgressions or conflicts, rather than having participants engage in conflict in real time (e.g., Lawler et al., 2003; McNulty, 2008; Stoia-Caraballo et al., 2008). Regardless of whether the conflict is discussed in real time or simply remembered or imagined, the outcomes remain largely similar. Participants who experience negative conflict with their partner (measured by negative communication patterns, such as demand and withdrawal) or report relationship concerns often experience more severe reactions to stress (Barnett et al., 2005; Heffner et al., 2006; Holt-Lunstad et al., 2008), thus leading to poorer physical health (Coker et al., 2000; Phillips, 2011), poorer mental health (e.g., depression and/or anxiety; Beautrais et al., 1997), and lower relationship satisfaction,

particularly when they are not successful in moving on, or "cooling down" after conflict (Salvatore et al., 2011).[1]

Researchers are required to protect participants from any undue harm and take necessary precautions to do so. Given the myriad negative outcomes that may result from engaging in negative patterns of conflict, it is imperative that researchers also work to circumvent any negative impact the conflict discussion paradigm may have for couples engaging in negative communication patterns after completing the study. Some studies have implemented an additional "cool-down" activity that allows the couple to talk about areas that are most agreed upon in their relationship (e.g., Haydon et al., 2017; Salvatore et al., 2011). Other studies involve simply informing participants during their debriefing process that all couples have conflict and disagreements, so it is a normal part of healthy and committed relationships (e.g., Barnes et al., 2007). While these steps may attempt to ensure participants are not continuously affected by the conflict manipulation, they have not utilized follow-up measures to verify this assumption, nor are these steps experimentally tested to determine their effectiveness in helping participants better navigate their conversations. They also do not teach participants to better process the conflict after leaving the lab. More procedures need to be established to ensure participants are not experiencing residual stress or additional arguments because of the in-lab conflict, as is ethically required. The proposed project aims to not only further understand the outcomes of engaging in laboratory-induced conflict on stress and psychological/relational evaluations, but to uncover a potential buffering mechanism to further inform future research practices after using the conflict discussion paradigm. It is the aim of this study to administer an intervention to

[1] Salvatore et al. (2011) assessed whether individuals were able to recover from conflict by noting how often participants would continue to bring up other problems, refused to talk to their partner, or continued to argue with their partner about areas they had supposedly already resolved.

reduce the negative effects of negative communication during conflict on various psychological, behavioral, and relational outcomes.

Conflict.

Interdependence Theory. Interdependence Theory (see Van Lange & Rusbult, 2012) and social interdependence theory (see Johnson & Johnson, 2005) state that interpersonal interactions are dynamic, with both parties motivated to achieve their own goals within the conversation. However, according to Yovetich and Rusbult (1994), individuals may be motivated to put aside their own goals if they become aware, or interpret, that the other person's goals do not match their own (often the case in times of conflict), and instead focus on the long-term effects of responding constructively versus destructively. The likelihood of the individual's goals shifting to match or adapt to the goals of the other person is partially dependent on how quickly they respond within the conversation (Yovetich & Rusbult, 1994) and their own sense of well-being (Johnson & Johnson, 2005; Van Lange & Rusbult, 2012). If a person does not have feelings of elevated well-being initially, they may feel excluded or rejected, making it less likely that they will reciprocate or work together to meet the other person's goals.

For those in romantic relationships, feelings of exclusion and rejection can arise during periods of conflict that are not handled well. If an individual feels rejected by their partner, they are more likely to be motivated to avoid such rejection in the future, and potentially react with more hostility or avoidance, potentially perpetuating the conflict (Baumeister et al., 2007). If the conflict is not easily resolved, the experience of social exclusion may substantially increase the time it takes to resolve the issue because distrust arises and empathy decreases (Baumeister et al., 2007). Though the negativity that can result after a conflict may only persist for a few days, if a couple is dissatisfied in their relationship, it is likely that they will ruminate on unresolved anger,

presumably because they lack the skills to reconcile effectively (Parsons et al., 2020). Recovery from a conflict is then prolonged and can perpetuate negative affect, likely causing strain within the relationship (Parsons et al., 2020). High-intensity conflict, as a result, significantly predicts lower levels of relationship satisfaction (see Woodin, 2011).

Social Undermining. Social undermining (similar to, but not opposite of, social support; Oetzel et al., 2007; Vinokur & van Ryn, 1993) refers to negative behaviors that a person specifically directs toward their partner, often while engaging in conflict (considered a stressor in and of itself; Cranford, 2004). Social undermining has implications for why certain relationship dynamics can lead to negative outcomes, and while this behavior is not central to this project, it is important to understand that these negative behaviors can manifest during times of conflict (through unhealthy or ineffective communication) and can influence how conflict is navigated. Social undermining more strongly impacts mental and physical health compared to supportive behaviors, thus supporting the *stress-exacerbation hypothesis* (Cranford, 2004; Oetzel et al., 2007; Vinokur & van Ryn, 1993), which argues that certain behaviors can worsen the already negative effects of stress on health.

Cranford (2004) speculates that social undermining counteracts the benefits individuals usually receive in healthy relationships (such as having a reliable source of support, greater partner responsiveness, and lower levels of distress and disorder; Albrecht & Adelman, 1987; Bowen et al., 2013; Burleson & MacGeorge, 2002; Cramer, 2004; Turner & Marino, 1994). Individuals could lack successful coping strategies for other stressors presumably because coping with social undermining draws attention and resources away from the healthy resolution of other stressors (Cranford, 2004). Additionally, when couples are already experiencing other stressors,

it makes it more likely that both partners will experience a more problematic relationship and, thus, poor psychological outcomes (August et al., 2007; Horwitz et al., 1998).

Negative Outcomes of Conflict. When a relationship is strained by serial conflict and individuals are left feeling rejected, the absence of a stable social connection can elevate stress, loneliness, and feelings of social isolation (Baumeister et al., 2007). Loneliness, specifically, predicts increased aggression, poor adjustment to college, and even maladjusted sleep patterns (Baumeister et al., 2007; Baumeister & Leary, 1995; Cacioppo et al., 2002; Crescioni & Baumeister, 2009; Wohn & LaRose, 2014). These negative experiences can severely impact risk of depression, decrease well-being, self-esteem, and various behavioral outcomes (Baumeister & Leary, 1995; Horwitz et al., 1998; Pinker, 2015), most of which are actually predictive of increased risk of suicide (specifically, depression/anxiety, loneliness, low self-worth, and reduced social support; Asgard, 1990; Fawcett et al., 1990; Hawton et al., 1982; Troister et al., 2008; Wichstrøm, 2000). Perhaps most important to the current study, experiencing persistent interpersonal conflict or relationship breakups is highly related to increased attempts and deaths by suicide (Beautrais et al., 1997; Brent et al., 1993).

Communication. While some may be quick to assume that it is conflict in general that puts individuals in relationships at risk of negative outcomes, the way in which couples navigate and resolve conflict is a larger determinant of their relational outcome and their overall health (Cranford, 2004; Gottman et al., 1998; Haydon et al., 2017; Parsons et al., 2020; Salvatore et al., 2011). Certain patterns persist for those in romantic relationships who do not handle conflict well. These patterns include expressing contempt or defensiveness while arguing, refusing to accept the influence of the other partner (most commonly men refusing the women in different-sex relationships), and/or the absence of trying to de-escalate the argument (Gottman et al.,

1998). Participants show a more severe physiological reaction to stress, and report feeling less supported by their partner when there are patterns of blame, of the partner not taking personal responsibility during an argument, dismissing the issue or the other person's feelings, or escaping the situation by withdrawal (Collins & Feeney, 2000; Heffner et al., 2006). Additionally, partners exhibiting a pattern of demand and withdrawal are more likely to criticize, blame, and threaten each other, which predicts marital dissatisfaction and divorce (Heffner et al., 2006).

Maintenance Strategies. Maintenance strategies also predict relationship duration and/or levels of relationship satisfaction. For example, Appel and Shulman (2015) reported that at a three-month assessment, adolescents' relationship status was predicted by initial romantic attraction in conjunction with the couple's ability to minimize and navigate conflict. However, at the six-month follow up, initial attraction no longer predicted relationship status, indicating that the more important factor for relationship longevity at least among adolescents was the ability to constructively and positively resolve conflict (Appel & Shulman, 2015). Finkel et al. (2013) assessed the effectiveness of a cognitive reappraisal intervention on married couples experiencing conflict. Over two years, half of the couples were asked every four months to engage in a cognitive reappraisal task where they were to think about conflict from a neutral third-party perspective who wanted the best for everyone involved. They were asked to think about how the neutral party would think about the disagreement and what good could come from it. They were then asked to speculate how successful they felt they could be in taking this perspective more often when the conflict was occurring. Results suggested that the intervention was effective at protecting couples from marital quality decline. Importantly, conflict-related distress mediated the relationship, meaning the cognitive reappraisal intervention first reduced the conflict-related distress couples felt, which then buffered their decline in marital quality

compared to those who did not receive the intervention. Finkel et al.'s (2013) study provides some evidence that implementing cognitive interventions after conflicts have taken place may be a fruitful area of research, thus supporting the current study's endeavor of testing a mindset-related intervention.

In another effort to prevent negative relationship outcomes, one possible way to resolve disagreements constructively and positively is by demonstrating partner support through showing a high level of responsiveness and understanding and active listening throughout the conflict (Collins & Feeney, 2000). Kline, Julien, et al. (2004) report that positivity can be portrayed both through nonverbal and verbal techniques. Nonverbally, positivity can be expressed through facial expressions (e.g., smiling), body positioning (e.g., an open orientation), and with a positive tone of voice. Verbally, support can be demonstrated by clearly and constructively communicating and defining the problem while working toward a solution that benefits both parties. It is important that both individuals encourage, acknowledge, and accept each other during conflict (Kline, Julien, et al., 2004). Given these strategies, partners are likely to experience perceived support even when engaging in a conflictual conversation, thus increasing positive outcomes.

Rumination and Cognition. As previously mentioned, experiencing negative conflict can impact the way a person responds to stress and can negatively impact overall health. Importantly, conflict, and the stress it produces, can disrupt an individual's cognitive functioning as well. The hippocampus is highly affected by the body's stress response, which can negatively impact the way individuals interpret and remember events such as arguments (McEwen, 1998; McEwen et al., 1995; Shields et al., 2017), suggesting that the accuracy of memories should be questioned after times of stress. It is likely these inaccurate memories reflect a misperception of circumstances that may have initially been processed as nonthreatening if not under stress. This

pattern of misperceiving events suggests that individuals are more likely to engage in conflict when they are stressed compared to when they are not and are more likely to judge previous conflicts as being more severe (which can also occur due to poor sleep; Gordon & Chen, 2014). If individuals begin to interpret their interactions more negatively (a tendency which is also prevalent for those with insecure attachment styles; Van Lange & Rusbult, 2012),[2] they may also overthink arguments, potentially misconstruing details and remembering them as being more emotionally taxing than what they were (Baumeister et al., 2007). This overthinking could lead to continued conflict and even more stress for the couple.

Rumination refers to the excessive and pervasive thoughts individuals experience regarding the symptoms, causes, circumstances, meanings, and consequences of negative mood (Watkins & Roberts, 2020) and the thoughts they experience in response to their problems, in coordination with the lack of progress made in addressing these problems (Nolen-Hoeksema et al., 2008; Watkins & Roberts, 2020). Rumination differs from self-reflection, which refers to more of a curious state of exploration of one's self, along with an openness to experiences (Takano & Tanno, 2009). Such self-reflection is often necessary in developing better coping strategies, is effective for problem-solving, and enhances mental health (Takano & Tanno, 2009). Rumination, in fact, makes it *less* likely that these positive outcomes will manifest (Nolen-Hoeksema et al., 2008), can cause higher concentrations of stress-related cortisol in the short-term (Zoccola et al., 2014), and is associated with many negative health conditions in the long-term (Kushner et al., 2006). The persistent thoughts characteristic of rumination have been strongly linked with not only experiencing negative, destructive messages during conflict (which are also predictive of stress and negative health outcomes), but also with predicting the

[2] Because attachment styles are linked with an individual's tendency to perceive their circumstances as being more negative and uncertain, attachment was included as a covariate in later analyses.

reoccurrence of conflict (Bevan et al., 2017). Specifically, Bevan et al. (2017) concluded that cognitions surrounding conflict (i.e., rumination, perceptions of how resolvable conflicts are, and interpretations of how important goals are within conflict) may be more important than communication itself to understand why arguments happen repeatedly over time.

In addition, rumination has been linked with various internalizing symptoms and escapist behaviors (such as binge-eating and self-harm), as opposed to externalizing symptoms (e.g., aggression; Nolen-Hoeksema et al., 2008). One specific internalizing symptom linked with rumination is depression, ostensibly because rumination enhances the already negative mood and evaluations that those with depression experience, thus increasing the likelihood that the negative attitudes and interpretations will continue (Nolen-Hoeksema et al., 2008; Watkins & Roberts, 2020). Though it is possible that the association between rumination and worsened depressive symptoms is present only for those already experiencing depression, directionality and causality is unclear. For example, other research has demonstrated a significant effect of stress on symptoms of anxiety and depression (Arborelius et al., 1999; De Kloet et al., 2005; Melchior et al., 2008; Raffaelli et al., 2012), suggesting a reciprocal relationship between conflict and stress on the one hand and depression and negative affect on the other, all of which are associated with rumination. Additionally, rumination is moderately heritable (accounting for 20 to 41% of variance in several twin studies), leading researchers to speculate that rumination may reflect a genetic risk for depression (Chen & Li, 2013; Watkins & Roberts, 2020).

Sleep. Rumination has a reciprocal relationship with sleep. Those who are prone to rumination often experience sleep impairments (such as delayed sleep onset; Zoccola et al., 2009), as their stress levels are elevated before bed as their negative thoughts persist (Åkerstedt et al., 2007). Consequently, health problems may manifest because these negative cognitions and

poor sleep patterns, in conjunction with the associated increased stress, contribute to *allostatic load*, thus prohibiting the body's stress response from returning to healthy levels (McEwen, 1998). Allostatic load refers to a physiological dysregulation that occurs when cortisol, dopamine, epinephrine, norepinephrine, and excitatory amino acid neurotransmitters are released in the body in either inadequate or excessive amounts (Dahm et al., 2017; Juster et al., 2010; McEwen, 1998; McEwen et al., 1995; McEwen & Seeman, 1999; Shields et al., 2017; Smith & Vale, 2006). The body's ability to maintain allostasis is dependent, to some extent, on the wake-sleep cycle (McEwen, 1998), such that stress impacts the body's ability to function efficiently and effectively. Hormones such as cortisol vary in a diurnal pattern, which is coordinated in part by sleeping and waking patterns (McEwen & Seeman, 1999). When sleep is interrupted or restricted, hormone levels are not able to efficiently help individuals physically as well as mentally recover from the day (Maschke & Hecht, 2004).

Obtaining adequate sleep aids both in fully developing cognitive abilities and restoring an individual's ability to cognitively evaluate a situation (such as a conflictual conversation between partners; Philbrook et al., 2017; see also Watson et al., 2015). As discussed previously, when an individual experiences an event, several brain areas work together to regulate emotions and to determine whether that event is threatening or stressful (Lupien et al., 2018; McEwen et al., 1995). Thus, obtaining adequate sleep helps individuals properly encode and consolidate knowledge from previous events (Monaghan et al., 2017) and helps them interpret ambiguous situations more accurately, thus reducing the need to ruminate about such situations later, ultimately reducing stress. Concurrently, obtaining inadequate sleep may impair the ability to evaluate a situation as nonthreatening (Tashjian & Glaván, 2020), meaning a person might interpret their partner's goals or intentions as being incongruent with their own, increasing the

likelihood for conflict to arise, further increasing the stress response and rumination. Additionally, if individuals do not accurately remember a conflict as being resolved or if information about the conflict is not adequately consolidated, lack of sleep could perpetuate future conflict and reduced relationship evaluations as well, even if only one of the partner's sleep is affected (Gordon & Chen, 2014).

Gordon and Chen (2014) suggest that not obtaining an adequate quality or quantity of sleep can not only lead to worse perceptions of conflict the next day, but it can also lead to a decrease in empathic responses to one's partner. Barnes (2012) related a lack of sleep to a decreased ability to regulate one's behavior and one's emotions, which aligns with Gordon and Chen's (2014) findings. Thus, experiencing inaccurate memories, an inability to control impulses and act in accordance with one's priorities (e.g., self-regulation), and feeling more susceptible to irritability and fluctuations in mood (e.g., emotion regulation) together make it more likely that conflict and negativity will escalate, leading to more negative outcomes for the couple and their relationship.

While Gordon and Chen (2014) suggest a directional component in which sleep affects conflict and the way partners interact the next day presumably through perceptions of stress, Dahlgren et al. (2005) suggest a different directional assessment, such that stress also impacts sleep. Specifically, Dahlgren et al. (2005) measured cortisol trajectories across participants' workweeks and assessed their stress, number of work hours, and sleepiness. For those with more stress and more work hours, cortisol slopes were flattened into the evenings, meaning that their evening cortisol levels were higher than normal, impairing their ability to sleep, thus keeping them up later at night and making them feel sleepier (Dahlgren et al., 2005). Given these findings, it is probable that the negative effects of stress and sleep are cyclical in nature (see

Figure 1). Specifically, experiencing stress from romantic conflict may impede one's ability to fall asleep and to obtain a quality night's sleep, thus perpetuating the negative interpretation of their partner's communication the next day, thus further increasing stress. Additionally, when it is psychosocial stress in particular that impacts sleep, participants experience increased sleep latency (i.e., taking longer to fall asleep once in bed), decreased sleep efficiency, decreased REM sleep, as well as decreased time spent in slow-wave sleep, with individuals also experiencing more time waking through the night (Kim & Dimsdale, 2007). The patterns presented collectively by these studies (i.e., Dahlgren et al., 2005; Gordon & Chen, 2014; Kim & Dimsdale, 2007) suggest a reciprocal effect of conflict, stress, and sleep that needs to be further explored in a single study. Combining these factors into one study allows researchers to better understand not only the unique contribution of each variable, but also how much variance is left to explain. The proposed project aims to address this by asking participants to report their sleep patterns from the night before their study session and their initial levels of stress to hold these constant when assessing the impact of conflict during the study on stress reactions and sleep the next night.

Forgiveness

Forgiveness refers to a person's cognitive, emotional, and behavioral response to an interpersonal transgression or conflict (Lawler et al., 2005). Many studies have reported that forgiveness and rumination are negatively related, suggesting forgiveness is an alternative to rumination (McCullough et al., 1998; Merolla, 2017; Stoia-Caraballo et al., 2008). McCullough et al. (2007) report that the relationship between rumination and forgiveness is mediated by anger toward the transgressor, such that those who increasingly ruminate tend to feel angrier toward the other person, thus reducing the likelihood of forgiveness. Additionally, forgiveness

involves a decrease in resentment, hostility, and other negative emotions and thoughts, with an internal transfer to more positive emotions, which encourages reconciliation with the transgressor (Kloeber & Waldron, 2017; Merolla, 2014, 2017; Waldron & Kelley, 2005; Whited et al., 2010). Consequently, forgiveness is critical in repairing and preserving relationships, as individuals begin to release feelings of retaliation and vengefulness (McCullough et al., 2001) and to actively think positively about the transgressor (Merolla, 2017).

For those experiencing severe transgressions in their relationships (such as when infidelity occurs or when an individual physically abuses their partner), forgiveness is often given conditionally; boundaries are redefined as a way for the victim to assert control over the new rules of the relationship (Kloeber & Waldron, 2017). Conditional forgiveness is often only beneficial for relationships that have suffered severe damage, as it may be the only realistic way to reconcile with the transgressor, should that be the goal. For transgressions that are not quite as severe (such as an individual not showing compassion for their partner during a time of stress), forgiveness produces consistently positive outcomes so long as those transgressions do not persist (McNulty, 2008). For example, those who forgive their partner for less-severe transgressions experience happier marriages, report fewer problems in their marriage, and report fewer negative behaviors from their spouse (i.e., individuals less frequently fault, reject, or criticize their partner and are less likely to avoid responsibility for problems; McNulty, 2008).

A person's propensity to forgive has been proposed as a mitigating factor in the relationship between interpersonal stress and health outcomes (McCullough et al., 1998). Many studies that measure forgiveness as a state or trait support this relationship (e.g., Barnes et al., 2007; Lawler et al., 2003, 2005; Stoia-Caraballo et al., 2008; Whited et al., 2010). Forgiveness is related to better physical and mental health, specifically through reducing negative affect and

stress, and improving conflict management skills (Lawler et al., 2003, 2005; Worthington et al., 2007). Additionally, the more likely a person is to forgive someone else, the less likely they are to experience anger rumination, thus leading to better quality sleep (Stoia-Caraballo et al., 2008) and better health and psychological outcomes. Physiologically, forgiveness has been associated with lower blood pressure and faster blood pressure recovery after stress, reduced heart rate, and lower rate pressure product (i.e., the product of systolic blood pressure and heart rate to assess the input of blood to the heart) and has been proposed to reduce allostatic load specifically associated with conflict (measured through physiological responses and their efficiency as noted above; Lawler et al., 2003). It is important to note that these studies did not experimentally manipulate forgiveness as a causal factor.

Forgiveness can be used as an intervention or as an outcome of an intervention, both of which have produced similar beneficial outcomes to those measuring forgiveness as a state or trait. For example, Freedman and Enright (1996) implemented a forgiveness therapy intervention for women who had experienced sexual abuse within two years of data collection. The intervention took place across several months, with each session focusing on a different emotional component of the forgiving process. Similarly, Coyle and Enright (1997) implemented a forgiveness therapy intervention that lasted 12 weeks with 90-minute weekly sessions. The goal of the intervention was to measure how much the male participants forgave their female partner after they received an abortion. Rye et al. (2005) conducted an intervention over six weeks to measure how much participants would forgive their ex-spouses. Reed and Enright (2006) provided forgiveness-based therapy to emotionally abused women over an average of eight months. All of these forgiveness interventions were successful in increasing levels of forgiveness against transgressors, as well as reducing feelings of depression and anxiety, along

with increasing self-esteem. However, these interventions took weeks or months to implement and were in response to severe events and transgressions that had already taken place, in some cases, years prior. Given that these interventions were successful, however, it is possible that a shorter, more immediate forgiveness intervention would yield similar outcomes for less-severe transgressions.

As an example of a shorter-term forgiveness intervention, Crowley (2014) implemented an expressive writing intervention for members of the LGBTQ community who had been victims of hate speech. Crowley compared a neutral writing condition (i.e., the control group) to those asked to report the traumatic incident in detail (experimental group 1), and to those asked to write about ways they could benefit from the incident (experimental group 2). A linguistic analysis indicated that the more cognitive words that were written, the more forgiveness the individuals reported feeling at the end of the study. Additionally, those in both experimental groups experienced better physiological reactivity to stress compared to participants in the control group. The author concluded that expressing oneself is therapeutic and can show great health benefits, and ideally the expression should be in the form of a coherent narrative using cognitive words. Importantly, the total word count for all participants did not have any influence on posttreatment outcomes, indicating that participants' outcomes depend not on how *much* they say, but rather *how* they say it (Crowley, 2014). This study has great implications for the current intervention, specifically in support of a shorter writing task rather than a weeks-long program.

Contribution and Significance

As researchers continue to implement a conflict discussion paradigm into their studies, it is important to understand how to stop the negative cycle that may be perpetuated in these methodological designs for those who engage in negative communication. While it is likely that

these discussions are not out of the ordinary for couples, and that researchers are not subjecting participants to conversations that they would not have already engaged in with their partners, it is still the researchers' responsibility to do as little harm to participants as necessary. Because negative conflict and stress often result in rumination, it is possible that laboratory manipulations of conflict may lead participants to ruminate about their conflicts after leaving the study. To the best of my knowledge, none of the studies implementing the conflict discussion paradigm have followed up with participants after debriefing for the purpose of ensuring the study did not invoke longer-lasting effects as a consequence of the study design.

Most relationships have conflict, but not all of them are negative or have negative outcomes. Some of the negative outcomes depend on communication styles employed during conflict (providing criticisms versus compassion), but these outcomes could also depend on personality traits, mindsets, or individuals' tendencies to behave in certain ways (such as Finkel et al.'s [2013] conflict reappraisal intervention). Forgiveness is a behavior that consistently produces positive outcomes for the individuals and their relationships, and so a forgiveness intervention may be useful for mitigating the negative effects of a conflictual discussion. Although most researchers only study forgiveness as a state or trait, Lawler et al. (2005) report that trait forgiveness accounted for less health variance than did state forgiveness, so more research that adds to the literature on forgiveness interventions, and that which is aimed to understand how forgiveness can be used on a situational basis is needed, regardless of a person's individual tendency to forgive.

When couples engage in negative communication while having a conflict or when that conflict is persistent (because of the negative communication in which couples engage), many poor outcomes emerge including increases in perceived stress (Baumeister et al., 2007),

rumination and negativity (Parsons et al., 2020), as well as impaired sleep (potentially because of the stress that conflict causes; Dahlgren et al., 2005), and a decline in relationship satisfaction (Woodin, 2011; no single study has assessed these links concurrently, as the proposed project aims to do). For researchers who implement the conflict discussion paradigm, it is imperative that an intervention be tested to help ensure participants have the necessarily skills to circumvent negative outcomes of poorly handled conflict and to decrease the likelihood that negative outcomes could occur following the conflict discussion paradigm. By administering an intervention *after* the conflict discussion, it allows flexibility for researchers to continue assessing factors that may impact the way couples communicate during conflict and the associated outcomes while also working to protect participants from rumination, continued negativity, and the same conflict discussion persisting outside of the lab.

While other studies have implemented interventions and studies assessing factors that mitigate negative effects of communication on various outcomes, many of them call for more research in this area. For example, Finkel et al. (2013) suggest that future studies test interventions that impact couples who are already distressed to see if relationship quality can actually increase rather than being maintained. Other studies call for researchers to learn new ways to train couples on more effective strategies to recover from conflict (e.g., Parsons et al., 2020). Additionally, most studies that assess forgiveness do so as a result of recalling a transgression from the past (Whited et al., 2010). It is just as important for research to better understand the more immediate and short-term effects of forgiveness on psychological functioning after a conflict discussion. Furthermore, given how impactful stress and conflict are on the immediate stress response, there has also been a call for studies to examine forgiveness as

a mechanism that enables an individual to overcome situations that would threaten well-being (Worthington et al., 2007).

Current Study and Hypotheses

The major goals of this project were twofold. First, it explored the impact that poor communication patterns demonstrated during a conflict discussed for the purposes of a research study may have on various psychological and relational outcomes. Second, it explored the potential impact of a forgiveness intervention on the relationship between communication patterns and psychological and relational outcomes. In the current study, I randomly assigned participants to either engage in a forgiveness exercise or a control exercise directly after experiencing conflict with their partner to examine the effects of communication patterns during conflict on perceived stress, rumination, sleep, and relationship evaluations.

Based on the research presented in this document, I hypothesize two main sets of outcomes. First (H1), that poor communication patterns, measured as conflict and withdrawal patterns, will predict increased stress directly after engaging in the conflict discussion paradigm while holding serial conflict, short-term stress, and baseline stress pre-conflict constant. By holding these variables constant, it serves to isolate the immediate impact of engaging in a conflict discussion on stress for those who experience negative communication. Second (H2), that the forgiveness writing condition will moderate the relationship between communication and various negative outcomes while holding serial conflict, short-term stress, and trait forgiveness constant. Specifically, I hypothesize that after participating in the conflict discussion paradigm, those in the forgiveness condition will experience less-negative (milder) outcomes in terms of stress, mood, perceived support, rumination, sleep, and relationship satisfaction compared to those in the control group (see Table 1 for the full list of variables and analytic plan).

METHOD

Participants

Participants were recruited using several techniques. First, undergraduate students at Colorado State University (CSU) were recruited through CSU's psychology research participant pool, with eligibility first determined by whether they were currently in a romantic relationship that had been ongoing for at least three months. Students received partial course credit provided by their respective instructors and the partner was entered for a chance to receive one of twenty $25 gift cards. Participants were also recruited through other classes in exchange for extra credit, with instructors offering an alternative assignment should students not wish to participate or for those who were not eligible for this particular study. Word-of-mouth and snowball sampling techniques were used to recruit as well. Individuals not receiving course credit or extra credit were entered to win the gift cards.

A power analysis algorithm had not yet been developed for the APIM analyses during the development of this study, so I based my original a priori power analysis on a similar statistical analysis using G*Power3 (Faul et al., 2007) to test the interaction of two independent group means (between-subjects factors) with several repeated measures using a repeated measures analysis of variance (ANOVA) with a within-between interaction, a small-to-medium effect size (d = .25; Cohen, 1988; Faul et al., 2007), and an alpha of .05. These repeated measures include three measurements of mood, and two measurements of perceived stress, perceived support, and sleep[3]. Results showed that for the most stringent test (a repeated measures analysis with only two repeated assessments), a total sample of 54 couples (108 individuals) was required to

[3] This initial power analysis was also based on the original hypotheses that were later updated and simplified. This is addressed in the Limitations section.

achieve a power of .95. A later power analysis was performed using Ackerman et al.'s (2010) APIMPowerR Advisor, which indicated a sample size of 59 dyads was required.

Inclusion Criteria and Prescreening

To assess eligibility, potential participants completed several initial questionnaires. First, they were asked to complete a survey regarding serial conflict within their relationship. Although participants completed these surveys independently, if the couple together scored an average of 1.30 or higher for serial conflict (see the Measures section for more information on this scale), they were considered eligible to participate. This inclusion criteria was used to ensure that participants actually had conflicts to discuss during the research procedures and increased the likelihood that there would be enough variability within communication patterns to detect effects. Before coming to the lab, participants were also asked to complete a survey assessing their typical communication patterns with their partner to ensure that what was measured in the lab represented their every-day experiences and further increased the likelihood that negative communication patterns would be evident in the lab. Additionally, both individuals needed to be healthy "normal" sleepers, meaning they were not diagnosed with sleep disorders, such as insomnia, to reduce any confounding factors on sleep quality and quantity that was not due to the laboratory interaction (Kessler et al., 2011).

When assessing eligibility, many individuals and couples were excluded or did not complete the study for various reasons. Ultimately, 20 couples were eligible but never scheduled an appointment (after repeated attempts to contact them), 12 couples had conflict scores below the cutoff for serial conflict (though many of these were determined to be ineligible before the threshold was lowered to 1.30), eight couples had one couple member who was diagnosed with a sleeping disorder, five couples scheduled an appointment but had ended the relationship before

completing the study, two couples had one couple member who was unwilling to complete the screening survey, and one couple ended the relationship before the partner was able to complete the screening survey. Additionally, 40 individuals submitted the screening survey but their partners did not, and five individuals were eligible but did not provide any contact information for the researchers to follow up about the partner's survey or to schedule an appointment. This resulted in 93 potential couples who were not eligible across all these reasons.

Procedure

Once participants were deemed eligible to participate and the couples scheduled their "lab appointment" via Zoom (a videoconferencing platform that has been established as a satisfactory alternative to in-person interviewing; Archibald et al., 2019)[4], couples were asked to individually complete an initial assessment of mood to record any fluctuations across the course of the study. During this time, they were both asked to record their quality and quantity of sleep the previous night as well as an initial assessment of short-term stress from the last three weeks and their current assessments of stress. Following the typical protocol for the conflict discussion paradigm, all participants were asked to individually write down a list of topics that are a source of continual disagreement or conflict for their relationship and rank them in order of severity. Participants were encouraged not to include areas of conflict that had already been resolved and were told the two lists would be compared and the areas of overlap and/or the most severe topics would be the focus of their conversation for a duration of 10 minutes while being videotaped. Each tape was later coded for communication styles, patterns, and tendencies by two trained research assistants and me (the training process will be described in further detail in a later section on the interaction session). The researcher left the room (i.e., walked out of view of the

[4] Note that due to COVID-19, only four couples were able to complete the study in-person; all others completed the study via Zoom.

webcam) while the participants were engaging in their conversation to provide as much privacy as possible, even though the interaction was still videotaped.

After 10 minutes, the researcher returned to the meeting and had the participants stop discussing their given topic. Immediately after the conversation, participants were asked to complete a very brief survey which asked them again about their immediate stress levels and to report how severe they perceived the conflict they discussed to be. Participants were then randomly assigned to either the forgiveness intervention group or the control group. Random assignment was achieved by creating a random list of 1s and 2s using a computer program (i.e., randomizer.org) to eliminate any researcher bias. Those in the intervention condition underwent a simple forgiveness writing task for 15 minutes. This forgiveness intervention incorporates aspects of the REACH paradigm which asks participants to follow several steps toward forgiveness through writing reflections to specific questions (Worthington, 2003). The REACH paradigm in its full form is a five-step process which has participants first **R**ecall the incident or argument, **E**mpathize with their partner, view forgiveness as an act of **A**ltruism, **C**ommit to forgiving, and **H**old on to that forgiveness for the future. The full workbook is available online and usually takes between six and seven hours to complete (Worthington, 2021a). Researchers have revised the full workbook to a shorter version that takes less than two hours to complete but has not yet been empirically tested for effectiveness (Worthington, 2021b).

Those in the control group completed a writing task in which they were asked to describe their home and/or their workplace for 15 minutes. This task was meant to be a filler task that did not impact participants' emotions or thoughts surrounding the conflict conversation, or any other stressor they may have been experiencing. Both questions simply asked them to describe the

space in which they live and the place in which they work, but specifically indicated they should not be writing about their emotions or feelings toward their living and workspaces.

All participants were then asked to complete several more questionnaires, including assessments of mood, perceived stress, perceived support, attachment style, their tendency to forgive, as well as any physical and mental health ailments they may be experiencing at that moment or within the last three months. Demographic information was also collected at this time. Upon departure from the laboratory session, participants were reminded that additional surveys would be sent to them via email the following morning.

The follow-up survey was designed to measure the extent to which participants ruminated about the conversations they experienced during the study as well as to investigate whether participants continued to be affected by the conflict discussion paradigm or the communication patterns present during the conflict. Finally, participants were asked to report a final assessment of perceived support and a measure of relationship satisfaction. Understanding that participants could also have productive conversations regarding their conflict after leaving the meeting, participants were asked to respond to several open-ended questions to assess whether they further discussed the conversation they had during the meeting and the extent to which they feel they have forgiven their partner.

These additional surveys were distributed electronically through email addresses provided by participants during their time in the meeting. Identifying variables (e.g., names, ages) were not collected outside of participant codes to keep dyadic data together and to enter their information for the gift card incentive (this information was kept separate from other data). All participants were sent an electronic debriefing form and were thanked for their participation after completing the morning survey. Upon completion of the study, eligible participants were

entered for the gift card (all CSU students were given partial course credit or extra credit as applicable, but the partner was considered eligible for the gift card) and subsequently emailed their gift card upon being selected.

To ensure equitable opportunities for all participants, those in the control group were offered the same forgiveness writing exercise via email after completion of the study, making this study a waitlist-control intervention design. If participants wished to complete the full, unedited version of the REACH intervention, a link was provided in the debriefing form for all participants that directed them to the full version that is available to the public (Worthington, 2021a). Appendix A provides a timeline of all procedures.

Materials/Measures

Pre-Screening Measures.

Serial Conflict. To assess whether participants engaged in enough negative[5] conflict with their partner to provide variability within the study, participants were asked to complete the Quality of Relationship Inventory (QRI; Reiner et al., 2012; see Appendix B). The full measure contains three subscales (Support, Conflict, and Depth), though only the conflict subscale, which contains 12 questions ($\alpha = .88$), was used for this study. The language referring to the target person in each question was updated to read "your partner" instead of "this person" to maintain consistency throughout all surveys. Questions included, "How upset does your partner sometimes make you feel," and "How much do you argue with your partner?" Responses were recorded using a 4-point Likert scale that was modified to better represent the questions posed (1 = *Not at all*; 4 = *Very much so*). In its original development, conflict was assessed for the

[5] Although we recognize that conflict can often be beneficial instead of harmful, the purpose of this study was to assess the impact of the conflict discussion paradigm on overall well-being and relationship satisfaction for those most at-risk of experiencing negative outcomes, thus the reason we focused on, and targeted, those with negative conflict.

participant and their mother, father, and friend, with average scores of conflict ranging from 2.10, 2.15, and 1.78, respectively (Pierce et al., 1991). In a replication study in a German sample of men and women in heterosexual relationships, the overall average conflict rating among individuals for the entire sample was 1.83 (Reiner et al., 2012). Given that the current study used a sample of students who were in a heterosexual relationship, the threshold for eligibility was originally taken from Reiner et al.'s (2012) study, as an average of 1.83, though this threshold was later reduced to 1.30, as very few couples were considered eligible with the higher threshold[6]. Individuals' serial conflict scores were then used as a control variable in the final analyses.

Communication Tendencies. To assess whether participants communicated similarly on camera as they do in everyday interactions with their partner, participants completed Fowler and Dillow's (2011) Four Horsemen Scale (see Appendix C). This scale includes four subscales measuring criticism (seven items, $\alpha = .83$), contempt (eight items, $\alpha = .88$), defensiveness (seven items, $\alpha = .82$), and stonewalling (eight items, $\alpha = .82$). Example items include, "When my partner and I disagree, it is important to me to show them that they are at fault," "When I get upset with my partner, it's easy for me to lose sight of their good qualities," "I feel unfairly attacked when my partner is negative towards me," and "I'd rather withdraw from an argument or conflict with my partner than get my feelings hurt" for each of the subscales, respectively. Items are on a 7-point scale (1 = *Strongly disagree*; 7 = *Strongly agree*).

In-Lab Measures.

Mood. To assess baseline mood, participants completed the Positive and Negative Affect Schedule (PANAS), which is a 20-item measure on a 5-point scale (1 = *Very slightly or Not at*

[6] This is addressed in the Limitations and Future Directions section in the Discussion.

all; 5 = *Extremely*; Watson et al., 1988; see Appendix D). Participants rated how they were currently feeling with items such as "excited," "proud," "irritable," or "jittery." Ten items assessed positive affect ($\alpha = .85$), and ten items assessed negative affect ($\alpha = .75$). The same scale was used each time mood was assessed, although the mood assessment recorded directly after the writing task was the only time point used for final analyses. Van Lange and Rusbult (2012) report that affect tends to fluctuate even in the most satisfied or unsatisfied relationships, thus providing support for why mood was measured at multiple time points which can be used for future projects.

Sleep. The Pittsburgh Sleep Diary (Monk et al., 1994; see Appendix E) is a standard assessment in the sleep literature to gain insights in both sleep quality and quantity either in isolation or in conjunction with objective measures (such as actigraphy watches; Barnes et al., 2011; Cohen et al., 2009; Monk et al., 2001). Monk et al. (1994) report significant correlations between the Pittsburgh Sleep Diary assessments and actigraphy assessments regarding total time spent asleep ($r = .43$, $p < .001$), indicating that self-report can be validly used for this purpose. Monk et al. (1994) also reported that while there were some discrepancies between self-report and objective assessments of when the participants fell asleep and when they woke up, some of these discrepancies can be attributed to inaccuracies in the actigraphy reports as well as in participants' clocks. Test-retest reliability indicated significant positive correlations across 22 months for number of awakenings, perceived sleep quality, time going to bed, lights out, and time getting up (r's range from .56 to .81, all p's < .001).

The Pittsburgh Sleep Diary was used to measure participants' sleep prior to participating in the conflict discussion (Pre-Appointment), which served as a control variable for several

exploratory analyses[7], and then again the next morning (Post-Appointment) to assess the impact of the intervention (or control) on sleep quality the night after the study session. The Pittsburgh Sleep Diary asked questions such as what time they "went to bed last night," how many "minutes until [they] fell asleep," and what time they "finally woke at." Participants were asked to further indicate how many times they woke up during the night and the total number of minutes they spent awake. In the current study, time spent sleeping was calculated by converting the time between when participants woke up to when they went to bed into minutes, with the number of minutes they spent awake through the night subtracted from that time. Finally, participants rated their sleep quality on a spectrum from 1 *(very bad)* to 100 *(very good)*.

Perceived Stress. Participants completed a measure that assesses how much stress they were currently feeling. Participants rated their perceived stress on a 6-item, 7-point bipolar adjective scale. Adjectives include "stress-relaxed," "uncomfortable-comfortable," "anxious-not anxious," "not nervous-nervous," "calm-excited," and "worried-content". The scale has been validated to distinguish between those who are currently experiencing low levels or high levels of stress ($\alpha = .92$; Lepore & Allen, 1993; see Appendix F). This assessment of short-term stress was administered to participants to assess baseline stress (Pre-Conflict; which served as a control variable for the final analyses), as a reaction to the laboratory interaction (described below; Post-Conflict), immediately after the writing task (described below; Post-Writing), and as part of their next-day battery (Next Day).

Participants also completed the Global Perceived Stress Scale during their time in the laboratory, which was used as a control variable in the final analyses (PSS; Cohen et al., 1983; see Appendix G). The PSS is comprised of 14 items that assess perceived stress during the past

[7] Gordon and Chen (2014) indicate that sleep quality and quantity the previous night can escalate conflict between partners the next day.

week that relate to general concepts rather than specific incidents. Example questions include, "How often have you felt confident about your ability to handle your personal problems," and "How often have you felt nervous or stressed?" Responses are on a 0 (*Never*) to 4 (*Very Often*) scale. Reliabilities range from .84 to .86 (Cohen et al., 1983).

***Interaction Session and Coding Procedures*.** All participants independently wrote down several areas that produce conflict within their relationship. They were told that they should only write down topics they felt comfortable discussing for the purposes of the study and that they would be discussing the topic that they agreed was an area of concern and that they rated most severe. An experimenter compared the lists from each partner and discussed with the couple which topic they would talk about on camera.

As previously mentioned, these interactions were videotaped and later coded by me and two trained undergraduate research assistants from the Communication Studies Department at Colorado State University. We used the Interactional Dimensions Coding System (IDCS; Kline, Julien, et al., 2004), which is designed as a global coding scheme, although its development was based in microanalytic frameworks (Kline, Julien, et al., 2004). It was originally designed to assess danger signs within relationships (e.g., withdrawal and other signs of distress) but has since been modified to include positive aspects for relationships. It has been successful in identifying distressed versus non-distressed couples (Kline, Julien, et al., 2004). The entire coding system is comprised of nine individual codes and five dyadic codes, though only two individual codes were used for the purposes of the current study (only those codes relevant to the current study will be discussed). For each individual in the dyad, we used the Conflict and Withdrawal codes, which rely on a combination of affect and content cues (see Appendix H for an example of the coding sheet).

Kline, Julien, and colleagues (2004) explain how coders should approach each of these individual codes, which the coders read as part of their training. Conflict manifests as behaviors that encourage arguing between partners. The more hostility, opposition, antagonism, and overall negative affect that an individual displays, the higher the conflict rating, as defined by the IDCS. Affectively, conflict may manifest as a negative tone of voice, being very cold or curt, or becoming visibly tense. Additionally, common examples of conflict expressed through verbal cues include minimizing the value of their partner's contribution to the conversation, making negative overgeneralizations of the partner's behavior, and expressing sarcasm, among others. Withdrawal reflects an attempt to avoid or retract from the interaction or conversation. Withdrawal can be nonverbal through cues that would create a physical barrier between the self and the partner (such as crossing their arms or covering their face with their hands), turning the body away from the partner, or avoiding eye contact. Withdrawal can also be verbal (or rather lack of verbal cues) by allowing the partner to dominate the conversation, contributing very little to the conversation, being non-assertive with their own needs, or ultimately stating that they do not wish to discuss the topic (Kline, Julien, et al., 2004).

Coders were required to first read the IDCS training manual (Julien et al., 1989). They then met with me to discuss the material, to go over specific examples of each coded category, watch sample videos, and began the coding process. When beginning to assign ratings, coders first watched the entire interaction while taking notes. No ratings were recorded at this stage. Then, the video was divided into 5 two-minute segments,[8] which has been adapted from Julien et al.'s (1989) original suggestion of using three equal segments of 3.33 minutes, to create cut-off times that were more easily identified in the video. Each segment, starting with the first, was

[8] Because we also had participants say their ID numbers on the videos, each video was longer than 10 minutes, but there were still five segments close to two minutes each.

watched as many times as needed to capture all the information to properly code it while taking more notes. At the end of each segment, the coder rated each of the relevant code categories for both individuals in the couple. The dimensions were originally on a 1 (*extremely uncharacteristic*) to 9 (*extremely characteristic*) scale, with higher numbers reflecting behaviors that are more frequent, more intense, and/or lasted for a longer period during the interaction (Julien et al., 1989). However, to increase interrater reliability and make the coding intervals more easily discernable, the original scale was converted to a one to five scale[9], with the remainder of the videos using the one to five scale. After all segments had been assigned ratings for the individual dimensions, coders then assigned an overall rating for both dimensions (conflict and withdrawal) for each partner, which could be assessed by the mode or the average of all individual ratings, or a holistic rating for how the rater felt in general for the entire interaction. Generally, the average score was used as an anchor and raters made small adjustments as they felt necessary to reflect the entire video.

To assess interrater reliability, overall scores for the entire video were used on each dimension rather than the individual segments. Dividing the interaction into smaller segments helps increase reliability and validity of the overall score, but these individual scores should not be used on their own. Studies that have utilized the IDCS have reported a range of reliabilities, though the more variable the behaviors, the higher the reliability (Kline, Julien, et al., 2004). In its original publication, Julien et al. (1989) reported intercoder Pearson correlations from .05 to .71 for the individual codes, and from .49 to .64 for the dyadic codes. More recent assessments of reliability using more diverse couples (i.e., not all newlyweds, as was used in the original sample) range from .66 to .95 (Kline, Julien, et al., 2004) with Cohen's kappa reported from .64

[9] To convert the videos already coded on the 1 to 9 scale, a 1 and a 2 was classified as a 1, a 3 and a 4 were classified as a 2, a 5 was classified as a 3, a 6 and a 7 were classified as a 4, and an 8 and a 9 were classified as a 5.

to .92 (Schilling et al., 2003; Stanley et al., 2001). Coding the 10-minute videos took approximately 30 minutes each once coders became familiarized with the coding system. Krippendorff's alpha was used to assess interrater reliability among all three coders and to account for the interval scale (Hayes & Krippendorff, 2007), with alphas ranging from 0.67 to 0.78. Once the minimum threshold of 0.67 was reached for all coded categories, the remaining videos were divided among the three coders, though several videos were still used as spot-checks to negotiate any discrepancies in the codes. Final reliability for the videos coded together (n = 34) were $\alpha_{conflict} = 0.78$ and $\alpha_{withdrawal} = 0.69$ which indicates acceptable agreement (Krippendorff, 2004).

Perceived Problem Severity. To ensure participants discussed issues that caused significant conflict in their relationship, participants completed a brief survey after their conversation which included three questions assessing perceived problem severity (taken from Bodie et al., 2011). Questions include, "I considered this problem to be very serious," "I considered this problem to be a very severe problem," and "This problem made me very upset." Responses were on a 1 (*strongly disagree*) to 5 (*strongly agree*) scale ($\alpha = .87$; see Appendix I).

Intervention. Following Yeager and Walton's (2011) guidelines for implementing effective interventions, the forgiveness intervention specifically targeted the participants' way of thinking and feeling toward their conflict with their partner. Yeager and Walton (2011) argue that brief interventions are more beneficial compared to lengthy ones, providing evidence that even though previous forgiveness interventions were across multiple weeks, a short, one-time intervention could be just as effective (in their article, they argue that even five-minute

interventions show benefits over 50-minute interventions[10]; Yeager & Walton, 2011). Other interventions have followed this suggestion as well, by including a 15-minute writing task that was effective in reducing cortisol levels among those who had been emotionally hurt (Crowley, 2014).

Adapting the method of Finkel et al.'s (2013) cognitive reappraisal intervention of conflict along with Crowley's (2014) expressive writing intervention of trauma, the current study's forgiveness intervention included a 15-minute writing task. Participants were asked to first recall the conflict conversation cognitively (following Crowley's [2014] recommendation to form the narrative), and then put themselves in a mindset of forgiveness (using an adapted version of the REACH forgiveness workbooks; Worthington, 2003; 2021a). Although the outcomes were not likely to change based on how many words participants wrote (Crowley, 2014), participants were still encouraged to write for the full 15 minutes to further increase the likelihood that they followed the intervention. Participants received the following prompts (see Appendix J for an example worksheet):

1. *Recall the conflict conversation you just had with your partner. Try to create a vivid picture of the event.*
2. *Write about a time when you hurt someone. What did you feel, think, see, and do before, during, and after?*
3. *When you think about the conflict conversation you just had with your partner, write about what you think your partner was experiencing. What are some other possible experiences your partner might have had? Are there any reasons to feel sorry for*

[10] Though seemingly counterintuitive, these shorter interventions may be more effective because they are considered "stealthy" and participants do not feel that they are being targeted for an area in which they need help, thus leading to less resistance to the intervention.

your partner? Does he or she need forgiveness? Do you feel any sorrow on behalf of this person?

4. *Think back to a time in your past when you hurt your partner (or someone else), and you needed forgiveness, and were granted forgiveness. Write a description of this event. What would you call the emotions that you experienced as you realized you had wronged another and needed forgiveness? What did it feel like to be forgiven?*
5. *Then, think about how you might forgive your partner for this conflict. Describe how you might release feelings of negativity or hostility you may have from the conflict.*
6. *What obstacles could you face in forgiving your partner for this conflict?*
7. *Write in the space below what you would say if you were to write a letter to your partner expressing your decisional forgiveness (this is, that you have decided not to hold a grudge and to treat the person as a valuable human) and telling your partner of your experience of emotional forgiveness (that is, that you have replaced negative emotions with positive emotions toward your partner).*
8. *Do your best in your interactions after leaving this laboratory to take this forgiveness mindset. How might you be most successful in doing this? How might forgiving your partner help you make the most of future disagreements in your relationship?*

Perceived Support. To assess the extent to which participants felt supported by their partner, they were asked to complete the Desired and Experienced Social Support Scale (DESS; Xu & Burleson, 2001; see Appendix K). The DESS asks participants how much support they actually receive from their partner, given specific behavioral examples across five subscales. Items include, "Telling you that he/she loves you and feels close to you," "Expressing agreement with your perspective on various situations," "Connecting you with people whom you may turn

to for help," "Giving you advice about what to do," and "Offering to help you do something that needs to be done," to assess emotional, esteem, network, informational, and tangible support, respectively. Responses are on a 1 (*Do not receive at all*) to 5 (*Receive a great deal*) scale. The number of items were shortened from the scale's original version to reduce participant fatigue while still maintaining reliability ($\alpha_{emotional}$ = .74; α_{esteem} = .81; $\alpha_{network}$ = .86; $\alpha_{tangible}$ = .77; $\alpha_{informational}$ = .87)[11].

Attachment. To control for the impact that individual attachment styles may have on the couples' reactions to conflict in the study (in exploratory analyses only), they were asked to report their attachment styles with respect to their feelings toward their marital or dating partner. To assess attachment style, participants completed the Experiences in Close Relationships – Relationship Structures questionnaire (ECR-RS; Fraley et al., 2011; see Appendix L). The ECR-RS contains nine items rated on a 1 (*Strongly disagree*) to 7 (*Strongly agree*) scale, with six questions assessing avoidant attachment (α = .87; e.g., "I don't feel comfortable opening up to my partner"), and three questions assessing anxious attachment (α = .91; e.g., "I'm afraid that my partner may abandon me"). Higher scores indicate higher avoidance and higher anxiousness, respectively. Language referring to the target person was altered from "this person" to "my partner."

Trait Forgiveness. As studies have shown that trait and state forgiveness can predict relational and psychological outcomes (e.g., Lawler-Row & Piferi, 2006), participants were asked about their tendencies to forgive (trait forgiveness), regardless of receiving the forgiveness intervention because it is possible that the intervention may show ceiling effects for those already

[11] Reliabilities reported here are from Xu & Burleson's (2001) original study; the current study's reliabilities can be found in the Results section of this dissertation.

likely to forgive.[12] This variable was then used as a control variable in the final analyses testing Hypothesis 2, and was assessed with the Heartland Forgiveness Scale (HFS; Thompson et al., 2005; Thompson & Snyder, 2019). The HFS contains 18 items across three subscales. For the purpose of this study, I only included one 6-item subscale to measure "forgiveness of other." Example items include, "With time I am understanding of others for the mistakes they've made," and "I continue to be hard on others who have hurt me." Items are on a seven-point scale (1 = *Almost always false of me*; 7 = *Almost always true of me*). Cronbach's alpha ranges from .78 to .81 with test-test reliability between .69 and .73 (Thompson & Snyder, 2019; see Appendix M).

State Forgiveness. To assess the extent to which participants forgave their partner either spontaneously or as an outcome of the forgiveness intervention, participants completed the Transgression-Related Interpersonal Motivations inventory (TRIM-18; McCullough et al., 2006; Thompson & Snyder, 2019; see Appendix N). In its original form, the instructions ask participants to think of one person who treated them unfairly or hurt them in the past. The instructions explain that the participant should visualize the events and the person involved in the interaction and keep that person in mind while answering the questions in the scale. I revised these instructions to have the participants visualize the argument they had with their relationship partner during the study while answering the questions. The items in the original TRIM-12 inventory (McCullough et al., 1998) were divided into two subscales: avoidance and revenge. The avoidance subscale contains seven items, including "I keep as much distance between us as possible," "I withdraw from him/her," etc. The revenge subscale contains five items, including "I

[12] It is difficult to identify the number or percentage of individuals who are more prone to forgive others, as many studies assessing trait forgiveness simply report participants' average frequency of forgiving others separated by demographics (e.g., women are more likely to forgive than men, individuals older than 70 are more likely to forgive than those younger; Lawler-Row & Piferi, 2006), or report other constructs that are associated with higher or lower levels of trait forgiveness (e.g., church attendance or work-related stress; Lawler-Row & Piferi, 2006; Li et al., 2020)

wish that something bad would happen to him/her," "I'm going to get even," etc. Reliabilities range from .86 to .90 for the avoidance and revenge subscales, respectively (McCullough et al., 1998). However, a revised version to the TRIM-12 includes a 6-item benevolence subscale, resulting in 18 total items. Example items include, "Even though their actions hurt me, I have goodwill for them," and "I forgive them for what they did to me." When assessing reliabilities after the addition of the third subscale, it is recommended to use all 18 items as one full scale rather than assessing subscales separately (Thompson & Snyder, 2019). Cronbach's alpha indicates high reliability using this method ($\alpha = .92$). All 18 items are on a 1 (*Strongly disagree*) to 5 (*Strongly agree*) scale.

Physical and Mental Health. To control for the effects of physical ailments on perceived stress and other outcomes (in exploratory analyses only), symptoms were compiled from other studies assessing the relationship between stress, mental health, and physical health. Herman and Lester (1994) used a list of 37 physical symptoms (taken from Goldberg, 1978).Seventeen items were excluded for the current study because some symptoms were more related to mental health rather than physical health, which are already being assessed in a separate measure (e.g., nervousness, worrisome thoughts, periods of depression), and if included would create artificially high correlations with the mental health measure. In addition, other symptoms referred to behaviors rather than symptoms (e.g., alcohol/drug use), were related to sleep quality (e.g., nightmares, early morning awakening), or were not seen to be relevant to the current sample (e.g., arthritis, colitis attacks). Example symptoms that were assessed include nausea/vomiting, diarrhea, neck/shoulder muscle ache, common flu/cold, hives, etc. Additionally, specific items from Pennebaker's Inventory of Limbic Languidness (Pennebaker, 1982) scale were included: chest pain, coughing or sore throat, faintness or dizziness, and feeling

out of breath (see Appendix O for a full list of items). Participants were asked whether they have suffered from each symptom (1) *never*, (2) *occasionally*, (3) *frequently*, or (4) *constantly* within the last three months.

Participants also reported their mental health ailments to control for any effects on perceived stress and the other outcomes (in exploratory analyses only). Participants completed the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983), which consists of seven items related to anxiety and seven related to depression. Responses are on a 1 to 4 scale with higher numbers indicating greater levels of anxiety or depression. Zigmond and Snaith (1983) report initial Cronbach's alphas from .81 to .90 and test-retest reliabilities from .80 to .86. Further evaluations of the scale report similar alphas (anxiety $\alpha = .85$; depression $\alpha = .80$; Roberts et al., 2001). Example questions include "I feel tense or wound up," "Worrying thoughts go through my mind," "I still enjoy the things I used to enjoy," and "I feel as if I am slowed down." (see Appendix P).

Next-Day Measures. As the laboratory appointment was ending, participants were reminded that the research team would send them a final survey that they would need to complete individually the next morning. The purpose of sending these surveys after participants left the meeting was to assess the extent to which the intervention impacted their thoughts and behaviors. In addition to the measures listed below, participants also completed an additional assessment of sleep, perceived stress, mood, and perceived support, as described in sections above.

Rumination. To assess the extent to which participants continued to think about and/or discuss their interaction from the laboratory appointment as a function of the intervention, and the impact that may have on their next-day outcomes, participants completed the rumination

scale, an eight-item measure adapted by McCullough, Orsulak, et al. (2007) from the Intrusiveness subscale of the Impact of Event Scale (Horowitz et al., 1979). Participants completed this measure twice: once referring to how they felt before falling asleep and once again referring to how they currently felt after waking. Items were slightly altered to reflect the repeated time assessments as well as to reflect the conversation the participants experienced rather than a traumatic event, which is what the original scale intended. Example items include, "I couldn't/can't stop thinking about the conversation I had with my partner," "Strong feelings about what my partner said to me kept/keep bubbling up," and "I found/find myself playing the conversation over and over in my head" (see Appendix Q). Responses were on a 1 (*Not at all true of me*) to 5[13] (*Extremely true of me*) scale, which reflects the original anchors from Horowitz et al., (1979) rather than McCullough, Orsulak, et al.'s, (2007) adaptation, as the latter asked about the frequency of rumination over a several-week period. Cronbach's alpha revealed high reliability for these items ($\alpha = .94$).

Relationship Satisfaction. To assess the extent to which participants felt satisfied within their relationships, they completed the Relationship Assessment Scale (RAS; Hendrick, 1988; see Appendix R). The RAS is comprised of seven items and is measured on a 1 to 5 scale with anchors that were altered to better represent the questions posed (1 = *Not at all*; 5 = *Very much/A lot*). Example items include, "How well does your partner meet your needs," and "To what extent has your relationship met your original expectations" ($\alpha = .86$).

[13] This scale was originally published as a 1 to 6-point scale, but because no other scale used in this study was on a 6-point Likert scale, it was changed to a 1 to 5-point scale instead.

RESULTS

Among the 118 individuals who participated in the study (59 couples), 108 (91.5%) indicated they were heterosexual, while seven (6%) reported being bisexual, and the remaining three (2.5%) reported being pansexual, asexual, or questioning. The sample consisted of 106 (90%) individuals in a committed relationship and/or living together, six (5%) who were engaged, and six (5%) who were married. Regarding race, 84 (71%) were European American/White and 20 (17%) were Latino/Latina/Hispanic. Other races include African American/Black (n = 2 [2%]), Asian American/Pacific Islander (n = 2 [2%]), Asian (n = 2 [2%]), or a combination of races (n = 7 [6%]). Participants were 21 years old on average (SD = 4.21; range from 18 to 43 years). Out of those randomly assigned to the forgiveness writing condition, only 32 participants (48%) completed all the provided questions. Specifically, 66 (100%) completed the first question, 62 (94%) completed the second, 64 (97%) completed the third, 62 (94%) completed the fourth, 55 (83%) completed the fifth, 50 (76%) completed the six, 41 (62% completed the seventh, and only 37 (56%) completed the eighth question. Out of those randomly assigned to the control writing condition, 47 participants (90%) completed all the questions with 52 (100%) completing the first question, and 47 (90%) completing the second question.

Preliminary Analyses

To ensure that participants were communicating during the study as they normally would had they not been recorded, I correlated the criticism and stonewalling subscales of the Four Horseman scale that participants completed as part of their screening survey with the conflict and withdrawal codes that were assigned to each individual by the two trained research assistants and myself. Results showed that criticism scores were marginally significantly correlated with

conflict ($r = 0.18$, $p = .055$), and stonewalling was marginally significantly correlated with withdrawal ($r = 0.16$, $p = .084$). The severity of the topics discussed was normally distributed from *not at all serious* to *very serious* ($M = 2.67$, $SE = 0.88$), was significantly correlated between genders, $r = 0.35$, $p = .006$, and results from a paired-samples t-test indicated perceived problem severity did not statistically significantly differ between men and women, $t(58) = -0.17$, $p = .865$, indicating consistency among partners' perceptions.

Many participants indicated that they forgave their partner, and many others indicated there was nothing to forgive, as the problem they discussed was not anyone's fault or the problem did not cause them to feel hurt. Additionally, a chi-square test indicated that the ultimate decision to forgive the partner did not depend on experimental condition, $\chi^2(2) = 1.87$, $p = .393$. The means, standard deviations, and reliabilities for all variables of interest, divided by condition and gender, are presented in Table 2. Correlations between the primary variables of interest used to test the two hypotheses are presented in Table 3, separated by gender.

Primary Analyses

Because this project's sample contains heterosexual couples, the data violates the assumption of independence among participants (Kenny et al., 2006), and thus a dyadic model was needed to test the influence that each individual has on each other within the couple. Variables were normally distributed and did not violate assumptions of normality. Predictor variables were grand mean centered (Aiken & West, 1991).

Hypothesis 1

My first hypothesis was that poor communication patterns would predict increased stress directly after engaging in the conflict discussion paradigm while holding pre-existing levels of serial conflict, short-term stress, and baseline stress pre-conflict constant. To test this first

hypothesis, I performed a series of regression analyses using the basic Actor-Partner Interdependence Model (APIM; Kashy & Kenny, 2000) using SPSS with a pairwise-structured dataset where each row is an individual. The APIM is the most popular model used to test the influence that dyadic members have on one another (Fitzpatrick et al., 2016), and simultaneously tests the effect of one's own predictor score on one's own outcome (i.e., actor effects), and one's own predictor score on the partner's outcome (i.e., partner effects; Stas et al., 2018). Dyads were treated as distinguishable by gender, as gender is a within-dyad variable that can meaningfully differentiate members of the couple (Kenny & Cook, 1999), and the error variances were separated for the two partners within each dyad using heterogeneous compound symmetry (CSH), which allows for non-constant variance but a constant correlation.

The APIM with distinguishable dyads was applied to examine the impact of men and women's conflict communication scores on their own, as well as their partner's immediate stress. An additional APIM with distinguishable dyads was applied to examine the impact of men and women's withdrawal communication scores on their own as well as their partner's immediate stress. Actor and partner effects for both men and women were examined. Again, results are reported while holding serial conflict, short-term stress, and baseline stress pre-conflict constant. For means and standard deviations for both predictor variables and all outcome variables (for both hypotheses), separated by gender, see Table 4.

Stress Post-Conflict

Conflict. The APIM results showed that the overall actor effect for both men and women's conflict score on their own stress levels measured directly after the conflict conversation was not statistically significant (b = -0.03, SE = 0.10, p = .75, 95% CI [-0.24, 0.17]). Specifically, men's conflict score did not indicate an actor effect on their own stress score

(*b* = 0.05, *SE* = 0.16, *p* = .75, 95% CI [-0.26, 0.36]), and women's conflict score did not indicate an actor effect on their own stress score (*b* = -0.12, *SE* = 0.14, *p* = .42, 95% CI [-0.41, 0.17]). These actor effects were not significantly different (*p* = .44, 95% CI [-0.26, 0.59]). The overall partner effect for both men and women's conflict score on their partner's stress levels was marginally statistically significant (*b* = 0.18, *SE* = 0.10, *p* = .08, 95% CI [-0.02, 0.39]). Specifically, women's conflict scores did not significantly predict men's stress levels (*b* = 0.02, *SE* = 0.15, *p* = .92, 95% CI [-0.29, 0.32]), but men's conflict scores significantly predicted women's stress levels (*b* = 0.35, *SE* = 0.15, *p* = .02, 95% CI [0.06, 0.65]; See Figure 2), such that for every one unit increase in men's conflict score, there was a corresponding 0.35 unit increase in women's stress. These partner effects were not statistically different from each other (*p* = .12, 95% CI [-0.77, 0.09]).[14]

Withdrawal. The APIM results showed that the overall actor effect for both men and women's withdrawal score on their own stress levels measured directly after the conflict conversation was not statistically significant (*b* = 0.23, *SE* = 0.16, *p* = .16, 95% CI [-0.09, 0.54]). Specifically, men's withdrawal score did not indicate an actor effect on their own stress score (*b* = 0.03, *SE* = 0.22, *p* = .87, 95% CI [-0.40, 0.47]), but women's withdrawal score indicated a marginally statistically significant actor effect on their own stress score (*b* = 0.42, *SE* = 0.23, *p* = .08, 95% CI [-0.04, 0.88]), such that for every one unit increase in women's withdrawal, there was a 0.42 unit increase in their own stress. These actor effects were not statistically significantly different (*p* = .22, 95% CI [-1.01, 0.24]). The overall partner effect for both men and women's withdrawal score on their partner's stress levels post-conflict was not significant (*b* = 0.09, *SE* =

[14] Other covariates were tested as well (including minutes spent sleeping the night before, whether they shared a bed with their partner the night before, relationship length, attachment style, mental and physical health, and positive and negative mood from before the conflict conversation). None of these covariates impacted these results.

0.16, p = .60, 95% CI [-0.24, 0.41]). Specifically, women's withdrawal scores did not significantly predict men's stress levels (b = 0.10, SE = 0.25, p = .70, 95% CI [-0.40, 0.59]), and men's withdrawal scores did not significantly predict women's stress levels (b = 0.08, SE = 0.21, p = .71, 95% CI [-0.35, 0.51]). These partner effects were not significantly different (p = .96, 95% CI [-0.62, 0.66]).[15]

Overall, these results provide partial support for the hypothesis that for those experiencing negative communication patterns, engaging in the conflict discussion paradigm can lead to increased stress, particularly for women with partners who communicate with more severe conflictual tendencies.

Hypothesis 2

My second hypothesis was that the experimental condition (control versus forgiveness writing condition) would moderate the relationship between poor communication patterns and various negative outcomes while holding trait forgiveness constant. Furthermore, because serial conflict and short-term stress were hypothesized as covariates in Hypothesis 1, they remain as covariates when testing the moderation within Hypothesis 2. Stress pre-conflict was not included in these analyses as a covariate as it was only applicable for Hypothesis 1.

As with Hypothesis 1, a series of regression analyses were performed using SPSS with a pairwise-structured dataset where each row was an individual, and actor and partner effects were first tested, with gender as a moderator to examine the effects for men and women as both actors and partners. For Hypothesis 2, experimental condition was added as an additional predictor to test the moderation models. The forgiveness condition was the reference group for all analyses; positive betas indicate higher values for those in the forgiveness condition compared to those in

[15] The other covariates listed in Footnote 13 were tested as well. None of these covariates impacted this model.

the control condition for all variables. Dyads were still considered distinguishable by gender, and the error variances were separated for the two partners within each dyad using heterogenous compound symmetry (CSH).

Stress Post-Writing

Conflict by Condition. The Mixed Model Regression APIM results showed that the overall effect for condition on stress levels measured directly after the writing conditions was not statistically significant (b = 0.07, SE = 0.12, p = .52, 95% CI [-0.16, 0.31]). However, there was a statistically significant actor by condition interaction effect for men (b = -0.85, SE = 0.41, p = .04, 95% CI [-1.67, -0.02]), such that for every one unit increase in men's conflict score, there was a 0.85 unit decrease in men's own stress levels for those in the forgiveness condition compared to those in the control condition. Women's conflict score did not indicate a statistically significant actor by condition interaction effect (b = 0.41, SE = 0.35, p = .25, 95% CI [-0.30, 1.11). Results showed there was not a statistically significant partner by condition interaction for men (b = -0.18, SE = 0.39, p = .65, 95% CI [-0.95, 0.60]), though there was a statistically significant partner by condition interaction for women (b = 0.96, SE = 0.37, p = .01, 95% CI [0.21, 1.70]), such that for every one unit increase in men's conflict score, there was a 0.96 increase in women's stress levels post-writing for those in the forgiveness condition compared to those in the control condition (See Figure 3). Interestingly, while holding stress from before the writing condition (but post-conflict) constant, the statistically significant actor by condition interaction effect for men became only marginally statistically significant (b = -0.47, SE = 0.27, p = .09, 95% CI [-1.02, 0.08]), and the statistically significant partner by condition interaction effect for women became only marginally statistically significant (b = 0.44, SE = 0.24, p = .08, 95% CI [-0.04, 0.93]).

Withdrawal by Condition. The Mixed Model Regression APIM results showed that the overall effect for condition on stress levels measured directly after the writing conditions was not statistically significant (b = 0.14, SE = 0.12, p = .25, 95% CI [-0.10, 0.38]). However, there was a marginally statistically significant actor by condition interaction effect for men (b = -1.22, SE = 0.61, p = .05, 95% CI [-2.45, 0.01]). Women's withdrawal score did not indicate a statistically significant actor by condition interaction effect (b = 0.16, SE = 0.54, p = .77, 95% CI [-0.93, 1.25]). Results showed there was not a statistically significant partner by condition interaction for men (b = 0.04, SE = 0.59, p = .95, 95% CI [-1.14, 1.22]), and there was not a statistically significant partner by condition interaction for women (b = -0.30, SE = 0.62, p = .64, 95% CI [-1.54, 0.95]). Interestingly, while holding stress measured immediately after the conflict discussion but before the writing condition constant, the marginally statistically significant actor by condition interaction effect for men became statistically significant (b = -0.80, SE = 0.39, p = .04, 95% CI [-1.57, -0.03]). All other paths remained non-significant.

Positive Mood Post-Writing

Conflict by Condition. The Mixed Model Regression APIM results showed that the overall effect for condition on positive mood measured post-writing was not statistically significant (b = 0.02, SE = 0.09, p = .84, 95% CI [-0.16, 0.19]). Results indicated there was not a statistically significant actor by condition interaction effect for men (b = -0.36, SE = 0.27, p = .19, 95% CI [-0.89, 0.18]), and there was not a statistically significant actor by condition interaction effect for women (b = 0.12, SE = 0.25, p = .63, 95% CI [-0.39, 0.63]). Results showed there was also not a statistically significant partner by condition interaction for men (b = -0.25, SE = 0.25, p = .33, 95% CI [-0.75, 0.25]), and there was not a statistically significant partner by condition interaction for women (b = 0.40, SE = 0.27, p = .15, 95% CI [-0.14, 0.94]).

Withdrawal by Condition. The Mixed Model Regression APIM results showed that the overall effect for condition on positive mood measured post-writing was not statistically significant (b = 0.03, SE = 0.09, p = .69, 95% CI [-0.14, 0.21]). Results indicated there was not a statistically significant actor by condition interaction effect for men (b = -0.10, SE = 0.37, p = .78, 95% CI [-0.84, 0.64]), and there was not a statistically significant actor by condition interaction effect for women (b = 0.22, SE = 0.36, p = .55, 95% CI [-0.51, 0.95]). However, results showed there was a statistically significant partner by condition interaction effect for men (b = -0.78, SE = 0.36, p = .03, 95% CI [-1.49, -0.06]), such that for every one unit increase in women's withdrawal, there is a corresponding 0.78 unit decrease in men's positive mood for those in the forgiveness condition compared to those in the control condition (see Figure 4). There was not a statistically significant partner by condition interaction for women (b = 0.54, SE = 0.38, p = .16, 95% CI [-0.22, 1.31]).

Negative Mood Post-Writing

Conflict by Condition. The Mixed Model Regression APIM results showed that the overall effect for condition on negative mood measured post-writing was not statistically significant (b = 0.08, SE = 0.05, p = .11, 95% CI [-0.02, 0.18]). Results indicated there was a marginally statistically significant actor by condition interaction effect for men (b = -0.30, SE = 0.16, p = .07, 95% CI [-0.63, 0.02]), but there was not a statistically significant actor by condition interaction effect for women (b = 0.09, SE = 0.16, p = .60, 95% CI [-0.24, 0.42]). Results showed there was not a statistically significant partner by condition interaction for men (b = 0.08, SE = 0.15, p = .62, 95% CI [-0.23, 0.39]), and there was not a statistically significant partner by condition interaction for women (b = -0.05, SE = 0.17, p = .76, 95% CI [-0.40, 0.29]).

Withdrawal by Condition. The Mixed Model Regression APIM results showed that the overall effect for condition on negative mood measured post-writing was not statistically significant (b = 0.09, SE = 0.06, p = .15, 95% CI [-0.03, 0.21]). Results indicated there was a statistically significant actor by condition interaction effect for men (b = -0.53, SE = 0.24, p = .03, 95% CI [-1.01, -0.04]), such that for every one unit increase in men's withdrawal, there is a corresponding 0.53 unit decrease in their own negative mood for those in the forgiveness condition compared to those in the control condition. There was not a statistically significant actor by condition interaction effect for women (b = 0.19, SE = 0.24, p = .44, 95% CI [-0.29, 0.66]). Results showed there was not a statistically significant partner by condition interaction for men (b = -0.13, SE = 0.23, p = .57, 95% CI [-0.60, 0.34]), but there was a marginally statistically significant partner by condition interaction for women (b = 0.47, SE = 0.25, p = .06, 95% CI [-0.03, 0.97]; see Figure 5).

Perceived Support Post-Writing

Conflict by Condition. The Mixed Model Regression APIM results showed that the overall effect for condition on perceived support was not statistically significant (b < -0.01, SE = 0.06, p = .96, 95% CI [-0.12, 0.11]). Results indicated there was not a statistically significant actor by condition interaction effect for men (b = -0.09, SE = 0.16, p = .59, 95% CI [-0.41, 0.23]), and there was not a statistically significant actor by condition interaction effect for women (b = -0.09, SE = 0.18, p = .62, 95% CI [-0.46, 0.28]). Results showed there was also not a statistically significant partner by condition interaction for men (b = -0.16, SE = 0.15, p = .31, 95% CI [-0.46, 0.15]), and there was not a statistically significant partner by condition interaction for women (b = 0.10, SE = 0.20, p = .62, 95% CI [-0.29, 0.49]).

Withdrawal by Condition. The Mixed Model Regression APIM results showed that the overall effect for condition on perceived support was not statistically significant (b < -0.01, SE = 0.06, p = .96, 95% CI [-0.13, 0.12]). Results indicated there was a marginally statistically significant actor by condition interaction effect for men (b = -0.45, SE = 0.25, p = .08, 95% CI [-0.94, 0.05]), and there was not a statistically significant actor by condition interaction effect for women (b = 0.03, SE = 0.26, p = .92, 95% CI [-0.49, 0.55]). Results showed there was also not a statistically significant partner by condition interaction effect for men (b = -0.39, SE = 0.24, p = .11, 95% CI [-0.87, 0.09]), but there was a statistically significant partner by condition interaction for women (b = 0.62, SE = 0.27, p = .03, 95% CI [0.07, 1.16]; see Figure 6), such that for every one unit increase in men's withdrawal, there is a corresponding 0.62 unit increase in perceived support for women in the forgiveness condition compared to women in the control condition.

Rumination Post-Appointment

Conflict by Condition. The Mixed Model Regression APIM results showed that the overall effect for condition on rumination post-appointment was not statistically significant (b = 0.05, SE = 0.07, p = .48, 95% CI [-0.09, 0.18]). Results indicated there was not a statistically significant actor by condition interaction effect for men (b = -0.17, SE = 0.27, p = .53, 95% CI [-0.72, 0.37]), and there was not a statistically significant actor by condition interaction effect for women (b = 0.08, SE = 0.18, p = .67, 95% CI [-0.28, 0.44]). Results showed there was also not a statistically significant partner by condition interaction for men (b = -0.09, SE = 0.26, p = .73, 95% CI [-0.60, 0.42]), and there was not a statistically significant partner by condition interaction for women (b = -0.08, SE = 0.19, p = .67, 95% CI [-0.46, 0.30]).

Withdrawal by Condition. The Mixed Model Regression APIM results showed that the overall effect for condition on rumination post-appointment was not statistically significant (b = 0.05, SE = 0.07, p = .49, 95% CI [-0.09, 0.18]). Results indicated there was not a statistically significant actor by condition interaction effect for men (b = -0.39, SE = 0.37, p = .30, 95% CI [-1.14, 0.36]), and there was not a statistically significant actor by condition interaction effect for women (b = -0.11, SE = 0.25, p = .66, 95% CI [-0.62, 0.40]). Results showed there was also not a statistically significant partner by condition interaction for men (b = -0.20, SE = 0.36, p = .59, 95% CI [-0.92, 0.53]), and there was not a statistically significant partner by condition interaction for women (b = -0.15, SE = 0.27, p = .57, 95% CI [-0.69, 0.38]).

Time Spent Sleeping Post-Appointment

Conflict by Condition. The Mixed Model Regression APIM results showed that the overall effect for condition on time spent sleeping post-appointment was not statistically significant (b = 1.63, SE = 9.44, p = .86, 95% CI [-17.31, 20.57]). Results indicated there was not a statistically significant actor by condition interaction effect for men (b = -35.44, SE = 25.93, p = .18, 95% CI [-87.44, 16.57]), and there was not a statistically significant actor by condition interaction effect for women (b = -13.33, SE = 23.47, p = .57, 95% CI [-60.50, 33.84]). Results showed there was not a statistically significant partner by condition interaction for men (b = -14.90, SE = 24.38, p = .54, 95% CI [-63.8, 34.01]), but there was a marginally statistically significant partner by condition interaction for women (b = 45.96, SE = 24.59, p = .07, 95% CI [-3.48, 95.40]), such that for every one unit increase in men's conflict, women in the forgiveness condition slept 45.96 minutes longer than those in the control condition.

Withdrawal by Condition. The Mixed Model Regression APIM results showed that the overall effect for condition on time spent sleeping post-appointment was not statistically

significant (b = 4.47, SE = 9.78, p = .65, 95% CI [-15.16, 24.09]). Results indicated there was not a statistically significant actor by condition interaction effect for men (b = 27.38, SE = 36.06, p = .45, 95% CI [-44.97, 99.73]), and there was not a statistically significant actor by condition interaction effect for women (b = 36.15, SE = 31.31, p = .25, 95% CI [-26.87, 99.18]). Results showed there was not a statistically significant partner by condition interaction for men (b = -46.76, SE = 34.97, p = .19, 95% CI [-116.91, 23.39]), but there was a statistically significant partner by condition interaction for women (b = -81.31, SE = 32.67, p = .02, 95% CI [-147.04, -15.59]; see Figure 7), such that for every one unit increase in men's withdrawal, there is a corresponding 81.31 minute decrease in women's time spent sleeping for those in the forgiveness condition compared to the control.

Sleep Quality Post-Appointment

Conflict by Condition. The Mixed Model Regression APIM results showed that the overall effect for condition on sleep quality measured post-appointment was not statistically significant (b = 1.27, SE = 2.46, p = .61, 95% CI [-3.67, 6.22]). Results indicated there was not a statistically significant actor by condition interaction effect for men (b = 10.19, SE = 7.29, p = .17, 95% CI [-4.43, 24.82]), and there was not a statistically significant actor by condition interaction effect for women (b = -3.20, SE = 6.34, p = .62, 95% CI [-15.91, 13.37]). Results showed there was not a statistically significant partner by condition interaction for men (b = -8.97, SE = 7.13, p = .21, 95% CI [-23.28, 5.35]), and there was not a statistically significant partner by condition interaction for women (b = -0.16, SE = 6.58, p = .98, 95% CI [-13.38, 13.06]).

Withdrawal by Condition. The Mixed Model Regression APIM results showed that the overall effect for condition on sleep quality measured post-appointment was not statistically

significant (*b* = 3.03, *SE* = 2.23, *p* = .18, 95% CI [-1.44, 7.50]). Results indicated there was not a statistically significant actor by condition interaction effect for men (*b* = -14.25, *SE* = 10.02, *p* = .16, 95% CI [-34.38, 5.88]), and there was not a statistically significant actor by condition interaction effect for women (*b* = -3.85, *SE* = 8.39, *p* = .65, 95% CI [-20.70, 13.00]). Results showed there was a statistically significant partner by condition interaction for men (*b* = -20.05, *SE* = 9.89, *p* = .05, 95% CI [-39.91, -0.19]; see Figure 8), such that for every one unit increase in women's withdrawal scores, there is a corresponding 20.05 unit decrease in men's sleep quality for those in the forgiveness condition compared to the control. There was not a statistically significant partner by condition interaction for women (*b* = -11.31, *SE* = 8.78, *p* = .20, 95% CI [-28.95, 6.33]).

Relationship Satisfaction Next Day

Conflict by Condition. The Mixed Model Regression APIM results showed that the overall effect for condition on relationship satisfaction was not statistically significant (*b* = 0.00, *SE* = 0.04, *p* = .99, 95% CI [-0.09, 0.09]). Results indicated there was not a statistically significant actor by condition interaction effect for men (*b* = 0.15, *SE* = 0.13, *p* = .26, 95% CI [-0.11, 0.41]), and there was not a statistically significant actor by condition interaction effect for women (*b* = -0.06, *SE* = 0.12, *p* = .63, 95% CI [-0.31, 0.19]). Results showed there was also not a statistically significant partner by condition interaction for men (*b* = -0.08, *SE* = 0.12, *p* = .51, 95% CI [-0.33, 0.17]), and there was not a statistically significant partner by condition interaction for women (*b* = -0.12, *SE* = 0.13, *p* = .34, 95% CI [-0.38, 0.13]).

Withdrawal by Condition. The Mixed Model Regression APIM results showed that the overall effect for condition on relationship satisfaction was not statistically significant (*b* = -0.01, *SE* = 0.05, *p* = .92, 95% CI [-0.10, 0.09]). Results indicated there was not a statistically

significant actor by condition interaction effect for men (b = -0.27, SE = 0.18, p = .14, 95% CI [-0.65, 0.09]), and there was not a statistically significant actor by condition interaction effect for women (b = 0.06, SE = 0.17, p = .72, 95% CI [-0.28, 0.41]). Results showed there was also not a statistically significant partner by condition interaction for men (b = -0.08, SE = 0.18, p = .65, 95% CI [-0.44, 0.28]), and there was not a statistically significant partner by condition interaction for women (b = 0.15, SE = 0.18, p = .42, 95% CI [-0.22, 0.51]).

The overall summary of the moderating effect of condition on communication patterns and the various outcomes presented above is complicated. Regarding conflict scores, the only two statistically significant paths included men's conflict predicting a decrease in their own stress, but an increase in women's stress for those in the forgiveness condition compared to the control. Additionally, while holding stress measured directly before the writing condition constant, these effects become marginally statistically significant.

Regarding withdrawal scores, it seems the writing conditions impacted these outcomes more prominently than did conflict scores. Specifically, men's withdrawal patterns statistically significantly predicted men's own negative mood and women's perceived support in the expected direction that would suggest experiencing the forgiveness writing condition helped make these outcomes less-negative compared to the control group. Interestingly, several statistically significant effects were revealed in the *opposite* direction of what was predicted, such that women's withdrawal was associated with a decrease in men's positive mood and in men's sleep quality after being in the forgiveness writing condition. Additionally, men's withdrawal patterns statistically significantly predicted a decrease in women's time spent sleeping after being in the forgiveness writing condition compared to the control. While holding stress measured directly before the writing condition constant, the marginal effect of men's withdrawal on their own stress

directly after the writing condition became statistically significant in the predicted direction. Overall, there is not enough evidence to suggest support for the moderating effect of condition on conflict and the various outcomes presented, although there is some evidence to suggest support for the moderating effect of condition on withdrawal and several outcomes.

DISCUSSION

Romantic relationships offer an opportunity for couples to provide and receive support for one another and to foster intimate connections (Sprecher & Fehr, 2006). Communication is a key component to not only building the foundation for the relationship to grow, but it also impacts how couples navigate conflict (Kline, Julien, et al., 2004). Should individuals demonstrate compassion, concern, and understanding for their partner during conflict, they will likely experience healthy and happy relationships (Collins & Feeney, 2000). However, should individuals demonstrate contempt, criticism, or demandingness of their partner during conflict, they are less likely to experience these healthy relationships (Gottman et al., 1998). Researchers studying communication patterns, or topics related to conflict in particular, often ask couples to communicate about such conflict as an element of the study (e.g., Barnes et al., 2007; Gordon & Chen, 2016; Gottman & Levenson, 1985; McNulty, 2008). To my knowledge, these researchers have not followed-up with participants or explored the potential negative outcomes of engaging in such research activities, especially for those with problematic communication styles.

This study had two main goals: to determine the extent to which engaging in a conflict discussion for research purposes would lead to negative personal outcomes for those demonstrating poor communication skills, and to determine whether implementing a short writing intervention would help mitigate those negative outcomes by asking participants to explore a forgiveness mindset. Results provide insight into these research questions.

The first hypothesis predicted that demonstrating poor communication patterns during a conflict conversation would predict increased stress directly after engaging in the conflict discussion paradigm. These relationships were tested while holding serial conflict, short-term

stress (stress experienced in the last three weeks), and baseline stress pre-conflict constant. While specific predictions were not made as to which communication style (actor or partner) would impact which participant's stress, both actor and partner effects were examined by gender as part of the Actor-Partner Interdependence Model. This model allows researchers to examine the impact that one individual has on their own outcomes (i.e., actor effects), and the impact that one individual has on their partner's outcomes (i.e., partner effects). In this study, men and women in these relationships served as both actors and partners in the relationship.

When assessing the extent to which an individual's stress response was predicted by communication patterns, men's conflict scores (but not women's) predicted an increase in women's immediate stress response measured directly after the conflict conversation, even while holding initial levels of immediate stress constant (i.e., the stress participants reported at the beginning of the study; this is in addition to the short-term stress reported from the previous three weeks). Interestingly, women's withdrawal scores also predicted an increase in women's own immediate stress response measured post-conflict. However, this effect was only marginally statistically significant while holding pre-conflict stress constant. It is possible that these participants were experiencing stress during (and before) the conversation and instead of increasing their conflict communication, they withdrew and became silent. This would suggest that perhaps there is another predicting factor preceding women's likelihood to engage in withdrawal patterns during the conversation. Additional analyses would be needed to further test whether men's communication patterns predicted both their partner's communication reaction and their partner's subsequent stress response, as some researchers suggest that when one partner engages in more demanding conflict patterns, the partner may react by withdrawing as a way to better control the severity of the conflict conversation (Gottman & Driver, 2005).

In the short-term, disengaging from the conversation may be beneficial, as responding neutrally can serve to prevent negative escalation (Carstensen et al., 1995). However, responding neutrally to conflict through withdrawal (or stonewalling) can be particularly harmful as it can actually *increase* conflict over time and subsequently reduce relationship satisfaction long-term (Hooper et al., 2017). It is possible that more severe conflict was not captured in the conflict discussion paradigm because of the 10-minute limit. Had participants continued their conversation, more severe patterns of conflict may have been recorded as participants began to react more emotionally to their partner's withdrawal. In fact, during the team's coding meetings, there were several instances where we discussed how the conflict was tense during the conversation, but it did not escalate into something more severe because one partner was withdrawn (a paired-samples *t*-test indicated withdrawal scores did not differ by gender; $t[58] = 0.29$, $p = .776$), and/or the time had ended just as the topic of conversation began to shift into something more serious.

Men's self-reported stress measured directly after the conflict discussion was not impacted by conflict or withdrawal scores from either themselves or their partners. Therefore, it seems that women are more negatively impacted by the conflict discussion paradigm than men, and this is particularly true when men engage in more conflictual styles of communicating, thus aligning with the interdependence theory which suggests a person's outcomes depend on their partner's behavior (Van Lange & Rusbult, 2012), and more specifically that the men's role within a conflict discussion is more critical in determining the partner's response than vice versa (Gottman & Driver, 2005). It is also possible that men were less impacted by the conflict discussion paradigm because they are more likely to engage in strategies that help them regulate

the conflict itself, thereby resulting in them regulating their emotional and physiological responses to such conflict as well (Gottman & Driver, 2005).

Although men's conflict scores significantly impacted women's stress response and women's withdrawal impacted their own stress, it is difficult to say whether this stress reaction was in response to the discussion or to their partner's communication patterns alone. However, because initial levels of stress, stress from the previous three weeks, and serial conflict scores were all held constant, the significant impacts of communication style on stress further highlights the effect that discussing conflict during a study can have on stress when those patterns are negative, or when they deviate from how the couple normally interacts. Additional evidence that may suggest engaging in the conflict discussion paradigm was harmful or problematic was in the participants' free responses collected the morning after the study session. All participants were asked to briefly reflect on their conversation from the day before and report whether they had forgiven their partner and to what extent they continued to discuss the conflict with their partner or others. Although these questions did not explicitly ask participants to reflect on their experiences as part of the study itself, some couple members offered insight as to how the study impacted their conversation during the study and in the conversations following. For example, one participant had written that he had forgiven his partner after the discussion because he did not have any problems with her but "*was forced to talk about things that start fights*," suggesting that participants interpreted the conflict discussion paradigm as a situation encouraging them to disagree and argue rather than simply talk about their areas of disagreement. For others, engaging in the conflict discussion paradigm seemed to aggravate already-existing arguments. For one participant in particular, they reported they did not forgive their partner because "*they are a lot meaner off camera and continued the argument even after the fact*." Another participant

described an interaction that happened later that night in which her partner "*blew up*" at her and left the house because their argument had continued after the study session had ended. The individual ultimately came back to the house and apologized, which helped to resolve the outstanding conflict, though it seemed the argument affected the participant enough for her to describe it the next morning.

Additionally, even though I tried to make the conversation seem as natural as possible by leaving the room while the participants talked and encouraged them to simply focus on each other, several participants expressed that the interaction did not follow their natural patterns of communication. For example, one participant indicated that he felt strange talking about their conflict on camera, and he specifically "*felt like we were behaving differently, with me being more [p]assive and [my partner] being less aggravated.*" Some of the quantitative data also support this pattern, as participants' criticism and stonewalling scores from the screening surveys only marginally correlated with the conflict and withdrawal scores coded from the recorded conversation, (p = .055 and p = .084, respectively).

Importantly, this finding suggests that while the conflict discussion paradigm may not be a natural replication of couples' communication, engaging in the paradigm itself produced an environment where participants felt encouraged to fight, and still produced stress and negative communication patterns, even when those negative communication patterns were not representative of their natural behavior. Furthermore, and although this is purely speculative, the partner's negative reaction to the conflict discussion paradigm could have been in response to the communication *discrepancies* they experienced during the laboratory session. For example, if one participant normally engages in highly conflictual communication patterns but they express less-severe patterns during the laboratory session, their partner may respond stressfully if they

are afraid of the escalation that may take place if the conflict became more intense. Perhaps they also reacted negatively because they were not expecting the partner to engage in the communication tendencies that they presented during the laboratory session resulting in higher levels of stress. They could have also been frustrated that the conversation did not feel as natural as it would had they not been participating in a research study. Regardless of the specific reason, this evidence suggests that engaging in the conflict discussion paradigm was potentially stress-inducing for some participants and future research should investigate the specific mechanisms at play.

It is important to note, however, that although not in line with my prediction that the conflict discussion paradigm would be a negative experience for participants, for some it seemed helpful: "*Of all our discussions about conflict, this one was honestly one of the best, mostly because I felt truly listened to as well as very open to working on things about myself in and outside the relationship*." It is clear from this participant's response, however, that even though her conversation with her partner was beneficial and her reaction was positive, this conflict did not follow the normal pattern for her and her partner. This provides further evidence that the conflict discussion paradigm produces conversations that are not representative of more natural conflict and may not be the best paradigm to use when studying interpersonal conflict conversations and its effect on personal and relationship outcomes.

Although the conflict discussion paradigm did not uniformly lead to an increase in stress for all participants, there were several notable outcomes that were moderated by the writing intervention. First, both men's conflict and withdrawal scores significantly and negatively predicted their own stress, measured directly after the writing conditions for those randomly

assigned to write about forgiveness for 15 minutes compared to those in the control condition.[16] Unexpectedly, men's conflict *positively* predicted women's stress measured directly after the writing conditions for those randomly assigned to the forgiveness condition compared to those in the control. It is possible that although men's poor communication patterns (i.e., both conflict and withdrawal) were harmful for their partner's self-reported stress, it may serve to help ease men's own stress when also putting themselves in a position to further reflect on how to better handle such conflict using a forgiveness mindset. Alternatively, men who engage in negative communication patterns may feel more in control of the conflict (or they use the negative communication patterns to take control of the conflict; Berns et al., 1999; Caughlin & Vangelisti, 2000), and that sense of control extended to the writing intervention where they felt confident in their ability to apply the forgiveness principles moving forward.

To explain the results pertaining to women, perhaps the more conflictual men's communication style is, the more women become stressed when reflecting on their conflict and when thinking about how they can forgive their partner. Although problem severity scores were low to moderate, this interpretation aligns with the literature suggesting that attempting to forgive someone for more-frequent transgressions can be more harmful than beneficial (McNulty, 2010). Measures assessing how chronic the argument is were not included in the current study, but several couples did indicate that the conflict conversation about their particular topic happened frequently, and others indicated their chosen problem would continue to be a problem despite their efforts to better navigate it. Women, in particular, may be concerned about how to forgive their partner for a problem that has not yet been solved perhaps because they believe the particular issue will continue to be a problem due to their partner's communication

[16] All results reported for the moderation analyses are while holding serial conflict, short-term stress, and trait forgiveness constant.

tendencies. Many studies suggest that women are more prominently impacted by their partner's communication than are men (Gottman & Driver, 2005), and that women are more emotionally expressive (both positively and negatively) during conflict conversations than are men (Carstensen et al., 1995). When taking the time to write about previous conflict and transgressions while also working to reconcile that conflict, these women may have been more emotionally sensitive and reactive to the situation compared to men and compared to the women who were in the control group writing about a neutral unemotional topic.[17]

Regarding mood, women's withdrawal scores statistically significantly predicted a decrease in men's positive mood, and men's withdrawal scores marginally predicted an increase in women's negative mood for those in the forgiveness condition compared to the control. Although the partner effect for women's negative mood was marginal, both these findings run contrary to what was predicted for those in the forgiveness condition. It is possible that men may feel disappointed that their partner is withdrawing from the argument instead of confronting the issue when the men are willing to talk about it. Thus, when given an opportunity to reflect on the argument, women's withdrawal leads to the decrease in men's positive mood, as it is common for individuals to react to their partner's withdrawal patterns with emotional flooding and over time, further leading to increased conflict and reduced relationship satisfaction (Hooper et al., 2017). This would also explain why several couples reported engaging in continued conflict after the laboratory session had ended, as it may have taken longer for participants to fully respond emotionally to what was communicated during the study.

[17] Interestingly, after holding stress (measured directly before the writing task) constant, these significant findings became marginal, suggesting the primary driving factor in this relationship was the stress from before the writing task occurred. This finding indicates that the writing intervention may not have significantly impacted stress outcomes for women as intended, although was useful for men.

Additionally, similar to why men's conflict scores predicted an increase in women's stress in the forgiveness condition, forgiveness may not be an appropriate response for some of the couples' arguments (McNulty, 2010). By asking participants to explore what it would be like to forgive their partner, it may depress their overall mood (by decreasing their positive mood and increasing their negative mood) because they realize they are being asked to forgive their partner for something that is recurring, or they may have started to feel defensive throughout the writing conditions. In particular, participants' trait forgiveness was relatively high as were scores on state forgiveness, so they may have been going to forgive their partner regardless but became defensive when prompted to engage in forgiveness for the study. Complications with this explanation arise when uncovering the finding that men's conflict and withdrawal scores both predicted a decrease in men's own negative mood for those in the forgiveness condition compared to the control. The finding for conflict was marginally statistically significant, and the finding for withdrawal was statistically significant, suggesting perhaps the forgiveness condition was more effective at reducing men's negative mood than women's negative mood. Perhaps men who are likely to withdraw from the conversation are taking time to process the argument or conflict (i.e., self-reflection), which is further prompted by the forgiveness condition. This self-reflection could then lead to a reduction in their negative mood (Takano & Tanno, 2009), whereas the control condition did not allow for reflection on the argument or other related transgressions. It is also possible that because men are less emotionally expressive than women (Carstensen et al., 1995), it was easier for men's negative mood to be reduced by the writing intervention compared to women.

Additionally, men's withdrawal scores predicted an increase in women's perceived support for those in the forgiveness condition. This finding was particularly unexpected, given

that men's withdrawal scores originally predicted women's reduced perceived support without accounting for the impact of the writing condition.[18] This finding lends partial support to the second hypothesis that the forgiveness intervention would circumvent the negative outcomes resulting from participating in a conflictual discussion when engaging in negative communication patterns. In exploring this result further, the forgiveness writing condition asked participants to not only recall the incident but recall other times in which they have hurt their partner or someone else and asked them to reflect on what the partner may have been experiencing during the conversation. When given the opportunity to recall previous incidents where the partner may have also been withdrawn rather than more severely conflictual, the women in this study may have started to shift their interpretation of the meaning or motive of their partner's withdrawal. Perhaps during the forgiveness writing condition, women began to interpret their partner's withdrawal as an attempt to provide a space for them to express their feelings or frustrations, allowing them to feel that their partner was supporting them rather than being argumentative.

Regarding sleep outcomes, men's conflict predicted women sleeping longer for those in the forgiveness condition compared to the control condition. Because this path was only marginally significant, caution should be used in interpreting whether these findings can be generalized to the greater population or interpreted further. In fact, when assessing withdrawal, men's withdrawal scores statistically predicted women sleeping *less* for those in the forgiveness condition compared to the control, and women's withdrawal predicted a decrease in men's sleep quality after the study for those in the forgiveness condition. One important factor that could explain the unexpected sleep patterns is that some participants slept for abnormally short periods

[18] This particular finding is not presented as part of the dissertation's hypotheses but was included as a result of exploratory analyses.

of time which could have skewed the results. Preliminary analyses indicated there were no striking outliers, but perhaps more stringent tests should be applied when deciding which data points to include in final analyses.

Another important factor that could explain why some participants were sleeping *worse* after the forgiveness intervention is due to the completion rate of the intervention itself. As noted in the Limitations section below, only about half of participants randomly assigned to the forgiveness intervention completed all eight questions in their entirety. For those who did not finish, the overwhelming majority did not have time to answer the final two questions, which asked participants to write a letter to their partner expressing their forgiveness, and to think about how they might forgive their partner in the future. These two questions are critical in the REACH forgiveness process, as the earlier questions in the process focus much more on negative aspects of conflict and transgressions. Without finishing the questions, participants may have still been processing the earlier questions in which they were reflecting on the conflict, when they had hurt other people in the past, how they themselves have been hurt in the past, etc. Focusing on these aspects of the intervention rather than the forgiveness aspects could explain why some participants experienced more negative outcomes than positive. Further analyses are needed to explore the outcomes for those who finished the full intervention compared to those who did not.

Limitations

One limitation of the current study is that the power analysis that was used to predict how many couples were needed to find significant effects was based on a different analysis than what was ultimately performed (i.e., a repeated analysis of variance rather than a series of regressions using the APIM). Furthermore, the later power analysis based on the APIM model was conducted based on indistinguishable dyads, while the couples in this study were distinguishable

by gender, which requires more participants to find significant effects (Ackerman & Kenny, 2016). While several results of the current study were significant, it is possible that many effects were missed because of a limited sample size, as a larger sample size is often needed to detect differences. A post-hoc power analysis was computed using Ackerman et al.'s (2010) APIMPowerR Advisor, to determine the sample size needed to detect differences among distinguishable dyads to achieve an effect size of .25 with an alpha of .05, and power of .80, which yielded 121 couples. It is apparent the current study was underpowered to detect all possible statistical differences.

Additionally, the average age of participants was approximately 21 years old, and while the relationship length varied from three months to 24 years, after removing the couple who had been married for 24 years, the average relationship length was slightly under two years. The relationship dynamics of couples in this age demographic may not generalize to couples who have been together longer, or to those who are married and/or have children (although a few of the couples were either engaged or married, and a few did have children, these demographics did not match the circumstances of the majority of couples in this study). To further explore this limitation, the average serial conflict score of the couples was very low (M = 1.67, SD = 0.43, on a scale of 1 to 4), suggesting that these couples likely were not experiencing severe or persistent conflict that couples of longer relationship lengths or statuses may have. Additionally, those who are dating compared to those who are engaged or married may experience different implications of their conflict, as the relationship carries different stakes for the couples.

In addition to considering the current sample's demographic characteristics, it is important to highlight the unique circumstances these particular participants were facing during data collection. Data collection began in March of 2020 and concluded in March of 2021, while

the COVID-19 pandemic was a heightened concern for many. Some participants were in long-distance relationships and were restricted in their ability to travel and visit their partner, while others were in constant contact with each other during the stay-at-home orders for couples who lived together. Additionally, working through the struggles and stressors experienced in 2020-2021 may have forced these early-stage relationships seen in the current study to present conflict very differently compared to couples recruited earlier than 2020 or in the future. Multiple unexpected stressors, concerns, and fears could prohibit the generalizability of the current sample to those in a post-COVID-19 era.

An additional limitation of this study is that participants' perceived severity of the problem they discussed was closely aligned with the response option of "*neither agree nor disagree*" with questions about whether the problem was considered serious, severe, and made them upset. Thus, about half of participants did not perceive their chosen topic to be that serious, even though they were instructed to discuss a topic that causes continual conflict and to pay special attention to conflicts that are more severe for their relationship. Many participants indicated they had a difficult time thinking of conflicts with little time to brainstorm, and several participants chose topics provided to them as a list of options because they could not think of anything else. Some even indicated they only included the item on their own list because it was on the sheet of options. Using a list of options may be beneficial in determining whether topics are conflictual without being salient or at the forefront of participants' minds but using such a list may not be productive in helping couples think of conflicts that are severe (severe conflicts should be easier to come up to mind than non-severe conflicts).

As mentioned earlier, participants first responded to a screening survey to indicate recurring patterns of conflict in their relationship, as well as their communication patterns.

Criticism is a large component of the conflict coding scheme I used to assess the qualitative data in the video conversation. However, criticism scores on the self-report survey only marginally correlated with conflict codes derived from the videos (p = .055), and stonewalling, which is almost equivalent to withdrawal, only marginally correlated with the withdrawal codes derived from the videos (p = .084). This finding potentially suggests that participants were not engaging in their normal mode of communicating because they were being recorded as part of a study. As previously discussed, some participants indicated in their surveys that they felt they or their partner acted differently in the research setting, and one participant said, "*I felt it was less heated than some of our arguments due to being filmed and also having a very limited amount of time to get into the discussion.*" This response suggests that the significant relationships found between conflict and withdrawal with the proposed outcomes might be even more pervasive than what was captured in this study, and some of the marginal effects may actually be significant had participants communicated in ways that better aligned with their natural patterns.

Though there were some results that showed a moderation effect of condition on various outcomes, many predicted paths were not statistically significant, or were in the opposite expected direction (i.e., one of the significant moderated paths showed that men's conflict scores positively predicted women's stress immediately after the writing condition for those reflecting on forgiveness). After examining the data, only about half of participants who were assigned to the forgiveness writing intervention actually finished all of the questions (34 participants finished it entirely, 32 did not). Out of those in the control condition, only five did not finish, though this is likely because the second question asked participants to describe their current or past job, and some participants had never been employed before, therefore giving them nothing to write about. Additionally, because there was a significant partner effect for women's stress, it could be that

some of their stress could be attributed to feeling rushed to get through the questions in time, as there were eight questions in the forgiveness condition, with only 15 minutes to complete all of them. With men's conflict score predicting this outcome, it could be that women in this condition had more to consider when reflecting on how to forgive their partner.

State forgiveness (i.e., participants' ability to forgive in the current moment) did not differ by condition, which suggests that the forgiveness writing intervention might not have adequately produced a forgiveness mindset more than that of the control condition. Consequently, caution should be used in interpreting the implications of incorporating the forgiveness writing intervention, as any effects that were present may not have been as prevalent to the entire forgiveness intervention as intended. Instead, those in the forgiveness writing condition might have focused more on previous transgressions or how to engage in empathy or compassion for what their partner was going through during the conflict, rather than reflecting on the later portion of the intervention when it presented questions about specifically applying aspects of forgiveness to their partner. In addition, when asked if participants forgave their partner, many indicated there was nothing to forgive, as they did not feel the partner had hurt them or needed forgiveness. This assessment aligns with the finding that participants on average did not perceive their problems to be especially severe to begin with.

Finally, one of the major goals of this project was to assess whether engaging in the conflict discussion paradigm is harmful for those with conflictual or withdrawal communication patterns. While the study did examine the effect of these communication patterns on stress, there was no direct comparison of the conflict discussion paradigm against a neutral or control condition. All participants engaged in the conflict discussion paradigm, thus there were no couples who were asked to discuss a neutral topic or a topic in which conflict was already

resolved. The absence of a control group makes it difficult to determine whether the conflict discussion paradigm itself is problematic or being in a situation where participants are being observed is also a stressor in itself.

Future Directions

Several adjustments can be made to the recruitment of participants and to the overall design of both the conflict discussion paradigm and the intervention. First, more couples should be recruited to obtain more power in adequately detecting significant effects, and those couples would ideally be in middle adulthood, as research suggests that those who are in older adulthood or who have been married for a long period of time actually express less negativity and more affection than couples who were middle-aged (Carstensen et al., 1995). Couples recruited for the future projects could potentially also have children or other obligations that would lead them to experience more severe conflict than the topics discussed in the current study. Other research should also address how the conflict discussion paradigm and other communication patterns present during conflict would impact individuals' reactions to conflict within an intersectionality framework for those from different races and sexual orientations.

Regarding the fact that self-reported communication patterns did not significantly correlate with conflict and withdrawal patterns coded from the recorded conversations, additional analyses should further examine whether participants responded more negatively or with more stress when they noticed that their partners were not engaging in their natural or habitual pattern of communicating. To eliminate the communication pattern discrepancies, future researchers could consider altering the study design so the recording is inconspicuous (i.e., use of a one-way mirror). In the current study, all but four of the couples were recorded virtually through Zoom, enabling the participants to see themselves on their device as they discussed their conflict. For

the four couples who completed this study in-person, the camera was set up on a tripod directly in front of them, again, making the fact that they were being recorded very salient. Participants may have felt self-conscious and subsequently fearful of self-evaluation by the research team. Alternatively, or in addition, future researchers could ask that participants talk for more than 10 minutes. As indicated by some of the participants, they felt that 10 minutes was not long enough to dive deeply into the topic, and when coding these conversations, it was evident that many of the couples were just about to start talking about more deeply emotional topics when the session ended. Research should investigate what length of time is appropriate for participants to start acting more naturally while on camera rather than following what is common practice with only 10 minutes.

Regarding the complex interplay of constructs included in this study, future directions could include more analyses that better represent the possible relationships among the variables. In particular, future research could aim to better understand predictive factors of communication patterns among partners, as one person's conflictual communication could trigger the partner's withdrawal, or vice versa, which then leads to fluctuations in mood, stress, and sleep. There may have been other factors that better explain these outcomes that were beyond the scope of the current project (such as tendencies of self-reflection rather than rumination, motivation for conflict, motivation for reconciliation, etc.). Furthermore, the current study used trait forgiveness as a control variable, but could also be viewed as a moderator, such that the forgiveness writing intervention is only effective for people who may or may not already tend to forgive. Additional analyses would also be needed to determine whether those who score higher in trait forgiveness were more invested in the writing condition, and thus wrote more during the intervention compared to those who are not naturally prone to forgiveness. To further probe the experiences

of participants, interviews could be included to gain a qualitative understanding of what participants were feeling during and after the conflict discussion paradigm. Conducting interviews would also help address whether participants were interpreting partner withdrawal as a supportive listening strategy rather than disengagement, as well as their own motivation for engaging in particular communication strategies themselves.

Future research should delve into how to better create an intervention within a short timeframe and increase compliance with the instructions. As some researchers already suggest, providing interventions that are short, quick, and not obviously interventions can be extremely beneficial in producing positive outcomes (Yeager & Walton, 2011). If future researchers can test how much time it would take participants to adequately address each of the writing prompts, the current intervention could be better tested with more time, or the number of questions could be reduced to keep the timeframe the same. The effectiveness of each question should also be assessed as the questions chosen for the current study were not empirically chosen, but rather chosen based on my best judgment for how to best represent the full intervention that normally takes several hours to complete. By creating a more effective and efficient intervention, future researchers may see a significant difference in state forgiveness among participants in the intervention condition compared to a control.

Furthermore, as mentioned earlier, there was not an adequate control group against which I could compare those engaging in the conflict discussion paradigm. Future research should include a control group in which participants discuss neutral topics, and perhaps a third group in which participants discuss previous areas of conflict that have been solved. By having different versions of the conflict discussion paradigm included in the same study, researchers can compare the outcomes of discussing current conflict versus previous conflict versus neutral topics. This

would help uncover whether it is conflict itself that leads to stress, or communication patterns in the absence of conflict.

Finally, as Finkel et al. (2013) suggest, future research should examine ways to help couples increase their own relationship satisfaction rather than maintain it or prevent it from decreasing. One way to do this is to assess positive communication skills (e.g., support, problem solving, and positive escalation) that predict increased positive outcomes, such as perceived support, increased positive mood, and increased relationship satisfaction. The current study only assessed negative communication patterns and negative outcomes. Positive aspects of conflict and communication are important to understand as well.

Significance

Scholars have made several calls for research on conflict and forgiveness. For example, Parsons et al. (2020) have called for new ways to better train couples with more effective strategies to recover from interpersonal conflict. Similarly, Worthington et al. (2007) have called for interventions to help mitigate conflict's impact on stress and Whited et al. (2010) have called for studies to better understand the more immediate and short-term effects of forgiveness on psychological functioning. By including the forgiveness writing intervention, the goal was to show couples how they can bring forth a forgiveness mindset after a conflict to better empathize with their partner to make it more likely they will forgive them and experience more positive outcomes.

The results of this study, though mixed, indicate that engaging in poor communication patterns, specifically conflictual communication patterns, can be harmful to not only one's own but also one's partner's psychological and relational outcomes, and women were more significantly affected by their partner's negative communication patterns than were men in terms

of stress. This finding indicates that future researchers implementing the conflict discussion paradigm should measure conflict communication styles to hold conflictual tendencies constant while examining other effects of interest. While it is not certain that the conflict discussion paradigm in and of itself is harmful, this study shows that at the very least, it produces an environment conducive to abnormal interaction, coupled with negative communication for some couples. Should researchers wish to employ the conflict discussion paradigm in future studies, precautions should be taken to explicitly tell participants they should not feel pressure to engage in an argument, as we are looking for more natural tendencies of interaction.

Few moderation effects of condition were found, meaning the effects of negative communication patterns may persist longer or be less responsive to short interventions. Some moderated paths that were statistically significant by condition lend partial support for the beneficial impact of the writing intervention for withdrawal on various personal and interpersonal outcomes. Concurrently, some moderated paths that were statistically significant by condition were in the opposite proposed direction, raising questions about the efficacy of the current intervention. Overall, more research is needed to determine the specific mechanisms that led to beneficial versus detrimental outcomes of the writing intervention. However, because participants who express and experience negative communication tendencies may be negatively impacted by the conflict discussion paradigm, more research should explore different avenues that can help participants who do not know how to best communicate with their partner during conflict or who do not know how to best recover from such conflict.

Conclusion

Overall, men's conflict communication patterns, as opposed to withdrawal communication patterns, predicted an increase in stress for women, but men's stress was not

impacted by either their own or their partner's negative communication during the conversation. The forgiveness intervention mitigated some of the effects of withdrawal communication patterns as opposed to conflict communication patterns on several outcomes, such that men's stress and negative mood decreased, while women's perceived support increased. Ultimately, there is some initial evidence to suggest that engaging in the conflict discussion paradigm is particularly harmful to participants in terms of their stress response, and minimal evidence to suggest that the writing intervention impacts short-term mood fluctuations and stress. Because poor communication patterns predicted increased stress after engaging in a conflictual conversation, it is worth pursuing future research to better understand how we can teach participants more positive communication skills while engaging in conflict and how to mitigate the negative effects more long-term.

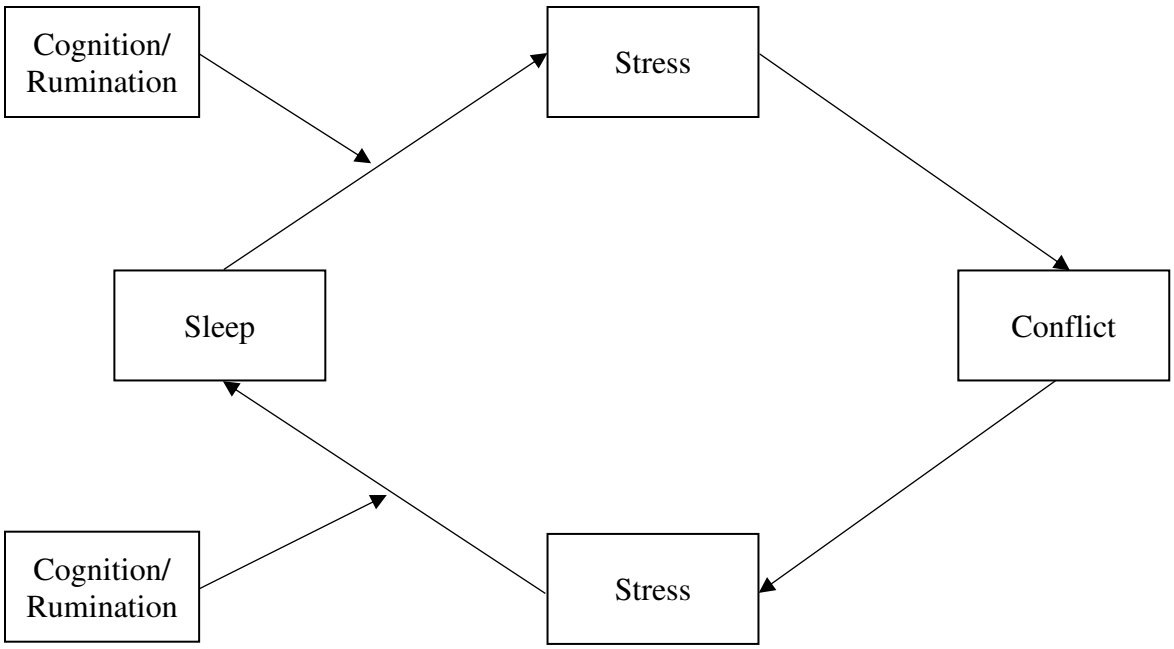

Figure 1. Cyclical Relationship Between Sleep, Stress, and Conflict

Table 1. Summary of Hypotheses, Variables, and Analytic Plan

	Hypothesis	Variables Included	Analytic Plan
H1:	Poor communication patterns will predict increased perceived stress while holding pre-existing levels of serial conflict, short-term stress, and pre-conflict stress constant.	Conflict and Withdrawal coded with IDCS. Perceived stress measured both before and after the conflict discussion QRI measured in the screening survey. PSS measured in the screening survey.	Dyadic data analysis using APIM with regressions through SPSS
H2:	The forgiveness intervention will moderate the relationship between communication and various negative outcomes, such that those in the forgiveness condition will experience less-negative (milder) outcomes while holding trait forgiveness constant.	IV – Control versus Forgiveness Writing Conditions Conflict and Withdrawal coded with IDCS. Perceived stress measured after the writing conditions. PANAS measured after the writing conditions. DESS measured after the writing conditions. Rumination measured the night following the appointment. PSD measured the night following the appointment. RAS measured the morning after the appointment. QRI measured in the screening survey. PSS measured in the screening survey. Heartland Forgiveness scale measured after the writing conditions.	Dyadic data analysis using APIM with moderated regressions through SPSS

Table 2. Descriptive Statistics for Continuous Variables by Condition and Gender

		Control Condition						Forgiveness Condition					
		Men		Women		Total		Men		Women		Total	
Variables	α	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Quality of Relationship – serial conflict	0.83	1.67	0.37	1.61	0.32	1.64	0.34	1.74	0.52	1.65	0.47	1.70	0.49
Four Horsemen Scale – Criticism	0.84	1.98	0.67	2.87	0.95	2.43	0.93	2.70	1.15	2.77	1.40	2.73	1.27
Four Horsemen Scale – Contempt	0.85	1.55	0.51	1.95	0.89	1.75	0.74	1.67	0.83	1.96	1.22	1.81	1.04
Four Horsemen Scale – Defensiveness	0.80	2.23	0.87	2.56	1.08	2.40	0.98	2.37	1.07	2.30	1.18	2.33	1.12
Four Horsemen Scale – Stonewalling	0.87	2.73	0.92	2.86	1.11	2.79	1.01	2.42	1.20	3.17	1.45	2.80	1.38
Four Horsemen Scale – All	0.93	2.12	0.57	2.55	0.77	2.34	0.71	2.27	0.86	2.55	1.18	2.41	1.04
Positive Mood Post-Writing	0.84	3.37	0.63	3.05	0.60	3.21	0.63	3.41	0.72	3.11	0.63	3.26	0.69
Negative Mood Post-Writing	0.78	1.52	0.59	1.54	0.31	1.53	0.47	1.56	0.50	1.50	0.36	1.53	0.43
Minutes spent sleeping Pre-Appointment	---	474.42	74.87	492.19	75.98	483.31	75.22	493.61	76.01	481.09	102.30	487.35	89.65
Stress Pre-Conflict	0.82	3.03	1.30	3.73	1.05	3.38	1.23	3.29	1.02	3.48	1.09	3.38	1.05
Perceived Stress for last three weeks	0.84	2.52	0.47	2.82	0.49	2.67	0.50	2.66	0.53	2.95	0.47	2.81	0.52
Conflict	---	1.62	0.80	1.42	0.70	1.52	0.75	1.67	0.99	1.67	1.05	1.67	1.01
Withdrawal	---	1.31	0.55	1.50	0.58	1.40	0.57	1.45	0.67	1.24	0.56	1.35	0.62
Stress Post-Conflict	0.87	2.92	1.21	3.17	1.05	3.04	1.12	2.94	1.29	3.41	1.39	3.18	1.35

		Control Condition						Forgiveness Condition					
		Men		Women		Total		Men		Women		Total	
Variables	α	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Perceived Problem Severity	0.74	2.55	1.02	2.67	0.74	2.61	0.88	2.75	0.97	2.70	0.81	2.72	0.88
Positive Mood Post-Writing	0.91	3.14	0.77	2.87	0.74	3.01	0.76	3.26	0.87	2.82	0.89	3.04	0.90
Negative Mood Post-Writing	0.90	1.35	0.50	1.39	0.53	1.37	0.51	1.62	0.72	1.56	0.66	1.59	0.69
Stress Post-Writing	0.89	2.56	1.25	2.90	1.23	2.73	1.24	2.94	1.36	3.15	1.53	3.05	1.44
Perceived Support Post-Writing	0.91	3.92	0.57	4.04	0.46	3.98	0.52	3.94	0.64	3.91	0.72	3.92	0.67
Avoidant Attachment	0.73	2.07	0.78	1.92	0.75	2.00	0.76	1.91	0.81	1.76	0.88	1.84	0.84
Anxious Attachment	0.85	1.72	0.95	3.42	1.75	2.57	1.64	2.19	1.21	2.60	1.62	2.39	0.67
Trait Forgiveness	0.77	5.04	1.00	4.88	0.99	4.96	0.99	4.85	1.12	4.94	0.99	4.90	1.05
State Forgiveness	0.87	4.53	0.46	4.35	0.60	4.44	0.54	4.55	0.39	4.54	0.44	4.54	0.41
Physical Health Ailments	0.84	13.00	6.49	19.69	9.60	16.35	8.79	11.06	7.22	17.64	7.41	14.35	7.98
Mental Health – Anxiety	0.81	1.87	0.60	2.37	0.43	2.12	0.58	1.93	0.54	2.32	0.43	2.13	0.52
Mental Health – Depression	0.71	1.44	0.36	1.58	0.42	1.51	0.40	1.50	2.55	1.55	0.50	1.52	0.40
Mental Health – All	0.83	1.65	0.44	1.98	0.35	1.81	0.43	1.72	0.35	1.93	0.40	1.82	0.39
Rumination Post-Appointment	0.93	1.52	0.50	1.76	0.80	1.64	0.67	1.64	0.75	2.11	0.97	1.88	0.89
Minutes Spent Sleeping Post-Appointment	---	500.23	76.23	476.04	60.55	488.13	69.25	486.48	99.95	500.21	99.51	493.56	99.17

		Control Condition						Forgiveness Condition					
		Men		Women		Total		Men		Women		Total	
Variables	α	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Sleep Quality Post-Appointment	---	74.08	20.90	68.96	23.71	71.52	22.28	73.53	22.49	72.74	23.43	73.14	22.77
Rumination Next Day	0.96	1.34	0.50	1.43	0.71	1.39	0.61	1.52	0.79	1.76	1.04	1.64	0.93
Positive Mood Next Day	0.92	2.83	0.88	2.52	0.84	2.67	0.87	2.89	0.86	2.38	0.77	2.63	0.85
Negative Mood Next Day	0.91	1.32	0.56	1.43	0.58	1.37	0.57	1.52	0.74	1.34	0.52	1.42	0.64
Stress Next Day	0.85	2.49	1.36	3.42	1.33	2.96	1.41	2.63	1.05	2.94	1.37	2.79	1.22
Perceived Support Next Day	0.93	3.97	0.70	4.03	0.50	4.00	0.60	3.91	0.69	3.97	0.75	3.94	0.71
Relationship Satisfaction Next Day	0.73	4.48	0.42	4.49	0.38	4.49	0.40	4.42	0.47	4.45	0.61	4.44	0.54
Relationship Length in Months*	---	32.08	53.26	33.15	57.50	32.62	54.88	23.91	23.25	23.85	22.97	23.88	22.93

*Not all participants gave the same response for how long they have been with their partner, so averages do not match. However, during final analyses, mismatched responses were averaged so both partners in each couple had the same response.

Table 3. Correlations between Variables Used in Hypothesis Testing by Gender

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Serial Conflict	--	.08	.11	.22+	.38*	.33*	.34*	-.24+	.43*	-.45*	-.33*	.33*	-.10	-.16	-.64*
2. Conflict	.31*	--	.01	.05	-.07	-.02	.01	.02	.16	-.44*	-.09	-.04	.27*	-.15	-.17
3. Withdrawal	.05	.32*	--	.30*	.17	.33*	.18	-.25+	.18	.03	.02	.12	-.10	-.09	.01
4. Stress Pre-Conflict	.12	.05	-.07	--	.39*	.54*	.51*	-.15	.43*	-.29*	-.30*	.26*	-.25+	-.12	-.18
5. Short-Term Stress	.17	.01	.14	.32*	--	.41*	.33*	-.09	.38*	-.19	-.20	.52*	-.25+	-.07	-.26+
6. Stress Post-Conflict	.38*	.13	.04	.45*	.44*	--	.81*	-.23+	.63*	-.36*	-.21	.28*	-.16	.01	-.32*
7. Stress Post-Writing	.34*	.18	.11	.46*	.41*	.82*	--	-.22	.80*	-.36*	-.14	.42*	-.17	-.07	-.38*
8. Positive Mood Post-Writing	-.05	.13	.05	-.08	-.24+	-.29*	-.09	--	-.17	.32*	.02	-.01	-.10	-.08	.21
9. Negative Mood Post-Writing	.46*	.39*	.13	.29*	.31*	.46*	.60*	-.04	--	-.40*	-.14	.57*	-.11	-.17	-.48*
10. Perceived Support Post-Writing	-.22	.02	.03	-.11	-.20	-.21	-.21	.34*	-.24+	--	.24+	-.09	.14	.17	.60*
11. Trait Forgiveness	-.08	-.06	.02	-.13	-.28*	-.18	-.14	-.02	-.35*	-.11	--	-.04	.01	.05	.34*
12. Rumination Post-Appointment	.53*	.32*	-.15	.18	.35*	.47*	.54*	-.04	.60*	-.24+	-.20	--	-.33*	-.08	-.36*
13. Time Asleep Post-Appointment	-.39*	.10	.03	.04	-.27*	-.26+	-.10	.15	-.12	-.09	-.04	-.18	--	-.01	.23+
14. Sleep Quality Post-Appointment	-.30*	-.03	-.07	.03	-.01	-.08	-.14	.01	-.21	.05	-.08	-.29*	.07	--	.04*
15. Relationship Satisfaction Next Day	-.49*	-.37*	-.05	-.13	-.27*	-.32*	-.35*	-.14	-.39	.46*	.01	-.38*	.10	.17	--

Note. The bottom of the divide refers to men's responses, and the top of the divide refers to women's responses.
+$p < .10$; *$p < .05$

Table 4. Descriptive Statistics for Men and Women's Conflict and Withdrawal Scores and Outcome Variables

Variable	Gender	*Mean*	*SD*	*Min*	*Max*	*n*
Conflict[a]						
	Men	0.04	0.91	-0.60	2.40	59
	Women	-0.04	0.92	-0.60	2.40	59
Withdrawal[a]						
	Men	0.02	0.62	-0.37	1.63	59
	Women	-0.02	0.58	-0.37	1.63	59
Stress Post-Conflict						
	Men	2.93	1.24	1.00	5.83	58
	Women	3.31	1.24	1.33	6.33	59
Stress Post-Writing						
	Men	2.77	1.31	1.00	6.17	58
	Women	3.04	1.40	1.00	6.33	59
Positive Mood Post-Writing						
	Men	3.21	0.82	1.40	4.70	59
	Women	2.85	0.82	1.40	4.70	59
Negative Mood Post-Writing						
	Men	1.50	0.64	1.00	4.30	59
	Women	1.49	0.61	1.00	3.90	59
Perceived Support Post-Writing						
	Men	3.93	0.61	2.75	5.00	59
	Women	3.97	0.62	1.40	5.00	59
Rumination Post-Appointment						
	Men	1.59	0.65	1.00	4.25	58
	Women	1.96	0.91	1.00	5.00	59
Sleep Post-Appointment						
	Men	492.75	89.41	180.00	710.00	57
	Women	489.56	84.79	300.00	720.00	59
Sleep Quality Post-Appointment						
	Men	73.78	21.60	10.00	100.00	58
	Women	71.02	23.42	2.00	100.00	57
Relationship Satisfaction Next Day						
	Men	4.51	0.44	3.00	5.00	58
	Women	4.47	0.52	1.86	5.00	59

[a]Conflict and Withdrawal are grand mean centered.

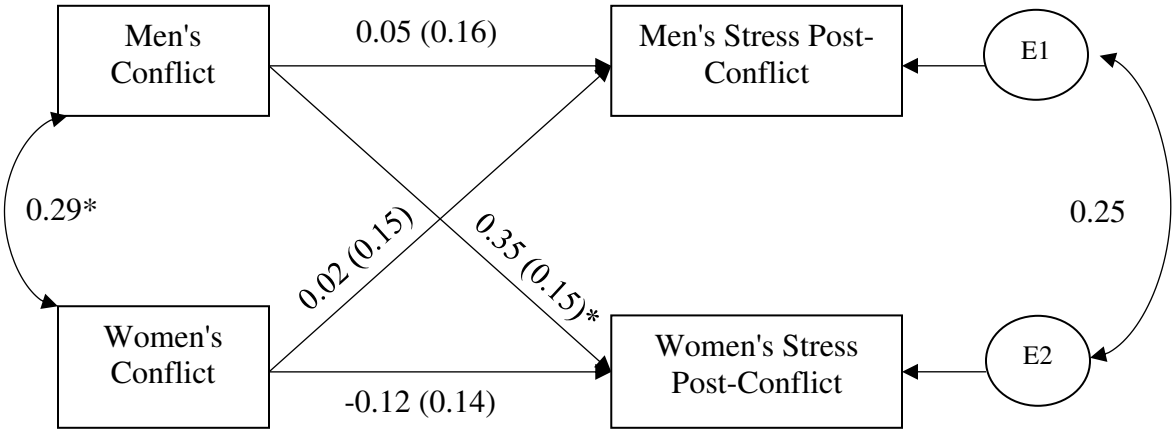

Figure 2. Basic APIM Results of Stress Post-Conflict Predicted by Men and Women's Conflict

$^{+}p < .09$ $*p < .05$, $**p < .01$, $***p < .001$

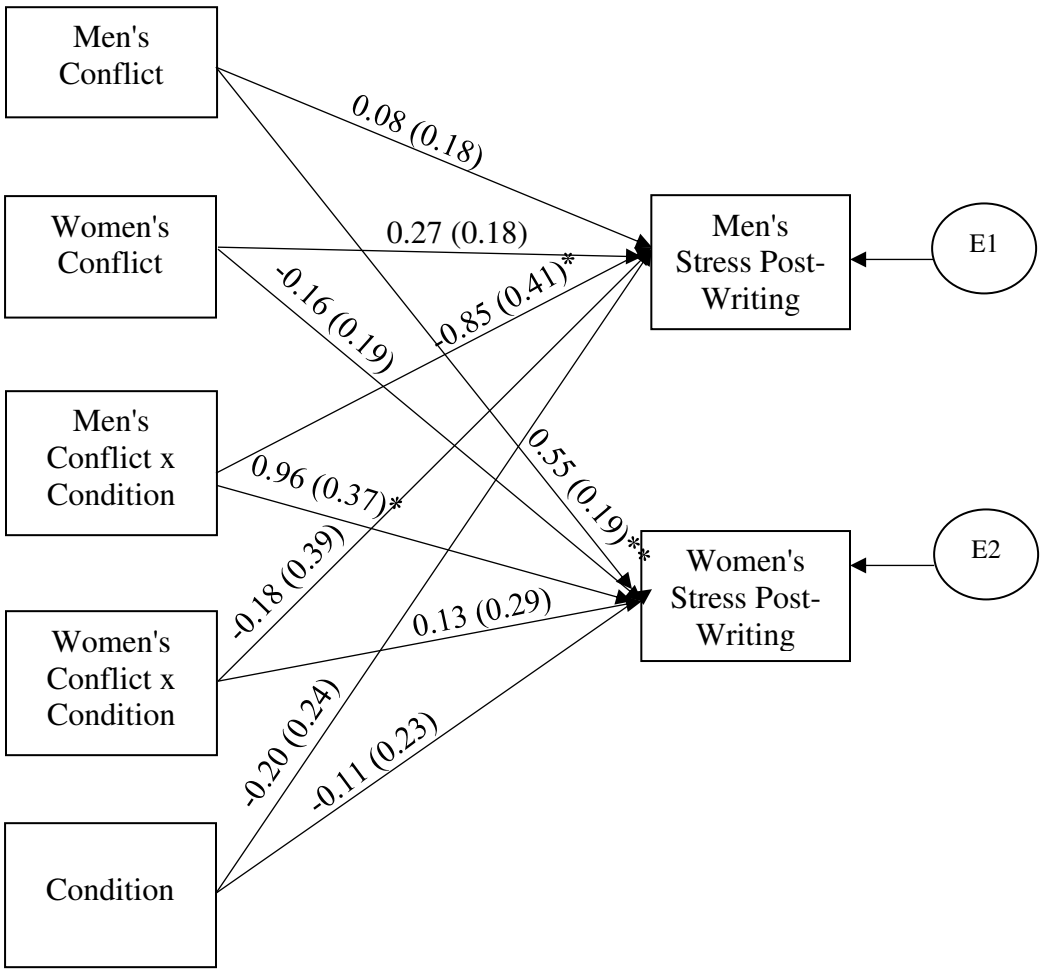

Figure 3. Basic APIM Results of Stress Post-Writing Predicted by Men and Women's Conflict by Condition with Forgiveness as the Reference Group
$^{+}p < .09$ $*p < .05$, $**p < .01$, $***p < .001$

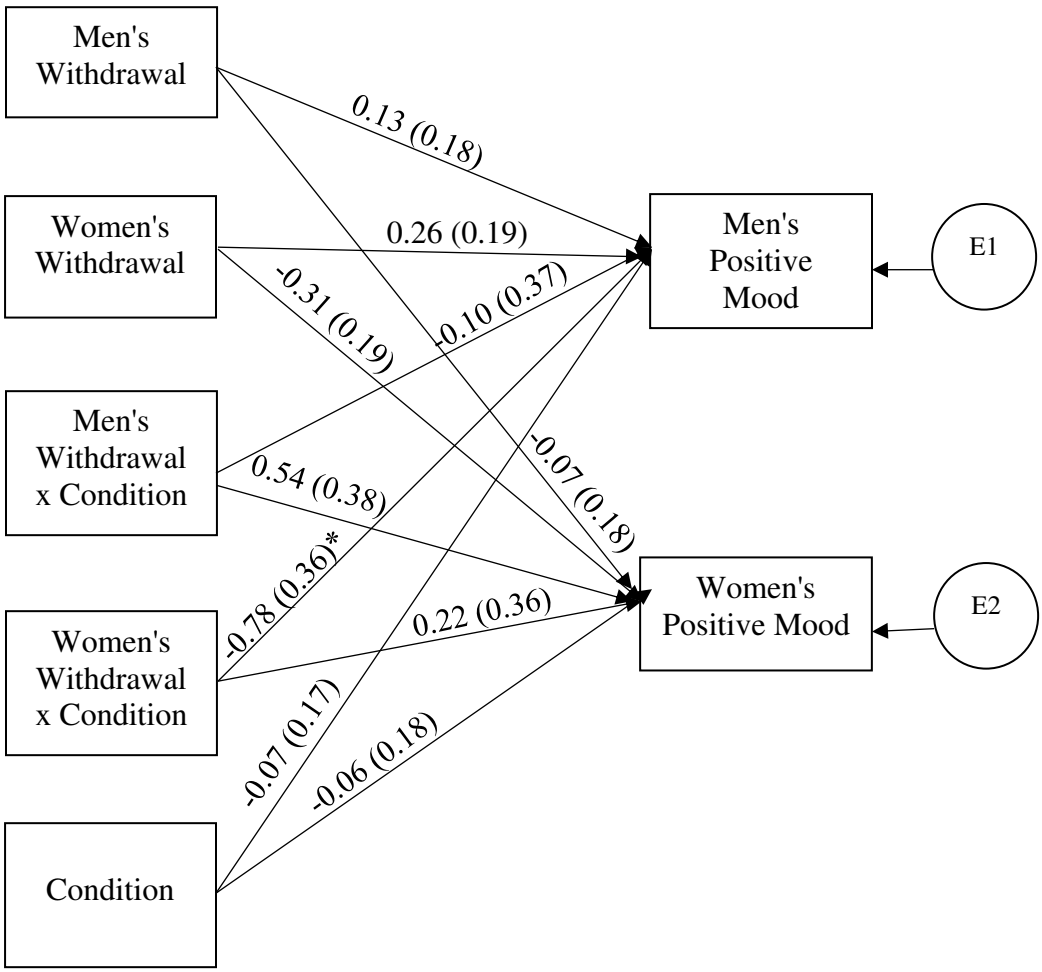

Figure 4. Basic APIM Results of Positive Mood Post-Writing Predicted by Men and Women's Withdrawal by Condition with Forgiveness as the Reference Group
$^{+}p < .09$ $*p < .05$, $**p < .01$, $***p < .001$

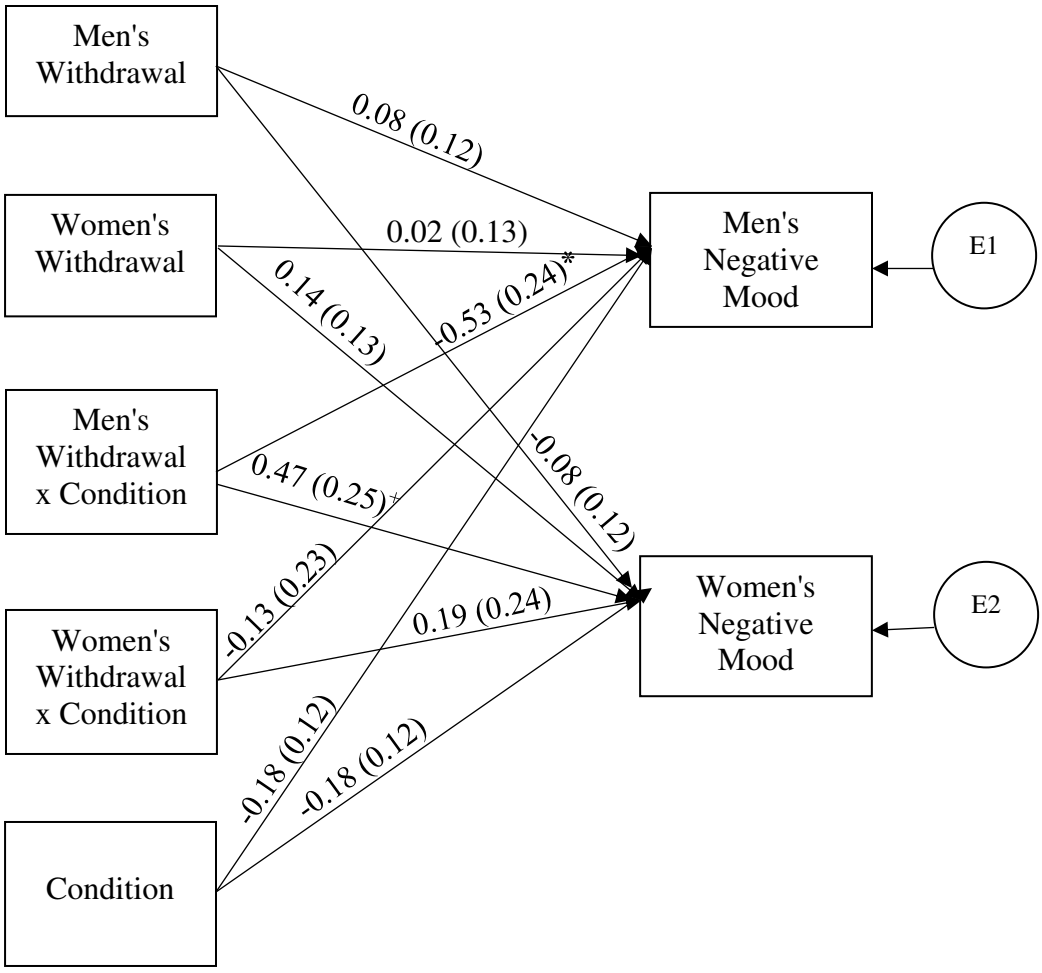

Figure 5. Basic APIM Results of Negative Mood Post-Writing Predicted by Men and Women's Withdrawal by Condition with Forgiveness as the Reference Group
$^{+}p < .09$ $*p < .05$, $**p < .01$, $***p < .001$

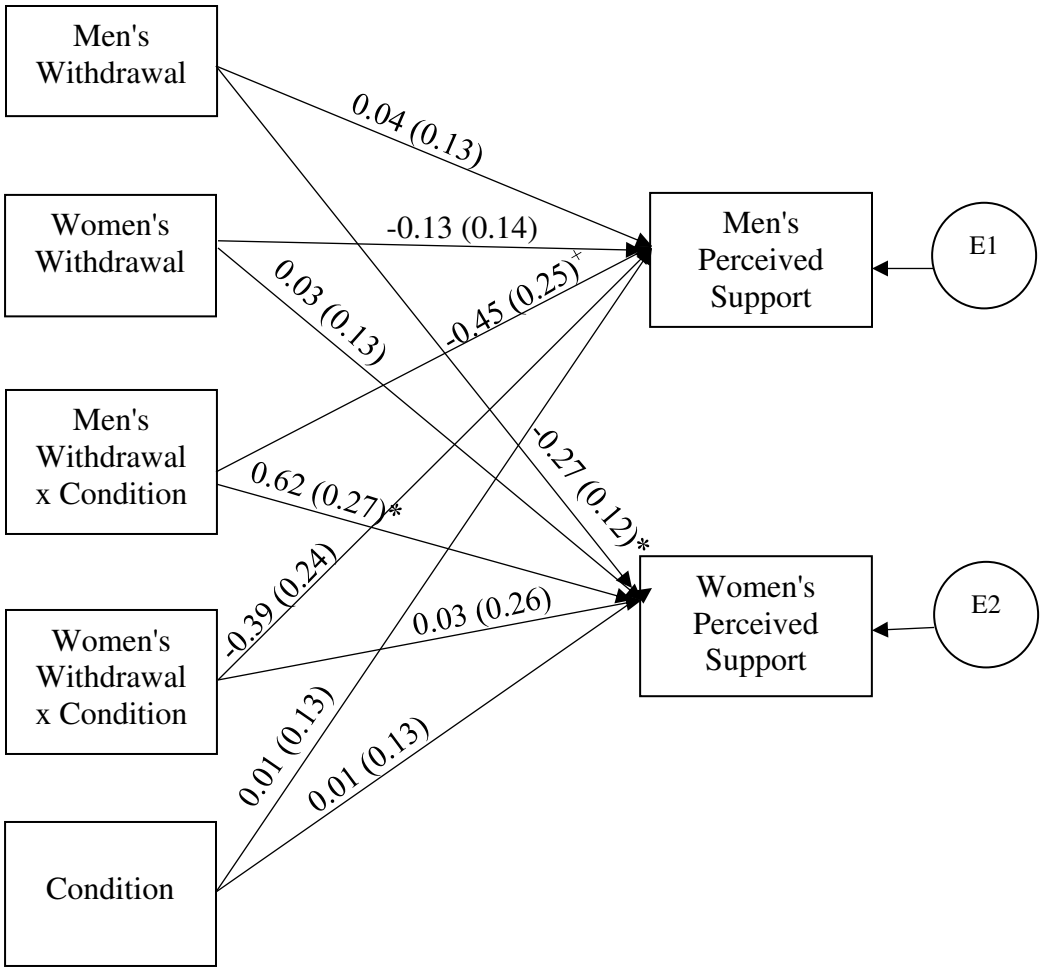

Figure 6. Basic APIM Results of Perceived Support Post-Writing Predicted by Men and Women's Withdrawal by Condition with Forgiveness as the Reference Group
$^{+}p < .09$ $*p < .05$, $**p < .01$, $***p < .001$

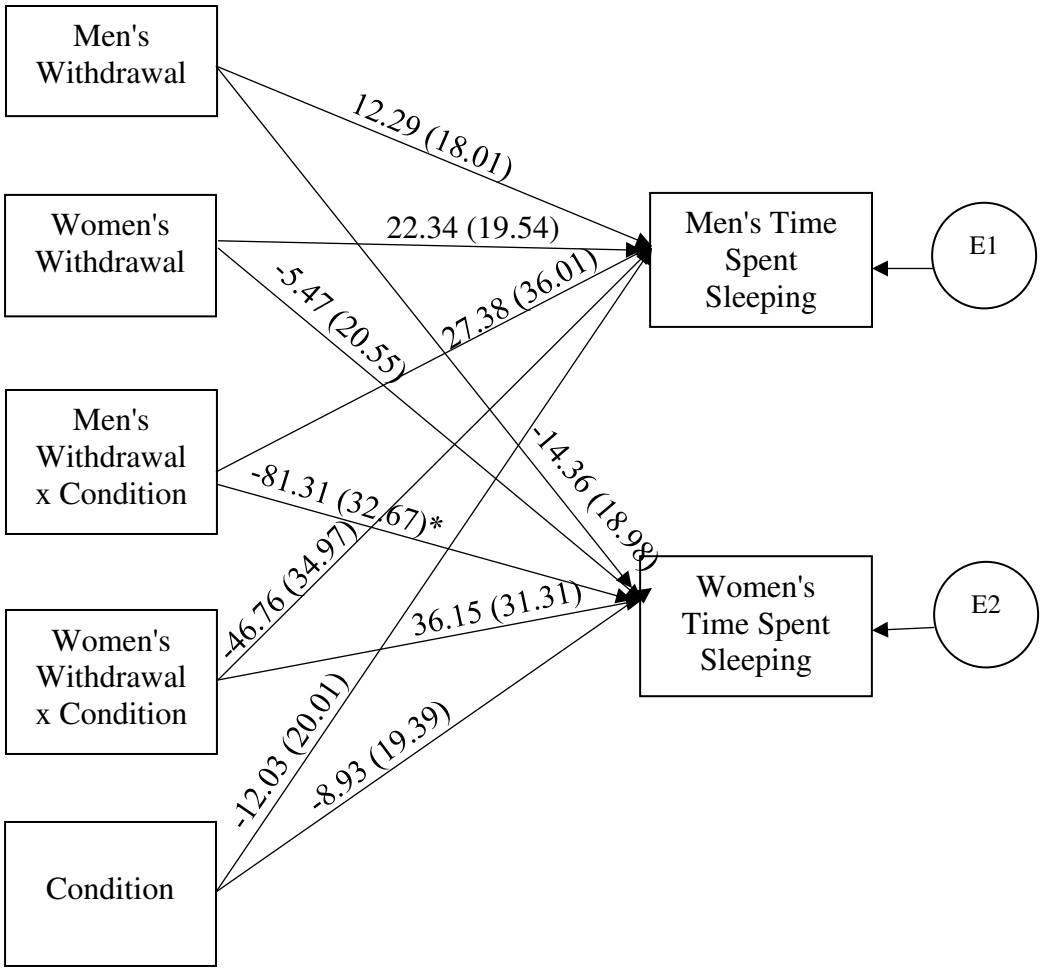

Figure 7. Basic APIM Results of Time Spent Sleeping Post-Appointment Predicted by Men and Women's Withdrawal by Condition with Forgiveness as the Reference Group
$^{+}p < .09$ $*p < .05$, $**p < .01$, $***p < .001$

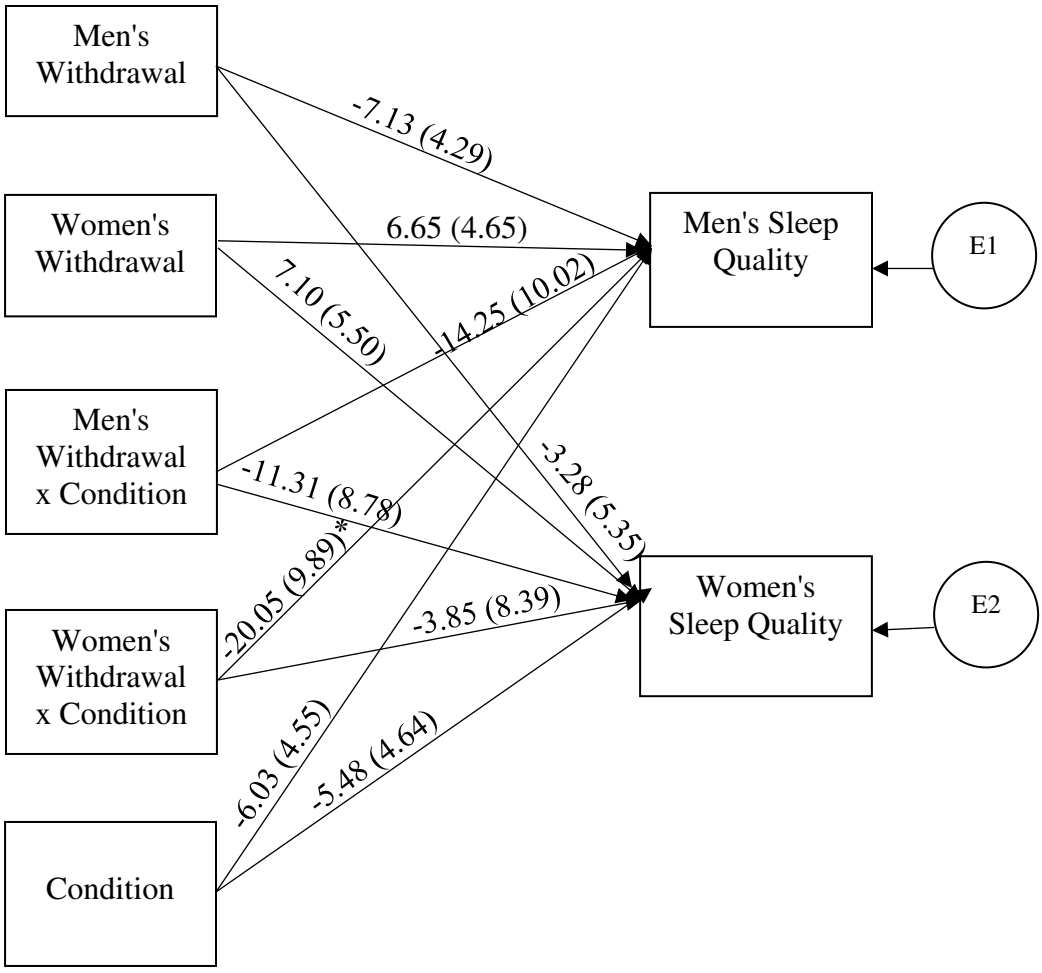

Figure 8. Basic APIM Results of Sleep Quality Post-Appointment Predicted by Men and Women's Withdrawal by Condition with Forgiveness as the Reference Group
$^{+}p < .09$ $*p < .05$, $**p < .01$, $***p < .001$

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APPENDIX A

Timeline of Data Collection and Data Analysis

Pre-Study Screening	**Pre-Conflict**	**Conversation**	**Post-Conversation**	**Writing Intervention**	**Post-Writing**	**Next-Day Measures**
Serial conflict Communication tendencies	Informed consent Mood Sleep Short-term stress (from 3 weeks) Stress	10-minute conversations to discuss area of conflict	Stress Problem severity	Randomly assigned couples to complete 15-minute writing task on forgiveness or control	Mood Stress Perceived support Attachment Trait forgiveness State forgiveness Physical and mental health	Rumination at night Sleep Rumination in morning Mood Stress Perceived support Relationship satisfaction

APPENDIX B

Quality of Relationship Inventory (QRI): Conflict Subscale

1	2	3	4
Not at all			Very much so

1. How often do you have to work hard to avoid conflict with your partner?
2. How upset does your partner sometimes make you feel?
3. How much does your partner make you feel guilty?
4. How much do you have to "give in" in this relationship?
5. How much does your partner want you to change?
6. How critical of you is your partner?
7. How much would you like your partner to change?
8. How angry does your partner make you feel?
9. How much do you argue with your partner?
10. How often does your partner make you feel angry?
11. How often does your partner try to control or influence your life?
12. How much more do you give than you get from this relationship?

APPENDIX C

Four Horseman Scale

Please take a few moments to consider the following questions regarding the way in which you and your partner communicate and indicate how much you agree or disagree with each statement.

1	2	3	4	5	6	7
Strongly Disagree			Neither Agree nor disagree			Strongly Agree

1. When my partner and I disagree, it is important to me to show them that they are at fault.
2. When I tell my partner that he/she has done something I don't like or appreciate, I explain how this fits a pattern of their behavior, or is connected to what they're like as a person.
3. When I talk to my partner about something he/she does that bothers me, I end up making a general point about them as a person instead of being specific about one situation or action.
4. When I complain to my partner about something he/she has done or said, I don't censor myself much, I really let my partner have it.
5. When I complain about something to my partner, the issue is often some kind of problem with his/her character that I need to point out.
6. When I talk with my partner about a problem in our relationship, one of my goals is often to get my partner to accept some blame for the problem.
7. Sometimes I find myself using phrases like "You always" or "You never" when I talk about something negative with my partner.
8. When we discuss issues or problems in our relationship, I sometimes can't think of anything I admire about my partner.
9. When I get upset with my partner, it's easy for me to lose sight of their good qualities.
10. Some of the things my partner does or says makes it hard for me to show respect for them.
11. When we disagree, I try to point out ways in which my partner is inadequate in some way.
12. When we talk, I quite often find myself putting my partner down.
13. Sometimes when I get into a disagreement with my partner, I want to make them feel bad.
14. I call my partner uncomplimentary or rude names when things get heated.
15. If my partner does something to upset or annoy me, I can be harsh and ridicule them for it.
16. Sometimes I feel that my partner picks on me unfairly.
17. I don't feel that I get enough credit from my partner for the positive things I do for our relationship.

18. I feel unfairly attacked when my partner is negative towards me.
19. If my partner complains about something I've done or said, I feel I have to "ward off" those attacks and defend myself.
20. It sometimes seems that all my partner can do is find fault with me.
21. When my partner criticizes me, I find a way to turn that criticism back on him/her or retaliate.
22. I feel like my partner is thinking something negative about me, even if he/she doesn't say so.
23. When my partner complains, I feel that I just want to get away from the situation.
24. When we have a disagreement that looks like it's blowing up, I just want to leave.
25. At times when my partner is very negative, I think it is best just not respond at all.
26. I'd rather withdraw from an argument or conflict with my partner than get my feelings hurt.
27. If I can tell a disagreement is brewing, I kind of shut down and stop talking.
28. If my partner starts to complain, I don't really react, I just wait until it's over and don't get drawn into things.
29. When my partner criticizes me, I try to just tune it out and ignore it.
30. When it seems my partner and I are headed for a conflict, I try to change the subject.

APPENDIX D

The Positive and Negative Affect Scale

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now, that is, at the present moment. Use the following scale to record your answers.

1	2	3	4	5
Very slightly or Not at all	A little	Moderately	Quite a bit	Extremely

_____ interested	_____ irritable
_____ distressed	_____ alert
_____ excited	_____ ashamed
_____ upset	_____ inspired
_____ strong	_____ nervous
_____ guilty	_____ determined
_____ scared	_____ attentive
_____ hostile	_____ jittery
_____ enthusiastic	_____ active
_____ proud	_____ afraid

APPENDIX E

Pittsburgh Sleep Diary

Instructions: We realize that estimates of time to falling asleep and time awake during the night are not going to be exact, just do the best you can. When answering questions about how well you slept, your alertness and mood on wakening, please consider the line to represent your own personal range. Place a mark somewhere along the line to represent your feelings at that time. We are using the line so that you are not required to give "yes" or "no" answers but can give one of a whole range of possible answers. Please try to use the whole scale, rather than simply putting your marks at one end or the other.

Waketime: Please fill out this part of the diary first thing in the morning.
Day _____ Date _____ ID _____
Went to bed last night at _____
Lights out at _____
Minutes until fell asleep _____
Finally woke at _____

Awakened by: (check one) Alarm clock/radio: _____
Someone who I asked to wake me: _____
Noises: _____
Just woke up: _____

After falling asleep, woke up this many time during the night (circle):
0 1 2 3 4 5 or more

Total number of minutes awake _____

- Woke up to use bathroom (circle # of times):
  0 1 2 3 4 5 (or more)

- Awakened by noises/child/bed partner (circle # of times):
  0 1 2 3 4 5 (or more)

- Awakened due to discomfort or physical complaint (circle # of times):
  0 1 2 3 4 5 (or more)

- Just woke (circle # of times):
  0 1 2 3 4 5 (or more)

Ratings: (place a mark somewhere along the line)

Sleep Quality:
Very bad ----------Very good

Mood on Final Awakening:
Very tense ----------Very calm

Alertness on Final Awakening:
Very sleepy ----------Very alert

APPENDIX F

Immediate Stress

This scale consists of several word pairs that describe different feelings and emotions. Read each pair and then mark the appropriate space in between each word to indicate to what extent you feel this way right now.

1	2	3	4	5	6	7
Stressed						Relaxed
1	2	3	4	5	6	7
Uncomfortable						Comfortable
1	2	3	4	5	6	7
Anxious						Not anxious
1	2	3	4	5	6	7
Not nervous						Nervous
1	2	3	4	5	6	7
Calm						Excited
1	2	3	4	5	6	7
Worried						Content

APPENDIX G

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer each question fairly quickly. That is, don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

For each question choose from the following alternatives:

0	1	2	3	4
Never	Almost Never	Sometimes	Fairly Often	Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly?
2. In the last month, how often have you felt that you were unable to control the important things in your life?
3. In the last month, how often have you felt nervous and "stressed"?
4.a In the last month, how often have you dealt successfully with irritating life hassles?
5.a In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?
6.a In the last month, how often have you felt confident about your ability to handle your personal problems?
7.a In the last month, how often have you felt that things were going your way?
8. In the last month, how often have you found that you could not cope with all the things that you had to do?
9.a In the last month, how often have you been able to control irritations in your life?
10.a In the last month, how often have you felt that you were on top of things?

11. In the last month, how often have you been angered because of things that happened that were outside of your control?
12. In the last month, how often have you found yourself thinking about things that you have to accomplish?
13. a In the last month, how often have you been able to control the way you spend your time?
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?
a Scored in the reverse direction

APPENDIX H

Interactional Dimensions Coding System – Coding Sheet

ID	CNum	Date	Time	Seg	Conflict	Withdrawal
1	1			1		
1	1			2		
1	1			3		
1	1			4		
1	1			5		
1	1			10		
2	1			1		
2	1			2		
2	1			3		
2	1			4		
2	1			5		
2	1			10		

APPENDIX I

Perceived Problem Severity

Instructions: Please take a few moments to consider the following questions regarding the conversation you just had with your partner.

1	2	3	4	5
Strongly disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree

1. I considered this problem to be very serious.
2. I considered this problem to be a very severe problem.
3. This problem made me very upset.

APPENDIX J

Forgiveness Task

Instructions: For this task, you will be asked to think about the conflict conversation you just had with your relationship partner. During this task, it asks you to put yourself in a mindset of forgiveness. Forgiveness is often defined as a transition from feeling negatively to feeling positively about someone who has "wronged" you. It often involves a motivation to reconcile with that person. Keep this definition in mind as you complete the following activity.

Please take approximately 15 minutes to write your thoughts to the following questions. Please try to write for the full 15 minutes until the experimenter asks you to stop.

1. *Recall the conflict conversation you just had with your partner. Try to create a vivid picture of the event.*
2. *Write about a time when you hurt someone. What did you feel, think, see, and do before, during, and after?*
3. *When you think about the conflict conversation you just had with your partner, write about what you think your partner was experiencing. What are some other possible experiences your partner might have had? Are there any reasons to feel sorry for your partner? Does he or she need forgiveness? Do you feel any sorrow on behalf of this person?*
4. *Think back to a time in your past when you hurt your partner (or someone else), and you needed forgiveness, and were granted forgiveness. Write a description of this event. What would you call the emotions that you experienced as you realized that you had wronged another and needed forgiveness? What did it feel like to be forgiven?*
5. *Then, think about how you might forgive your partner for this conflict. Describe how you might release feelings of negativity or hostility you may have from the conflict.*
6. *What obstacles could you face in forgiving your partner for this conflict?*
7. *Write in the space below what you would say if you were to write a letter to your partner expressing your decisional forgiveness (that is, that you have decided not to hold a grudge and to treat the person as a valuable human) and telling your partner of your experience of emotional forgiveness (that is, that you have replaced negative emotions with positive emotions toward your partner).*
8. *Do your best in your interactions after leaving this laboratory to take this forgiveness mindset. How might you be most successful in doing this? How might forgiving your partner help you make the most of future disagreements in your relationship?*

APPENDIX K

Desired and Experienced Social Support Scale – Shortened Version

Instructions: In the context of your relationship, your supportive may do all kinds of different things for you when you need support, but they probably do so to a greater or lesser extent. Here, we are interested in how much of each behavior you actually receive from your supportive partner. For each of the items below, please indicate on the supplied answer sheet how much of each behavior you actually receive from your supportive partner.

1	2	3	4	5
Do not receive at all				Receive a Great Deal

1. Telling you that he/she loves you and feels close to you.
2. Expressing understanding of a situation that is bothering you or disclosing a similar situation that he/she experienced before.
3. Comforting you when you are upset by showing some physical affection (including hugs, handholding, shoulder patting, etc.)
4. Providing you with hope or confidence
5. Telling you that you are still a good person even when you have a problem.
6. Trying to reduce your feelings of guilt about a problem situation.
7. Expressing agreement with your perspective on various situations
8. Assuring you that you are a worthwhile person.
9. Offering to do things with you and have a good time together.
10. Connecting you with people whom you may turn to for help.
11. Offering to spend time with you to get your mind off something (chatting, having dinner together, going to a concert, etc.)
12. Helping you find the people who can assist you with things.
13. Giving you advice about what to do
14. Analyzing a situation with you and telling you about available choices and options
15. Telling you whom to talk to for help.
16. Giving you reasons why you should or should not do something.
17. Offering to lend you something (including money)
18. Taking care of your domestic chores when you are feeling ill.
19. Joining you in some activity in order to alleviate stress.
20. Offering to help you do something that needs to be done.

APPENDIX L

Experiences in Close Relationships – Relationship Structures (ECR-RS)

This questionnaire is designed to assess the way in which you mentally represent important people in your life. You'll be asked to answer questions about your parents, your romantic partners, and your friends. Please indicate the extent to which you agree or disagree with each statement by clicking along the scale below.

1) Please answer the following questions about your dating or marital partner.

	Strongly Disagree						**Strongly Agree**
1. It helps to turn to my partner in times of need.	1	2	3	4	5	6	7
2. I usually discuss my problems and concerns with my partner.	1	2	3	4	5	6	7
3. I talk things over with my partner.	1	2	3	4	5	6	7
4. I find it easy to depend on my partner.	1	2	3	4	5	6	7
5. I don't feel comfortable opening up to my partner.	1	2	3	4	5	6	7
6. I prefer not to show my partner how I feel deep down.	1	2	3	4	5	6	7
7. I often worry that my partner doesn't really care for me.	1	2	3	4	5	6	7
8. I'm afraid that my partner may abandon me.	1	2	3	4	5	6	7
9. I worry that my partner won't care about me as much as I care about him or her.	1	2	3	4	5	6	7

APPENDIX M

Heartland Forgiveness Scale – Forgiveness of Other subscale

In the course of our lives negative things may occur because of our own actions, the actions of others, or circumstances beyond our control. For some time after these events, we may have negative thoughts or feelings about ourselves, others, or the situation. Think about how you **typically** respond to such negative events. For each of the following items, indicate the number (from the 7-point scale below) that best represents how you **typically** respond to the type of negative situation described. There are no right or wrong answers. Please be as open as possible in your answers.

1	2	3	4	5	6	7
Almost always false of me		More often false of me		More often true of me		Almost always true of me

1. I continue to punish a person who has done something that I think is wrong.
2. With time I am understanding of others for the mistakes they've made.
3. I continue to be hard on others who have hurt me.
4. Although others have hurt me in the past, I have eventually been able to see them as good people.
5. If others mistreat me, I continue to think badly of them.
6. When someone disappoints me, I can eventually move past it.

APPENDIX N

Transgression-Related Interpersonal Motivations Inventory – 18-Item Version

For the questions on this page, please think about the conflict interaction you and your partner just completed in the laboratory. Please think of this person and visualize the events involved in the interaction. Please keep this in mind while answering the questions in the scale. Indicate your current thoughts and feelings about this person and the incident. Use the following scale to indicate your agreement with each of the questions.

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

1. I'll make them pay.
2. Even though their actions hurt me, I have goodwill for them.
3. I wish that something bad would happen to them.
4. I want us to bury the hatchet and move forward with our relationship.
5. I want them to get what they deserve.
6. I'm going to get even.
7. I want to see them hurt and miserable.
8. I keep as much distance between us as possible.
9. I live as if they don't exist, or aren't around
10. I don't trust them.
11. Despite what they did, I want us to have a positive relationship again.
12. I find it difficult to act warmly toward them.
13. I want to avoid them.
14. Although they hurt me, I am putting the hurt aside so we can resume our relationship.
15. I want to cut off the relationship with them.
16. I have released my anger so I can work on restoring our relationship to health
17. I want to withdraw from them.
18. I forgive them for what they did to me.

APPENDIX O

Physical Health Symptoms

Please indicate the extent to which you have experienced the following items/symptoms:

1	2	3	4
Never	Occasionally	Frequently	Constantly

1. Constipation
2. Lower back pain
3. Allergy problems
4. High blood pressure
5. Hives
6. Low-grade infections
7. Indigestion
8. Hyperventilation
9. Dermatitis
10. Nausea/vomiting
11. Migraine headaches
12. Loss of appetite
13. Diarrhea
14. Neck or shoulder muscle aches
15. Asthma attacks
16. Common flu/cold
17. Cold hands or feet
18. Heart palpitations
19. Tension headaches
20. Overeating
21. Stomach ache or pain
22. Chest pain
23. Runny or congested nose
24. Coughing or sore throat
25. Faintness or dizziness
26. Out of breath
27. Acne or pimples
28. Stiff or sore muscles

In the past 30 days, how many:

_____ Visits have you made to the doctor for illness

_____ Days you have been sick

_____ Days your activity has been restricted due to illness

APPENDIX P

Hospital Anxiety and Depression Scale

For the following questions, please indicate your response by circling the appropriate phrase.

1. I feel tense or 'wound up':
    a. Most of the time
    b. A lot of the time
    c. From time to time, occasionally
    d. Not at all

2. I still enjoy the things I used to enjoy:
    a. Definitely as much
    b. Not quite so much
    c. Only a little
    d. Hardly at all

3. I get a sort of frightened feeling as if something awful is about to happen:
    a. Very definitely and quite badly
    b. Yes, but not too badly
    c. A little, but it doesn't worry me
    d. Not at all

4. I can laugh and see the funny side of things:
    a. As much as I always could
    b. Not quite so much now
    c. Definitely not so much now
    d. Not at all

5. Worrying thoughts go through my mind:
    a. A great deal of the time
    b. A lot of the time
    c. From time to time, but not too often
    d. Only occasionally

6. I feel cheerful:
    a. Not at all
    b. Not often
    c. Sometimes
    d. Most of the time

7. I can sit at ease and feel relaxed:
    a. Definitely

b. Usually
c. Not often
d. Not at all

8. I feel as if I am slowed down:
    a. Nearly all the time
    b. Very often
    c. Sometimes
    d. Not at all

9. I get a sort of frightened feeling like 'butterflies' in the stomach:
    a. Not at all
    b. Occasionally
    c. Quite often
    d. Very often

10. I have lost interest in my appearance:
    a. Definitely
    b. I don't take so much care as I should
    c. I may not take quite as much care
    d. I take just as much care as ever

11. I feel restless as if I have to be on the move:
    a. Very much indeed
    b. Quite a lot
    c. Not very much
    d. Not at all

12. I look forward with enjoyment to things:
    a. As much as I ever did
    b. Rather less than I used to
    c. Definitely less than I used to
    d. Hardly at all

13. I get sudden feelings of panic
    a. Very often indeed
    b. Quite often
    c. Not very often
    d. Not at all

14. I can enjoy a good book or radio or TV program:
    a. Often
    b. Sometimes
    c. Not often
    d. Very seldom

APPENDIX Q

Rumination Scale

Instructions: Please complete this survey regarding the extent to which each of the following items pertains to how you felt last night before falling asleep.

1	2	3	4	5
Not at all true of me				Extremely true of me

1. I couldn't stop thinking about the conversation I had with my partner during the lab appointment.
2. Thoughts and feelings about the lab conversation kept running through my head.
3. Strong feelings about what my partner said to me during the lab conversation kept bubbling up.
4. Images of the lab interaction kept coming back to me.
5. I brooded about the lab conversation.
6. I found it difficult not to think about the lab conversation with my partner.
7. I found myself playing the lab conversation over and over in my head.
8. Even when I was engaged in other tasks, I thought about the conversation with my partner during the lab appointment.

Instructions: Please complete this survey regarding the extent to which each of the following items pertains to how you currently feel after having woken up for the day.

1	2	3	4	5
Not at all true of me				Extremely true of me

1. I can't stop thinking about the conversation I had with my partner during the lab appointment.
2. Thoughts and feelings about the lab conversation keep running through my head.

3. Strong feelings about what my partner said to me during the lab conversation keep bubbling up.
4. Images of the lab interaction keep coming back to me.
5. I am brooding about the lab conversation.
6. I find it difficult not to think about the lab conversation I had with my partner.
7. I find myself playing the lab conversation over and over in my head.
8. Even when I am engaging in other tasks, I am thinking about the conversation I had with my partner during the lab appointment.

APPENDIX R

Relationship Assessment Scale (RAS)

1	2	3	4	5
Not at all				Very much / A lot

1. How well does your partner meet your needs?

2. In general, how satisfied are with your relationship?

3. How good is your relationship compared to most?

4. How often do you wish you hadn't gotten into this relationship? *

5. To what extent has your relationship met your original expectations?

6. How much do you love your partner?

7. How many problems are there in your relationship? *