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Intimate partner violence (IPV) is a widespread problem with significant negative effects. A common result of IPV is the development of posttraumatic stress disorder (PTSD), a disorder that occurs when psychological recovery from a traumatic experience is impaired or arrested. There are a variety of approaches for treating PTSD, but one of the most prevalent symptoms of PTSD, posttraumatic nightmares (PTNMs), frequently does not resolve even when other PTSD symptoms have been significantly reduced or eliminated (Bradley, Greene, & Russ, 2005). In addition, PTNMs of IPV survivors often contain horrific content that is emotionally disturbing (Rasmussen, 2007), and PTNM frequency is linked to increased risk of suicide attempts, with several studies showing this increased risk is independent of depressive symptoms and insomnia (Nadorff et al., 2014; Sjostrom et al., 2007; Tanskanen et al., 2001).

Due to the difficulty in resolving PTNMs and their negative effect on IPV survivors, this study sought to increase understanding of the function of PTNMs by examining elements of the Contemporary Theory of Dreaming (CTD) suggesting that nightmares help to integrate the emotion from trauma into the experience of the dreamer. The study also examined Levin and Nielsen's (2009) idea put forth in their (A)mygdala, (M)edial (P)refrontal Cortex, (H)ippocampus, (A)nterior (C)ingulate Cortex/(A)ffective (N)etwork (D)ysfunction (AMPHAC/AND) neurocognitive dreaming model that nightmares allow for fear-memory extinction. Both CTD and the AMPHAC/AND model

suggest that when nightmares repeat the dreamer is not formulating new associations, which is an impairment of the normal function of nightmares, namely, to aid trauma recovery. Therefore, this study examined two forms of repeating nightmares that are linked with PTSD and with difficulty recovering from PTSD, and for which there is a dearth of research describing the relationship between these dream types and PTSD. These two types of repeating nightmares are *replicative* nightmares (nightmares that repeat the trauma exactly) and *recurrent* nightmares (nightmares that do not repeat the trauma but occur in the same form repeatedly). CTD suggests that insomnia is the likely cause of repeating nightmares, while the AMPHAC/AND model attributes affective distress (as measured through nightmare distress) as the cause. The current study evaluated these competing proposals for the cause of repeating nightmares as well as the relationship between repeating nightmares and PTSD using a cross-sectional correlation design to discover if the reported relationships of repeating nightmares, PTSD, insomnia, and nightmares distress among IPV survivors was consistent with the models (CTD and AMPHAC/AND).

Analyses revealed that PTSD and repeating nightmares were strongly correlated among the sample of IPV survivors who participated in the study. In addition, nightmare distress had a strong significant correlation with repeating nightmares and PTSD, while insomnia had a moderate correlation with PTSD and only the replicative type of repeating nightmares. These findings were consistent with the propositions made in the AMPHAC/AND model, however, the CTD proposal that insomnia leads to repeating nightmares was not supported by the findings.

There are implications from the research findings. The presence of repeating nightmares in clients should indicate the need for trauma assessment due to the strong relationship between repeating nightmares and PTSD symptom severity. IPV survivors should be assessed for repeating nightmares, and, based on the strong relationship between repeating nightmares, nightmare distress, and PTSD symptom severity, the nightmares of survivors experiencing repeating nightmares should be addressed in counseling to alleviate distress related to the experience of those repeating nightmares. In addition, further research is needed. Longitudinal studies to evaluate whether dreams and nightmares that generate new associations lead to improvements in PTSD symptoms among IPV survivors would provide valuable information towards evaluating the role of dreams and nightmares put forward in the AMPHAC/AND model. Additionally, due to the lack of research on IPV survivors' dreams and nightmares over time, qualitative research of IPV survivors' experiences with dreams and nightmares in the maintenance of PTSD and recovery from PTSD is needed.

DREAMING AFTER TRAUMA: EXPLORING THE RELATIONSHIP OF
REPLICATIVE AND RECURRENT POSTTRAUMATIC NIGHTMARES
TO INSOMNIA, NIGHTMARE DISTRESS, AND POSTTRAUMATIC
STRESS DISORDER AMONG SURVIVORS OF INTIMATE
PARTNER VIOLENCE

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CHAPTER I

INTRODUCTION

Intimate partner violence survivor quote (C. Murray, personal communication, October 29, 2014):

It's not over for me. I can't wait for the day when I look back upon my abusive past and it doesn't make me cry and when I don't have nightmares and flashbacks and am afraid to walk alone at night.

Intimate Partner Violence and Posttraumatic Stress Disorder

Intimate partner violence (IPV) affects millions of individuals and families, causing significant harm. IPV is defined as, “any behavior within an intimate relationship that causes physical, sexual, or psychological harm to those in the relationship” (World Health Organization, 2012, p. 1). These behaviors are further categorized into *acts of physical violence, sexual violence, emotional (psychological) abuse, and controlling behaviors* (p. 1). IPV survivors describe experiences including isolation from friends and family, torture, rape, beatings, and threats to their own wellbeing as well as to those they love (Black et al., 2010; Golding, 1999; World Health Organization, 2012).

The number of individuals affected by IPV is startling. According to Black et al.'s (2010) National Intimate Partner and Sexual Violence Survey: 2010 Report Summary, 35.6% of women and 28.5% of men in the United States have experienced IPV.

Experiences of IPV reported include stalking, rape, and/or physical violence. Within the

previous year of the survey, 5.9% of women and 5.0% of men indicated they had experienced IPV. In 2009, it is estimated that 12.7 million individuals in United States experienced IPV. The economic costs of IPV are also immense with lifetime financial losses due to IPV injuries estimated at 37 billion dollars in the U.S., with 4 billion resulting from medical treatment and 33 billion attributed to lost productivity (Black et al., 2010; Corso, Mercy, Simon, Finkelstein, & Miller, 2007).

As a consequence of IPV, survivors experience serious psychological distress such as high rates of Post-Traumatic Stress Disorder (PTSD). PTSD is a psychological disorder in which, after exposure to “real or threatened death, injury, or sexual violence” (p. 271), there is significant impairment for at least a month due to symptoms that include a) re-experiencing the traumatic event, b) avoidance, emotional numbing, c) negative changes in thoughts and moods, and d) persistent increased arousal (American Psychiatric Association, 2013). In a meta-analysis of 11 studies Golding (1999) reported PTSD rates ranging between 31% and 84.4% among IPV survivors. Even at the low end of Golding’s estimation, 31%, the number of IPV survivors with PTSD symptoms would be immense (close to four million individuals in 2010 based on the estimate of 12.7 million Americans experiencing IPV that year), though the mean percentage for those developing PTSD across the studies was much higher at 64%.

The high occurrence of PTSD among IPV survivors is understandable as individuals who experience IPV face complex emotional pain and trauma (Bostock, 2009; Rasmussen, 2007; Woods, 2000). IPV often involves a serious loss of independence, significant financial problems, and great difficulty caring for children,

including, in some cases, protecting children from the brunt of a partner's violence. These factors compound the fear and pain of the direct abuse (Bostock, 2009; Woods, 2005; Woods, 2000). In the midst of managing the logistics of survival and dealing with the abuse, the re-experiencing symptoms of PTSD renew the terror generated by episodes of violence (Ehlers, Hackmann, & Michael, 2004). Posttraumatic nightmares (PTNM) are one very common aspect of PTSD categorized as an intrusion/re-experiencing symptom that increases fear and confusion for IPV survivors through exposure to dream imagery that is intensely emotionally disturbing and may even replicate the violence experienced (Mellman, 2008; Phelps, Forbes, & Creamer, 2008; Rasmussen, 2007).

Posttraumatic Nightmares

PTNMs are nightmares that occur following trauma that are related to the trauma through content and/or affect (Schreuder, 2001). Between 50% and 71% of those with a PTSD diagnosis report trauma-related nightmares (Leskin, Woodward, Young, & Sheikh, 2002; Neylan et al., 1998; Rasmussen, 2007). In a small study by Rasmussen (2007), rates of nightmares were found to be 50% among IPV survivors, and accounts of their PTNMs often describe in terrifying detail the emotions and imagery with which the sufferers live. PTNM reports from the survivors Rasmussen studied revealed that dreams involving torture, murder, death, blood, and being chased occurred commonly and were described by survivors as highly emotional and deeply disturbing experiences. Adding even more significance to the possible negative effects of PTNMs on IPV are studies indicating that the experience of increased nightmares is linked to a greater likelihood of suicide (Agargun et al., 2007; Cukrowicz et al., 2006; Nadorff & Fiske, 2013; Nadorff,

Anestis, Nazem, Claire Harris, & Samuel Winer, 2014; Nadorff, Nazem, & Fiske, 2013; Tanskanen et al., 2001). Specifically, increased nightmares were linked to increased suicidal ideation, greater number of previous suicide attempts, and increased likelihood of attempting suicide within the next two years, independent of depression, anxiety, and PTSD symptoms (Nils Sjöström, Hetta, & Waern, 2009; Nisse Sjöström, Wærn, & Hetta, 2007; Tanskanen et al., 2001). Subsequently, such a clear link between nightmares and suicide is disturbing, and further emphasizes the importance of increasing understanding of the emotionally distressing phenomenon of PTNMs in order to improve treatment effectiveness for supporting IPV survivors experiencing PTNMs.

PTNMs were traditionally considered a secondary symptom of PTSD, however there is growing evidence that PTNMs are, in fact, a primary indicator of the disorder (Germain, Buysse, & Nofzinger, 2008; Mellman, 2008; Spoormaker & Montgomery, 2008). Extant research includes findings that reveal PTNMs may persist following treatment of PTSD, that individuals who experience frequent nightmares prior to the occurrence of trauma have an increased likelihood of PTSD following trauma, and that the treatment of PTNMs can reduce PTSD symptom severity (Spoormaker & Montgomery, 2008). Taken together, the available research findings point to the conclusion that nightmares play a significant role in PTSD, yet it is one that is currently poorly understood.

The fact that PTNMs are poorly understood in both PTSD theory and treatment indicates that additional research is needed. Currently, research on dreams and research on PTSD has largely occurred separately, however recent research on dreams and

theories grounded in that research suggest possibilities for new understandings of PTNMs (Phelps et al., 2008). To further the existing knowledge, it is necessary to differentiate between types of PTNMs. In support of developing a better understanding of the types of PTNMs and the significance of those types, two different but overlapping dream theories addressing PTNMs are discussed to build a rationale for the exploration of Replicative PTNMs and Recurrent PTNMs in relation to PTSD. The Contemporary Theory of Dreaming (CTD) (Hartmann, 2011) and the (A)mygdala, (M)edial (P)refrontal Cortex, (H)ippocampus, (A)nterior (C)ingulate Cortex/(A)ffective (N)etwork (D)ysfunction (AMPHAC/AND) neurocognitive model (Levin & Nielsen, 2009) are the theories of dreaming that offer the most potential for illuminating the role that PTNMs play in the development and treatment of PTSD.

Contemporary Theory of Dreaming

CTD is based on emerging findings in neuroscience and cognitive research and proposes that the affective state of the dreamer drives the generation of dreams (Hartmann, 2011). CTD suggests that dreams involve associations between disparate memories from one's life and imagined creations (e.g. ideas with no basis in the reality of the dreamer such as walking on Mars or being attacked by ghosts), and that the associative linking between memories and imagined creations is driven by the dreamer's emotion (e.g. the dreamer is afraid of her father in waking life, so in her dream she is pursued by a vampire in her father's T-shirt). Through this associative process, there are possibilities for the intense emotions of recent waking experiences to be connected to past experiences and imagined creations in dreams and through that linking of intense

emotions to other memories and imagined experiences, events such as trauma are more easily integrated into the lived experience of the dreamer (Hartmann, 2011). This process is likened by Hartmann (2011) to a weaving in of emotion and experiences linked to the emotion with other memories. Hartmann (2011) describes the process of generating new associations in dreams based on emotional salience as a naturally occurring process that helps individuals to work through life's challenges.

According to Hartmann (2011), after trauma, the emotional concerns of an individual are much stronger, which prompts an increased level of association in dreaming (these dreams generally take the form of PTNMs) in order to integrate the emotions related to the trauma experience with the dreamer's past experiences and what the dreamer can conceptualize through imagination. CTD further proposes that this integration helps the individual to psychologically heal from the trauma and that the psychological healing function of dreaming is a reason for dreaming. Small studies and findings based on examining the dreams of individuals after trauma and those who successfully recovered from trauma support the proposal that the associations generated in dreams may have a healing role (Hartmann, 1998; Hartmann & Basile, 2003; Hartmann & Brezler, 2008; Hartmann, Zborowski, Rosen, & Grace, 2001; Hartmann, 1999). However, the potential healing role of PTNMs that create new associations has not been examined among individuals with PTSD or among IPV survivors.

When PTSD develops, recovery from trauma is stalled; therefore, psychological healing either does not occur or happens very slowly. From the CTD perspective, PTSD is indicative that the internal integration of the emotion of the trauma experience that is

observed in associative dreaming is impaired. The impairment results in the occurrence of non-associative PTNMs (repeating nightmares) that are *replicative* (i.e., repeating the trauma experience as it occurred) and *recurrent* (i.e., repeating the same imagery without change and the imagery is not a repeat of the trauma experience as it occurred in waking life). These repeating nightmares are indicative of the internal psychological healing process being slowed or arrested (Hartmann, 2011; Phelps et al., 2008). Hartmann further suggests that decreased and disturbed sleep may be responsible for the impairment of the natural psychological healing function that results in recurrent and replicative PTNMs. This is consistent with replicative and recurrent PTNMs being associated with insomnia, which commonly co-occurs with PTSD (Krakow et al., 2000; Spoormaker, Schredl, & van den Bout, 2006). Hartmann argues that sleep impairment prevents the dream process from progressing to the point that new associations between the emotion of the trauma and past experiences and imagined creations can occur (Hartmann, 2011; Kolk, Blitz, & Burr, 1984; Phelps et al., 2008). Given the role that sleep disturbance plays in PTSD and in those who have experienced trauma, it is critical to evaluate sleep impairment and PTSD symptoms in relation to replicative and recurrent PTNMs among IPV survivors.

AMPHAC/AND Neurocognitive Model

Levin and Nielsen (2009) proposed a neurocognitive dreaming paradigm, the AMPHAC/AND model that, like CTD, strongly draws from neuroscience and cognitive research findings and describes nightmares as being linked to emotional processing. The relationship between neurological processes and the model is reflected in the model's name, which consists of the brain regions connected to the dreaming process,

(A)mygdala, (M)edial (P)refrontal cortex, (H)ippocampus, and the (A)nterior (C)ingulate cortex and the cognitive-neural processing network implicated, (A)ffect (N)etwork (D)ysfunction. Further, the model's name is descriptive of the interplay between the regions of the brain and the processing of emotion and memory. The AMPHAC/AND model proposes that one function of dreaming is fear-memory extinction and that repeating nightmares occur when the fear-memory extinction process is impaired (Levin & Nielsen, 2009).

Dreaming creates an environment for fear-memory extinction by stimulating memories that contain fearful or emotionally disturbing content, prompting those memories to be recombined with new content from memory or imagination that creates a new context for the fearful or emotionally disturbing content. That generation of a new context related to the fearful or emotionally disturbing material is described as the creation of new fear extinction memories (Levin & Nielsen, 2009; Levin & Nielsen, 2007). Because dreams feel real, the memories of the new combinations are treated in a similar manner to waking experiences and therefore, provide opportunities for new relationships to the experiences that prompted the emotional disturbance in waking. An important part of this process is the involvement of emotional processes in dreaming. The involvement of emotional processes is important, as it is through this engagement with emotion that fearful or disturbing memories are recalled. Furthermore, it is through this process that, as those memories are recombined and reimagined in dreaming, new emotional relationships to memories are developed. When the generation of new emotional relationships to memories in dreaming is impaired, extinction memories are

not created, and as a result, repeating nightmares are generated and trauma recovery is impaired (Levin & Nielsen, 2007). This relationship between repeating nightmares and PTSD needs empirical support; therefore, direct research into the relationship of PTSD symptom severity to replicative and recurrent PTNMs stands to provide data allowing for better evaluation of that proposed relationship. Based on the theory proposed in the AMPAC/AND model, more frequent repeating nightmares should be linked to more severe PTSD (Levin & Nielsen, 2009).

The AMPHAC/AND model creates a clear rationale for understanding the relationship of repeating nightmares to PTSD, and supports looking more closely at the relationship of repeating nightmares and nightmare distress. Within the model, affective distress, which refers to the manner in which individuals experience distress, is implicated in the impairment of dreaming that results in PTNMs. When the impairment is significant, the result is repeating nightmares (Levin & Nielsen, 2009; Levin & Nielsen, 2007). Nightmare distress is the direct manifestation of the affective distress trait as regards nightmares (Levin & Nielsen, 2007), therefore, evaluating that relationship between repeating nightmares, PTSD, and nightmare distress will increase understanding of whether affective distress, through the variable of nightmare distress, may be a primary factor in the generation of replicative and recurrent PTNMs and more severe PTSD symptoms among IPV survivors.

Sleep and PTSD

PTNMs, especially replicative and recurrent PTNMs, are linked to insomnia (Krakow, Hollifield, et al., 2000; Spoormaker, Schredl, & van den Bout, 2006), and

PTNMs and insomnia are known to be associated with greater severity in PTSD symptoms and slower recovery from PTSD (Babson et al., 2011; Germain, 2009; Pigeon et al., 2011; van Liempt, 2012). However, other than a recognition that individuals suffering from insomnia and PTSD are more likely to report replicative and recurrent PTNMs, the relationship between these variables and whether replicative or recurrent dreams contribute to greater waking distress is nonexistent (Babson et al., 2011; Krakow et al., 2000; Pigeon et al., 2011; Spoormaker & Montgomery, 2008; van Liempt, 2012).

CTD provides a potential explanation for the relationship between insomnia, replicative and recurrent PTNMs, and PTSD. The theory suggests that insomnia impairs the psychological healing process of PTNMs, causing PTNMs to become recurrent or replicative (Hartmann, 2011). The mechanism for this impairment is thought to be an interruption of the normal process by which one cycles through sleep stages (sleeping individuals go through multiple cycles of non-rapid eye movement [NREM] and rapid eye movement [REM] sleep over the course of a normal night's sleep) that leads to increased association in dreams in later stages of the cycling (Cicogna, 1994; Foulkes, 1962; Malinowski & Horton, 2014; Wamsley, Hirota, Tucker, Smith, & Antrobus, 2007). This interruption to the normal sleep and dreaming cycle may account for the occurrence of replicative PTNMs among PTSD sufferers, in which the trauma experience is repeated in a nearly literal manner (e.g., dreaming about an experience of IPV as it actually occurred), through the explanation that dreaming is interrupted before the sleep cycles reach a point in which that trauma experience is connected to other memories or imagined creations. It could also account for recurrent PTNMs. Subsequently, recurrent

dreams may be thought of as dreams in which affective associations between the trauma, memories, and imagined creations began to occur, but in subsequent dreaming experiences, sleep cycles did not reach the stage in which further associations could be formed; leaving the established associations locked in place (Hartmann, 2011; Phelps et al., 2008). The progressive nature of cycling sleep stages throughout the night provides evidence as to why insomnia and recurrent and replicative PTNMs are so strongly associated with greater PTSD symptom severity, as PTNMs that directly replicate trauma impair the psychological healing function of PTNMs, as suggested by Hartmann (2011). Other researchers have also suggested a link between severe insomnia, increased replicative and recurrent PTNMs, and greater PTSD symptom severity (Babson et al., 2011; Anne Germain, 2013; Pigeon et al., 2011). Given the extant research, the current study was focused on replicative and recurrent PTNM frequency, insomnia, and PTSD symptom severity as a first step in evaluating the relationship between associative dreaming and insomnia that CTD proposes.

Nightmare Distress

Nightmare distress refers to the distress in waking life that individuals attribute to the nightmares they experience, and it is closely linked to the trait identified in the AMPHAC/AND model as affective distress (Levin & Nielsen, 2007). There is support for nightmare distress being distinct from the frequency of nightmares and greater nightmare distress being linked to more severe PTSD symptoms and insomnia (Belicki, 1992a; Böckermann, Gieselmann, & Pietrowsky, 2014; Duval, McDuff, & Zadra, 2013). However, whether replicative or recurrent PTNMs are implicated in the link between

greater nightmare distress and more severe PTSD symptoms and insomnia is unknown. In fact, no research has been conducted into the relationship between nightmare distress and PTSD symptoms among survivors of IPV, a population that consistently reports high levels of frightening and distressing PTNMs (Krakow et al., 2002; Pigeon et al., 2011; Rasmussen, 2007). Due to the impact that PTNMs have on sufferers and the lack of understanding of relationships between nightmare distress, PTSD, insomnia, and repeating nightmares, the inclusion of nightmare distress as a variable in this study is important.

Statement of the Problem

A review of the literature revealed no research exists exploring the frequency of replicative and recurrent nightmares in relation to insomnia, nightmare distress, and PTSD symptoms among survivors of IPV. Therefore, this study employed a correlation research design to investigate if different types of PTNMs among IPV survivors are differentially linked to the problems often associated with PTNMs as suggested by CTD and the AMPHAC/AND model; namely, insomnia, nightmare distress, and PTSD symptoms. Specifically, data on the frequency of recurrent and replicative nightmares was collected and analyzed to determine if increased repeating nightmares (replicative and recurrent nightmares) were linked to increased insomnia, nightmare distress, and PTSD symptoms. The findings generated from the study were used to examine whether differentiating types of nightmares (e.g., replicative, recurrent, and non-associative) might be valuable in assessment and treatment for survivors of IPV. The findings were

then evaluated in relation to CTD and the AMPHAC/AND model and suggestions for future research were generated.

Need for the Study

The lack of integration between dream theories and PTSD theories of nightmares as identified by Phelps et al. (2008), the uncertain role of PTNMs in the experience and maintenance of PTSD as expounded by Spoormaker and Montgomery (2008), and the distress PTNMs cause survivors (Rasmussen, 2007), sometimes even after other PTSD symptoms have resolved (Phelps et al., 2008; Spoormaker & Montgomery, 2008) all support the need for an increased understanding of the role of PTNMs in PTSD. Research showing nightmares can be treated and that treatment of nightmares can positively affect PTSD symptoms more broadly (Krakow, Hollifield, et al., 2000; Moore & Krakow, 2010) further supports the need for a better understanding of PTNMs. To date, it is unclear why treatment of nightmares may have a broader impact on the recovery from trauma given that within the prevailing understandings of PTSD, nightmares are viewed simply as a secondary symptom (Phelps et al., 2008; Spoormaker & Montgomery, 2008). Finally, theoretical and research support for the involvement of nightmares in the recovery from trauma through the generation of associations as described by Hartmann (2011) or through the generation of new associations in the form of new extinction memories as proposed by Levin and Nielsen (2007, 2009) provides a clear differentiation of nightmare types based on the generation of new content in nightmares that has not been directly explored in relation to PTSD, insomnia, or nightmare distress. The lack of understanding of PTNMs in the course of PTSD and the possibility that the associative

distinction between nightmares might be beneficial in generating insight about the relationship of PTNMs to insomnia, PTSD, and distress attributed to nightmares provides a clear justification for the current study.

Relating these problems to survivors of IPV creates an even clearer sense of what this study intended to address. For IPV survivors, nightmares are disturbing and frequent experiences, possibly linked to increased suicide risk, for which clear and research supported explanations are lacking, and treatments are limited. In addition, the presence of nightmares unpredictably occurring during and after PTSD recovery is both distressing and confusing for those experiencing them. Therefore, this study addresses the need to better understand PTNMs in order to improve understanding, assessment, and treatment of PTNMs experienced by IPV survivors.

Research Questions

1. Research question (RQ1)- Is there a significant correlational relationship between the frequency of recurrent or replicative nightmares and the measures for insomnia, nightmare distress, and PTSD symptom severity reported over the past month among IPV survivors?
2. RQ2- Is there a significant correlational relationship between the time since the last repeating nightmare (replicative and recurrent nightmares) and PTSD symptom severity among IPV survivors?
3. RQ3- Is there a significantly different correlational relationship between the frequency of replicative nightmares and insomnia compared to the frequency of recurrent nightmares and insomnia?

Definition of Terms

AMPHAC/AND Neurocognitive Model- Levin and Nielsen's (2009) model that describes the role of dreams in fear memory extinction and that increased affective distress as a cause in the impairment of dreaming that results in nightmares.

Intimate Partner Violence (IPV)- The occurrence of physical, sexual, or psychological abuse perpetrated by a spouse or partner.

Survivors- A term used to describe an individual who has experienced a trauma and is persevering following a trauma. Historically, "victim" was a term commonly used; however, it denotes helplessness. Survivor is the term used in this manuscript because of its greater connotations of empowerment.

Contemporary Theory of Dreaming (CTD)- A recent theory of dreaming developed by Ernest Hartmann that is based on cognitive and neuroscience research findings. CTD proposes that dreaming exists on a continuum with waking in regards to the way the brain generates associations. In waking, associations are more cognitively regulated and serial. As an individual moves across states, from normal waking to daydreaming for example, the associations become less serial and more affectively governed. Dreaming is a hyper-associative state governed by the dreamer's affective state. CTD further proposes that this hyper-associative dream state provides a safe-place for integrating trauma experiences and trauma related emotions with other imagery and memories in order to spread the affective load and aid psychological recovery (Hartmann, 2011).

Nightmare Distress- The distress in waking life that individuals attribute to the nightmares they experience.

Repeating Nightmares- Encompasses replicative and recurrent nightmares and refers to the nightmares experienced after trauma that do not create any novel, associative content.

Posttraumatic Nightmares (PTNMs)- PTNMs are nightmares following trauma that are related to the trauma through content or affect. They are distinct from idiopathic nightmares (i.e., nightmares that occur without links to trauma experience). In this study, PTNMs will refer to all disturbing dreams following a trauma and thought to be related to the trauma, regardless of whether the dreamer awakens immediately from the nightmare. Furthermore, the term PTNMs will be inclusive of both replicative and non-replicative nightmares unless specified.

Replicative Nightmare- A nightmare in which an actual trauma event or part of an actual trauma event is re-experienced as it occurred in waking life.

Recurrent Nightmare- A nightmare that reproduces a previous nightmare. Recurrent non-replicative nightmares copy a previous nightmare but are not replications of the trauma event; instead, recurrent nightmares contain symbolic content.

CHAPTER II

REVIEW OF LITERATURE

Intimate partner violence survivor quote (C. Murray, personal communication, October 29, 2014):

I was depressed, took therapy and had nightmares. The nightmares lasted 28 years. I am now deciding not to blame myself or think about it. I have finally learned it is time to let go.

This chapter provides a detailed overview of the foundational literature for the study as introduced in Chapter 1. The chapter is organized as follows; a) the first section focuses on how Interpersonal Partner Violence commonly leads to the development of PTSD; b) PTNMs are identified as a common, significant and distressing symptom in IPV survivors who develop PTSD, and a symptom for which improved understanding and treatment are needed; c) PTNMs are defined and described historically and culturally in order to build awareness of PTNMs as a phenomenon that exists historically and across cultures; d) psychological perspectives on PTNMs are provided in order to highlight the challenges that exist in understanding and treating PTNMs; e) CTD is explained in detail and positioned as a theory that accounts for existing research evidence on dreaming; f) the CTD proposition that PTNMs that generate new associations are a natural, self-healing process following trauma is explained; g) the impairment in PTSD sufferers of the self-healing process of PTNMs through repeating nightmares is clarified using

perspectives from neuroscience research and research on insomnia; h) the AMPHAC/AND model is described in detail to relate brain functions to PTNM development; i) the relationship of hippocampal impairment to non-associative dreaming is explained based on the AMPHAC/AND model; j) nightmare distress as a factor important to evaluate in relation to the AMPHAC/AND model and repeating nightmares is described; k) current treatments for PTNMs are described and the need for better understanding of PTNMs and how they are treated are highlighted and finally; l) a summary of the predictions based on CTD and the AMPHAC/AND model concerning the relationship of repeating nightmares and insomnia, nightmare distress, and PTSD recovery is provided.

Intimate Partner Violence and PTSD

Individuals who experience IPV have a higher prevalence of PTSD due to the physical, sexual, and psychological abuse they have endured (Black et al., 2010). PTSD symptoms have a lifetime occurrence of 22.3% among women and 4.7% among men within the general population, but the occurrence rises to 62.6% of women and 16.4% of men who have experienced IPV (Black et al., 2010). The number of 62.6% for women who develop PTSD symptoms after IPV is quite close to the mean of 64% that Golding (1999) reported across the 11 studies included in her meta-analysis of IPV survivors. It is clear from this set of studies that PTSD is a frequent serious consequence of IPV.

The diagnosis of PTSD is indicative of what the survivor has experienced and continues to experience. PTSD is defined by the American Psychiatric Association's (2013) *Diagnostic and Statistical Manual of Mental Disorders: DSM-5* (DSM-5) as a

trauma and stress related disorder recognized by certain criteria. The first diagnostic criterion is exposure to “real or threatened death, injury, or sexual violence” (p. 271). Rape and physical violence that occur in IPV obviously are consistent with the diagnostic criteria; furthermore, the threats, coercive behavior, stalking, and harassment that occur in IPV involve the threat of death, injury, and sexual violence. Therefore, it seems clear that IPV can occasion the development of PTSD symptoms. Once that first situational criterion is met, then the DSM-5 describes the criteria indicating the individual fulfills the symptoms that necessitate a PTSD diagnosis. Those criteria describe a) the occurrence of re-experiencing the traumatic event, b) avoidance and emotional numbing, c) negative changes in thoughts and moods, d) persistent increased arousal since the traumatic experience, e) duration of symptoms for over a month, f) significant impairment due to the symptoms, and g) the symptoms not being the result of a substance or medical condition. The DSM-5 criteria describe a response to trauma that is impairing and extends the trauma through the re-experiencing of symptoms.

In lived experience, PTSD symptoms can significantly impair the ability of survivors to work, care for children, manage households, maintain friendships and relationships, and even sleep. As a consequence there is immense emotional pain and suffering for IPV survivors with PTSD that can last for decades. Johnson, Zlotnick, and Perez (2008) found in a study of 190 women in a battered women’s shelter that the severity of abuse a woman had experienced was directly related to the occurrence and severity of PTSD. Furthermore, it was noted that significant losses of physical and emotional resources were also directly related to PTSD severity. In another study of 79

women with PTSD symptoms in a shelter for battered women, Johnson and Zlotnick (2012) found that 62% had chronic PTSD. In a larger study of 160 IPV survivors drawn from a range of locations, between 44% and 66% (depending on the PTSD measure used) of IPV survivors who had been out of their abusive relationships for over two years still suffered from PTSD (Woods, 2000). Both the debilitating effects of PTSD and the chronic nature of the condition indicate that PTSD for IPV survivors is a significant problem. Therefore, better treatment methods are needed to counter the chronic nature of the condition.

The importance of effectively treating PTSD is not only to improve the health and well-being of the individual but also to prevent future IPV. Researchers report that PTSD sufferers are significantly more likely to experience IPV than those successfully treated for the disorder (Iverson & Litwack, 2013; Iverson et al., 2011). The higher incidence of re-victimization is likely linked to survivors adopting passive coping strategies, such as wishful thinking, problem avoidance, and self-criticism, to manage their PTSD symptoms. This conclusion is supported by the work of Iverson and Litwack (2013) in which it was reported that passive coping strategies among IPV survivors was significantly associated with re-victimization. The importance of supporting and treating IPV survivors was noted by Black et al. (2010). The researchers found in a survey research study that 29.2% of women and 26.9% of men who were IPV victims, experienced abuse with more than one partner. Such research outcomes offer a chilling sense of the preventative importance of successfully addressing the IPV impact of PTSD.

Societal costs of PTSD.

On a societal scale, the costs of PTSD treatment for IPV survivors are immense and may be extrapolated by examining another population with high rates of PTSD in which greater tracking of costs occurs. Soldiers in The United States (US) military have high rates of PTSD, and since the US military closely monitors and treats PTSD in soldiers, information from research on that population can help explain the challenges and cost of treatment for PTSD more broadly (Congressional Budget Office, 2012). A study conducted by the Rand Corporation in 2008 estimated that for returning veterans from Iraq and Afghanistan 4 to 6 billion dollars will be lost every two years due to the impact of PTSD on lost economic productivity, the expense of treatment for veterans, and the cost of suicides for veterans (“Expedition Balance,” 2014). The Congressional Budget Office (2012) estimates that treating PTSD through the Veteran’s Administration between 2004 and 2009 cost 1.4 billion dollars for the 103,500 veterans of Iraq and Afghanistan diagnosed with the disorder. These figures do not include those with dual PTSD and Traumatic Brain Injury diagnoses.

According to the National Center for PTSD (2014), 5.2 million Americans experience PTSD every year, many as a result of IPV, as indicated by Black et al.'s (2010) report. The 103,500 veterans is a small percentage of the 5.2 million Americans with PTSD, and the cost of treating just those individuals along with the estimates of associated costs from the Rand Corporation provides a sense of the immense impact PTSD has on individuals and society as well as the difficulty of healing from PTSD. The

combination of negative personal and societal effects makes understanding and treating IPV survivors with PTSD a critical research concern.

IPV Survivors and PTNMs

Though PTNMs are just one of the challenges survivors of IPV with PTSD encounter, they are at the heart of the inner experience of IPV survivors and provide troubling glimpses into the terrors of their abuse. Through that window, it is clearly seen that even without any external stimuli reminding survivors of past abuse, current challenges, or future risks, there often is turmoil and terror in the minds of IPV survivors. Rasmussen (2007) gathered accounts of IPV survivors' experiences to better understand the effects and understandings of PTNMs on IPV survivors. The dream reports he obtained were quite disturbing. For example, in one PTNM the IPV survivor's ex-husband shows up at a special occasion and "murders my mothers and others", "stabs and cuts up my mother", and even though there is blood everywhere, other people in the room act like "nothing is wrong" (p. 318). In another nightmare, the dreamer reports experiencing a man "choking me" and feeling "near-death" (p. 318-319), and another survivor recounted a nightmare in which she was "tortured and then killed by [her] ex-husband and his male friends" (p. 318). Drs. Christine Murray and Allison Crowe co-founded the See the Triumph campaign (see www.seethetriumph.org) to end the stigma surrounding intimate partner violence. The campaign is based on their research with hundreds of survivors of past abuse. Through personal communication with this study's author, Dr. Murray shared the following five quotes from their research studies that speak

to the lasting impact of the distressing nightmares faced by survivors of past abuse (C. Murray, personal communication, October 29, 2014):

I don't think the fear will ever go away completely. I still kind of panic when I see him around town. I am hyper-vigilant when I am at work or out shopping, always looking around me. I sometimes have nightmares of him attacking me. It is not as often as the years pass, but it is still there.

For me it has taken 5 years plus. Possibly due to the continued abuse after I left via the courts and now the Child Support System and the loss of my Son. I now feel I am finally commencing to overcome all of this as I am now managing to control my life with intent. I am managing to begin to build my business up again for the past 10 years. I am starting to think that maybe I could begin another relationship. My nightmares are getting less. I am making more friendships that I can call true friends and a support network.

I think it would mean overcoming PTSD, being able to regain your confidence and have the ability to live your life on life's terms. The nightmares would end. You wouldn't think about the abusive relationship every day. It wouldn't affect your ability to work or function normally in society. There would be no residual fear harming a new relationship.

It's not over for me. I can't wait for the day when I look back upon my abusive past and it doesn't make me cry and when I don't have nightmares and flashbacks and am afraid to walk alone at night.

No one wants to believe the actual stories I have to tell. Come watch me sleep one night and you'll witness my PTSD, night terrors, and nightmares.

I was depressed, took therapy and had nightmares. The nightmares lasted 28 years. I am now deciding not to blame myself or think about it. I have finally learned it is time to let go.

These reports of nightmares and descriptions of their impact are not isolated and appear to be typical of the PTNM experiences of IPV survivors based on the limited research on this topic (Rasmussen, 2007). Adding more support to the likelihood that these terrifying nightmares are typical is the much larger body of research on the PTNMs

of combat veterans with PTSD. Among combat veterans, horrific dream content is commonly reported, and also in many cases, lasts for decades after the trauma (Harb, Cook, Gehrman, Gamble, & Ross, 2009; Kolk et al., 1984; Neylan et al., 1998; Phelps, Forbes, Hopwood, & Creamer, 2011).

The fact that suicide risk is greater for those experiencing more frequent PTNMs speaks to both the negative experience of PTNMs and gives greater impetus for developing more effective treatments (Agargun et al., 2007; Cukrowicz et al., 2006; Nadorff & Fiske, 2013; Nadorff, Anestis, Nazem, Claire Harris, & Samuel Winer, 2014; Nadorff, Nazem, & Fiske, 2013; Tanskanen et al., 2001). Researchers investigating suicide risk have found that nightmare frequency is correlated with greater suicidal ideation and suicide attempts, independently of depression, anxiety, other sleep disturbances, and PTSD symptoms (Nils Sjöström et al., 2009; Nisse Sjöström et al., 2007; Tanskanen et al., 2001).

In a large study of 36,211 Finnish participants, Tanskanen et al. (2001) found a direct relationship between nightmare frequency and suicide. This study was conducted using a random sample of men (17,700) and women (18,511) from the general population and followed those participants from 1979 to 1995 or until they died, following up with them at approximately 15 year intervals. Subjects' nightmare frequency was assessed using one question about how frequently they had nightmares over the last month, and this was then correlated with suicide rates using a national health database that collected death statistics. The researchers determined that occasional nightmare sufferers were 57%

more likely to commit suicide, while frequent nightmare sufferers were 105% more likely to commit suicide compared with those not reporting suicide (Tanskanen et al., 2001).

Similar findings were obtained in two studies of undergraduate college students in the Southern United States (Nadorff et al., 2014). In both studies, regression analyses were used to examine the relationship between insomnia, depressive symptoms, and nightmare frequency. The first study consisted of 747 and the second 604 participants who completed assessments of insomnia, depressive symptoms, and nightmare frequency. The analyses were consistent between the studies in showing a significant positive correlation between past suicide attempts and nightmare frequency independent of depressive symptoms and insomnia (Nadorff et al., 2014). Further supporting the relationship between nightmare frequency and suicide risk was a two-year study of 165 patients in a Swedish hospital admitted for having attempted suicide (Sjöström et al., 2009). Of the 165 participants, 42 made a repeat attempt in the two year study period, and in regression analysis of what predicted repeat suicide attempts, frequency of nightmares was the only sleep variable significantly correlated with future repeat suicide attempts and remained the only significant predictor when controlling for sex, depressive symptoms, PTSD, anxiety, antidepressant medication, and persistent axis-1 diagnoses in this sample (Sjöström et al., 2009). The link between nightmares and suicide is disturbing, especially considering that survivors of IPV with PTSD are already significantly more likely to commit suicide than the general population (Panagioti, Gooding, & Tarrier, 2009). Given the prevalence of PTNMs in IPV survivors, there is strong justification for additional research about PTNMs and effective treatments.

As described above, PTNMs can significantly contribute to the suffering of IPV survivors, are a common symptom of PTSD for IPV survivors that may be contributing to greater suicide risk among survivors. Therefore, it is important to understand PTNMs and how they impact sufferers, so that better treatment approaches can be developed.

Posttraumatic Nightmares

To better comprehend the posttraumatic nightmares (PTNMs) of survivors of intimate partner violence (IPV) a contextual understanding is needed. To accomplish this, PTNMs are defined, followed by an examination of the literature describing how PTNMs are understood and treated across cultures. Finally, a foundation of how traditional psychological dream theories explain PTNMs serves as a bridge into CTD and the AMPHAC/AND model.

Definition of PTNMs.

The psychological term, *posttraumatic nightmares*, refers to disturbing dreams that originate after a traumatic event and are believed to be linked to that event through either content or affect (American Psychiatric Association, 2013; Schreuder, 2001). This term, PTNM, encompasses a variety of dreaming or dream-like experiences encountered in individuals with PTSD. PTNMs include dreams that copy in a literal manner the trauma experience (called *replicative PTNMs*; e.g., *one dreams of being hit by a past partner in the same way it actually occurred*), dreams that recur without significant changes but do not copy the trauma experience (called *recurrent PTNMs*; e.g., *once a week one dreams of being chased by a werewolf and all the details of the dream remain the same or very similar each time*), and dreams that are highly disturbing and begin after

trauma but are not copies of the trauma and do not repeat (called *non-replicative PTNMs*).

The meaning of the term *nightmare* may differ between general and diagnostic usage; therefore, a clear definition of the term is needed. In many studies and in diagnosis, nightmares are defined as disturbing dreams from which the dreamer suddenly awakens, while bad dreams are defined as disturbing dreams that do not result in the sudden awakening of the dreamer (Germain, 2012). Existing studies are often unclear about this distinction and individuals outside of research and clinical settings commonly describe nightmares as any disturbing or terrifying dream whether they awaken immediately or simply recall the nightmares after awakening. A definition that excludes the condition of sudden awakening and is consistent with the general definition of nightmare as “a terrifying or deeply distressing dream” (“Nightmare,” 2014, para. 1) will be used in the current study.

Two additional considerations also support the use of the term *nightmare* to include *bad dreams*. First, there is a lack of clarity on how difficulty maintaining sleep, a common experience among individuals exposed to trauma, affects accuracy of reporting awakening from PTNMs (i.e. did waking up in the middle of the night lead the dreamer to remember the PTNM they were experiencing or did the PTNM awaken them?), as this has not been researched (Blagrove & Haywood, 2006). Secondly, Robert and Zadra (2014) found that for idiopathic nightmares (i.e., nightmares not linked to a trauma) and bad dreams, the difference between bad dreams and nightmares was a matter of intensity

of emotion and degree of bizarreness in the nightmare. It is likely then that nightmares and bad dreams are one phenomenon with a range of intensity.

PTNMs historically and across cultures.

Though the terminology of PTNMs is recent and linked to the development of psychology in Western cultures, the phenomenon seems to be recognized historically and across cultures and to have been understood and addressed in a variety of ways.

Historically and cross culturally, dreams often have been understood as messages from the divine, omens, prophetic warnings, paths for healing, and interactions with mystical worlds (Edgar & Henig, 2010; Hoffman, 2004; Tick, 2005). These differing beliefs have led to a variety of treatment approaches that may prove useful to consider in relation to current understandings and treatments.

Numerous scholars (Grayman, Good, & Good, 2009; Gregor, 1981; Hinton, Hinton, Pich, Loeum, & Pollack, 2009; Hollan, 1989; Hollan, 2009) have reported that PTNMs affect many individuals across a range of cultures following a traumatic event. Furthermore, dreams relating to trauma experiences frequently occur and the lack of resolution of such nightmares is indicative of problems with resuming normal life following the trauma. Most research on PTNMs is conducted as part of PTSD research focused on individuals in modern Western cultures, however, there is a small amount of research on the occurrence of PTNMs within non-Western cultures describing culturally specific approaches to understanding and addressing such dreams, while also providing support for a similar occurrence of PTNMs across cultures.

PTNMs historically.

Dream interpretation is first recorded in Mesopotamia between 1800 and 1700 BCE, where it appears that dreams were understood as symbolic and predictive of the future of the dreamer or the dreamer's community (Hoffman, 2004). Dreams and dream interpretation continue to occur in literature and practice across a wide variety of cultures up to the present day, and though they are understood in a variety of ways, they are often described as being significant and meaningful in terms of how they reflect the relationship of the individual to the community and spiritual world. Dreams are also thought to provide a connection between waking reality and spiritual worlds, and to offer predictive and guidance roles for the individual and community (Bulkeley, 1999; Edgar & Henig, 2010; Edgar, 2003; Freud, 1994; Hoffman, 2004; Jung, 1974; Katz, 1997). Within the recorded dreams from various cultures there exist a few descriptions linking nightmares to waking life trauma, however in most instances dreams are recorded as prophetic of future events.

The Greek philosopher Hippocrates in the 5th century BCE linked physical and psyche problems to dreams and described diagnostic uses of dreams for medical treatment. Eight hundred years later, the Greek philosopher, Macrobius (Third century CE), listed five categories of dreams and proposed all but nightmares and apparition dreams (defined as hallucinatory, hypnogogic dreams) had divine and prophetic significance. For nightmares and apparition dreams Macrobius attributed waking life distress, both of the body and psyche, and anxiety about the future as their originators (Barbera, 2008). The identification of nightmares as a phenomenon of distinct

significance from other dream types by Macrobius and the causal links between waking problems, in the psyche and body, and dreams identified by Macrobius and Hippocrates are significant recognitions echoed in present research on PTNMs.

The healing function of dreams is described in historical writings. Most notable is the healing tradition that grew up around the Greek god, Asklepios, that lasted for nearly 1800 years (Tick, 2005). Traditionally, it was believed that the god would send healing or advice to aid restoration through dreams. In Asklepian practice, the healing and advice received in dreams was preceded by a request for healing from Asklepios and generally occurred at specific sites dedicated to the ritual of receiving dreams from Asklepios. Interestingly, there have been modern uses of Asklepian rituals to heal individuals experiencing PTNMs who had PTSD. Descriptions of these rituals provide anecdotal support for positive outcomes, however research support for such practices is lacking (Horrigan, 2004; Tick, 2005). A request for healing through one's dreams is a process known as dream incubation and, as in the Asklepian approach, it is used today across a variety of cultures and religious traditions such as within Islam, the Khanty (an indigenous Russian people) culture, and modern Western shamanism (Edgar & Henig, 2010; Hagood, 2006; Moldanova, 2007; Nordin, 2011; Shafton, 1995; Tick, 2005).

Dream incubation is an intentional process of going to sleep with the specific intention of having a dream answer a question or accomplish a task for the dreamer (Shafton, 1995). Healing is often the goal of dream incubation. Although, gaining guidance about decisions and the future is also a common rationale for dream incubation (Edgar & Henig, 2010; Hagood, 2006; Moldanova, 2007; Nordin, 2011; Shafton, 1995;

Tick, 2005). Often dream incubation involves praying for an answer from a divine figure. Edgar and Henig (2010) provided a variety of examples of dream incubation within the Islamic dream work and interpretation tradition known Istikhara. These approaches involved either praying to Allah or having a spiritual leader pray to Allah while going to sleep, and then interpreting the received dream that occurred following the prayer. In this tradition and in descriptions from Asklepian tradition, healing may occur instantaneously with the experience of a dream, over time following a dream, or through performing tasks or behaviors suggested, often symbolically, in a dream (Edgar & Henig, 2010; Hagood, 2006; Moldanova, 2007; Tick, 2005). Though dream incubation occurred widely in the past and is still utilized today, there is little specific information about recovery from trauma through such practices. What is most significant about these past practices in relation to the current focus on PTNMs is the widespread recognition and use of dreams as both sign of psychological difficulties and tool for addressing those emotional distress.

PTNMS across cultures.

The negative impact of PTNMs and cultural interpretations of PTNMs have been researched across numerous cultures. Studies show cross-cultural recognition for the occurrence of nightmares following trauma. The findings of this line of research provide support for the idea that the continued occurrence of nightmares is indicative of a problematic reaction. Specific cultures in which PTNMs have been observed include Cambodian refugees (Hinton et al., 2009), Puerto Ricans (Hollan, 2009), Khanty (Moldanova, 2007), Toraja (Hollan, 1989; Hollan, 2009), Indonesians (Grayman et al., 2009), and Mehinaku Indians of Brazil (Gregor, 1981).

An excellent example of both the similarities across cultures and unique cultural challenges of PTNMs was found by examining dreams of Cambodian refugees who survived the genocidal regime of Pol Pot. For those survivors, PTNMs were reported as a common and disturbing experience in which nightmares perpetuate the trauma for decades beyond the actual events (Hinton et al., 2009; Hinton, Peou, Joshi, Nickerson, & Simon, 2013). In a study of 100 Cambodian refugees in the United States, 44% were found to meet the diagnostic criteria for PTSD despite the incidents that precipitated the disorder having occurred many decades earlier (Hinton et al., 2009). Of those with PTSD, 96% reported having at least one nightmare in the previous month compared to 14% among those not experiencing PTSD. Additionally, among the PTSD sufferers, 64% reported four or more nightmares in the previous month. Hinton's finding of a wide prevalence and chronic nature of PTNMs is consistent with observations of IPV survivors.

Exacerbating the pain of PTNMs for this group of Cambodian refugees is the traditional Buddhist belief that deceased relatives appear in dreams because they are still seeking a path to be reborn. PTNMs may serve as a reminder that their relatives died violently and/or were not buried according to the proper rituals thus preventing the relative from rebirth (Hinton et al., 2009; Hinton, Field, Nickerson, Bryant, & Simon, 2013; Hinton, Peou, et al., 2013). Due to the relatives' unrest, there is believed to be potential danger to others as the spirits of the deceased are unhappy and can negatively affect the living (Hinton, Field, et al., 2013). Subsequently, among those with PTSD, such dreams not only are disturbing reminders but also create anxiety about the threat of

the spirits in the present and concern about how the dreamer can help the spirits find peace.

The challenge of resolving PTNMs and fears about the meaning of these nightmares are found across cultures (Edgar, 2007; Gregor, 1981; Hinton, Hinton, Pich, Loeum, & Pollack, 2009; Hollan, 1989; Hollan, 2009; Moldanova, 2007). In many instances, dreams that repeat a traumatic event or portray elements of the trauma, create fear that the dream is predictive of another trauma experience. In other instances, it is believed that evil spirits are responsible and may threaten the spirit of the dreamer (Edgar & Henig, 2010; Grayman, Good, & Good, 2009; Hinton, Field, et al., 2013). Both of these possibilities create elements of fear that are additive to the existing fear from the trauma experience that initiated the nightmares.

Across various cultures the negative effects of PTNMs are addressed through a range of healing approaches focused on the content of the nightmares. Hinton et al. (2009) identified rituals Cambodian refugees used to address PTNMs that were thought to accomplish a range of functions. Including creating a shield for the dreamer to repel spirits, bringing the dreamer into a place of internal balance, placating spirits, enlisting protection from ancestors, and increasing the spiritual power of the dreamer. Each ritual entailed a physical act in waking life to accomplish the spiritual functions just described. The use of waking life rituals to deal with dreams is consistent with observations across cultures that dreaming is connected to waking life and that there is interplay between waking consciousness and dreaming. The connection between dreams and waking life suggests the necessity to acknowledge and address the content of nightmares. Even

though standard PTSD treatments in Western cultures (Brewin & Holmes, 2003; Cruwys & O’Kearney, 2008; Rosen & Lilienfeld, 2008) do not typically draw such connections, results from the nightmare specific intervention, Imagery Rehearsal Therapy (IRT), has demonstrated that working in a waking state with the content of nightmares has significant positive benefits for PTSD symptom severity in addition to decreasing nightmare severity and frequency (Casement & Swanson, 2012). This effect is not understood through current PTSD conceptualizations of PTNMs. However, CTD and the AMPHAC/AND model suggest an explanation for the effect of IRT and that explanation also supports the interconnected nature of waking and dreaming commonly recognized across cultures (Hartmann, 2011; Levin & Nielsen, 2009).

PTNMs and foundational psychological dream theories.

Great emphasis was placed on dreams by early psychological theorists as a way to better understand the operation of the mind (Freud, 1900; Shafton, 1995). This focus led to the identification of PTNMs and speculation regarding their etiology and treatment. Below, the foundational theories of Sigmund Freud, Carl Jung, and Alfred Adler are described along with an overview of how each theorist understood and addressed PTNMs.

Freudian dream theory.

Freudian dream theory was built upon the foundational idea of an unconscious and conscious divide within the mind, along with a preconscious that bridges the gap between the unconscious and conscious. Freud’s theory included the key concepts of wish fulfillment, an internal censor, and repression (Freud, 1900; Shafton, 1995). Freud

believed that primal, primarily sexual, drives exert a strong power in the psyche, and for societal acceptance such drives must be repressed. However, while dreaming, the unconscious is able to express what the conscious mind cannot directly recognize. Because of the necessity of the conscious mind to avoid recognizing the wishes based on those primal drives, dreams are transformed through a process of censorship, which disguises a wish into a symbolic representation. The censor in the brain is responsible for the manifest (i.e., literal) content of the dream and for disguising the wish desire within the latent (i.e., hidden meaning) content. To access the latent content of a dream, Freud used the technique of free association, and based on the associations generated would interpret the dreams true meaning (Freud, 1900; Shafon, 1995).

The purpose of understanding the latent content in Freudian dream interpretation is to bring what has been repressed into awareness within the conscious mind. Through insight into repressed material, Freud believed the repressed content would then exert less power over the individual. However, Freud discovered this approach did not work with some PTNMs that repeated trauma. In particular, Freud found the replay of traumatic events in replicative PTNMs was not conducive to the free association approach utilized to gain access to the repressed desires and uncover dreamers' wishes. In addition wish fulfillment as a foundation for the PTNMs was difficult to reconcile with the horror and suffering portrayed and felt by the dreamer (Freud, 1955). These realities led Freud to propose that some replicative PTNMs were not dreams per se, but rather a different phenomenon, he called a fear enactment. Freud refined his theory to include the idea that nightmares repeating the trauma were a phenomenon called *repetition compulsion*, which

is a need to repeat an experience over and over again to develop control over it (Barrett, 1996; Freud, 1955). By reframing the desire to attain mastery over challenging life situations as a wish, PTNMs then fit into the Freudian wish fulfillment, causal explanation of dreams. The challenge of effectively treating PTNMs along with recognition that PTNMs that replay traumatic experiences are distinct from other types of dreaming was also addressed by Freud's protégé, Carl Jung.

Jungian dream theory.

Like Freud, Jung believed in an unconscious and conscious divide within the mind, however he postulated a region of the unconscious mind not described in Freudian psychology. Jung called this area the collective unconscious (Jung, 1974; Shafton, 1995). Jung (1974) was not clear in his descriptions about the nature of the collective unconscious, describing it differently in various manuscripts; however the purpose the collective unconscious served in Jungian dream work was to provide an explanation for the common mythical and symbolic elements that occur in dreams across cultures. Jung introduced the idea of archetypes, which he claimed were templates of characters used in dreams and through which certain universal tasks and experiences are portrayed. The collective unconscious and archetypes are structural aspects of Jung's theory of dreams (Jung, 1974; Shafton, 1995).

Jung (1974) often argued that the purpose of a dream was compensation for whatever was imbalanced within the individual's psyche. This compensation could take many forms, and Jung viewed Freud's description of waking life sexual impulses that cannot be acknowledged as only one aspect of experiences that lead to dreams. Jung

viewed dreams as projections of the individual or unacknowledged aspects of the individual's personality into a symbolic world. Therefore, he believed the purpose of dream work was to help the individual incorporate those projections into their identity (Jung, 1974; Shafton, 1995).

To accomplish this, Jung used associations to dream imagery (as opposed to Freudian free association) to gain insight into the latent content symbolically encoded in the manifest content. He also drew upon the manifest content to further develop a dream interpretation based on unique aspects of the client and his or her life. The overarching purpose of a Jungian dream interpretation is to expand the dreamer's understanding of his or her self. Jung also utilized active imagination, which is similar to a daydream, in order to explore the projected world of the client, with the hope of helping the individual develop insight towards integrating those projections into their sense of self (Jung, 1974; Shafton, 1995).

As with Freud, Jung found replicative nightmares from trauma difficult to address. He called these dreams *reproduction* dreams and described the occurrence of such dreams as a way for the psyche to reincorporate a piece that was broken off, or separated. He postulated that through the repetition, the experience is incorporated into the psyche and the psyche is made whole again. Furthermore, he stated that the only way to distinguish these dreams from compensatory dreams is by analyzing them. In the case of true *reproduction* dreams, no interpretation will change their manifestation. However, for compensatory dreams, a proper interpretation will lead to the cessation of the repetition (Jung, 1974).

Adlerian dream theory.

Adler, another protégé of Freud, developed an approach to psychology and understanding of dreaming that differed significantly from Freud's. Adler did not believe in a division of consciousness into the unconscious and conscious and did not often utilize dream work. Nevertheless, his beliefs about dreaming had a strong influence on the Adlerian and Existential psychologists who followed him. The Adlerian view of dreams can be summarized as follows, a) dreams are a continuation of waking; b) there is no unconscious; c) dreams are distortions of waking life providing opportunities to continue to work on waking life concerns; and d) they serve the purpose of generating emotions that motivate the dreamer to act in waking life. What is most significant in comparison to Freud and Jung is the continuity of dreaming with waking life and the lack of hidden symbolic content. From an Adlerian perspective, nightmares are simply a continuation of the fear and distress experienced in waking life (Bird, 2005; Brink & Matlock, 1982; Shafton, 1995).

Summary of psychological dream theories.

Freud, Jung, and Adler's approaches to understanding dreams continue to influence current beliefs about dreaming. Both Freud and Jung recognized that dreaming takes a variety of forms and that replicative nightmares are a distinct type that occurs following trauma. Replicative nightmares were understood by Jung and Freud as indicative of a dreamer's need to incorporate the threatening experience into the dreamer's psyche and an inability to accomplish that task. Adler differed slightly by regarding nightmares as being a continuation of waking life carried over into dreams. For

both Jung and Freud, dream analysis was considered a means to understand psychic struggles in a manner that bypassed the cognitive regulation and interpretation (conscious mind) that individuals usually apply to themselves and their actions. In contrast, Adler considered dreams a distortion of waking life concerns that could be used to give perspective on those concerns. Much like the dream beliefs of Cambodian refugees, Freud, Jung, and Adler believed the interplay between waking and sleep was a dynamic process. Through the facilitation of greater interaction with dream content in waking life, it was believed that healing could occur, directly at times for Freud and Jung and through insight on waking actions for Adler. However, with replicative nightmares, Freud and Jung found facilitating interaction with dream content through their usual interpretive approaches to be ineffective (Adler did not address PTNMs). The unique aspects of trauma reactions and trauma induced nightmares, which Freud and Jung recognized, led to the development of the diagnosis now known as posttraumatic stress disorder (Andreasen, 2010).

Currently, there continues to be a lack of clarity regarding how best to address dreams in counseling and the function of PTNMs. However, CTD and the AMPHAC/AND neurocognitive model provide promising ways of understanding dreaming, approaches that acknowledge a continuity between waking and dreaming (as did Freud, Jung, and Adler) and describe the process of dreaming as forming metaphoric/symbolic content (as did Freud and Jung) through the affective linking of memories and mental imagery (Hartmann, 2011; Levin & Nielsen, 2009; Shafton, 1995). In addition, CTD and the AMPHAC/AND ground their description of dreaming in

neuroscience research and findings from psychological research (Hartmann, 2011; Levin & Nielsen, 2009).

Contemporary Theory of Dreaming

CTD is a theory based on dream research that describes dreaming as a phenomenon driven by emotion that generates dream imagery associated with that emotion. According to CTD, emotionally driven dream imagery connects recent emotional experiences to other emotional mental imagery in order to establish and maintain the emotional memory system and generate new perspectives (Hartmann, 2011). In the following section, the dreaming process and the function of dreaming are explained from the CTD perspective.

Associative continuum.

Hartmann (2011), who developed CTD, proposes that dreaming exists with other states of consciousness along a continuum of association. In this context, associations refer to the mental linking of thoughts, emotions, images, and ideas. For example, based on past experiences, an apple might be associatively linked with pie; sadness might be associated with a grandmother's death; the concept of power might be associated with a king; and a rose might be associated with love. These examples provide a spectrum of linkages that are based on experience and context. In an awake and focused state of consciousness, individuals consciously direct how associations are made. For example, when one is thinking of a fruit to serve at a meal, peaches, pears, apples, and mangoes may all occur as possibilities. However, the context of availability, what is already in the kitchen, and with what foods the fruit will be served all enter into the thoughts of the

individual making the decision. Based on these considerations, it may be decided that there are already apples in the kitchen and the apples will go nicely with the cheese being served. This is a cognitively regulated thought process in which a goal for the associations is maintained.

CTD proposes that in dreaming, affectively guided association occurs due to the diminished role of cognitive regulation in the associative process. For example, within a dream, the feeling of happiness may lead to an associative linkage with being at grandmother's house. Then, grandmother's house is combined with the gymnasium at the high school where an award was won. The happy feeling of being on stage with grandmother looking on is then linked with the imagined experience of being elected president of the United States. The cognitive regulation that would maintain a goal for the associations and challenge associations that lack consistency or are not realistic is not present while dreaming. In CTD, the state of dreaming is described as hyper-associative because the lack of a conscious goal or conscious regulation for the associations results in associative linkages in dream imagery that are not constrained by what is possible physically or temporally in waking life. The hyper-associative dream imagery is tied together affectively by felt similarities of content and theme, which is a metaphoric linking (Hartmann, 2011).

Hartmann (2011) explains that as an individual moves from a waking state into a sleep state, there is a decrease in the conscious cognitive regulation of inner processes (e.g. choosing to think about places to travel on vacation brings memories of a trip to the beach, then that memory is evaluated for its relevance to the current vacation needs based

on time and expense) and the affective state of the individual exerts a less regulated influence on associations (e.g. the feeling of excitement stimulates memories of a trip to the beach, then leads to a jump to the excitement in memories of a mountain view, which is combined with the excitement of flying by the imaginative occurrence of floating off the mountain). These changes in cognitive regulation from waking to dreaming result in the associative continuum, identified by Hartmann, and are consistent with changing brain activation observed across states of consciousness (Dang-Vu et al., 2007; Hartmann, 2011).

Brain activation from waking to dreaming.

Neuroscience research has generated better understandings of what occurs in the brain during dreams, and the neuroscience findings support the description of dreaming processes from CTD. Research into the relationship between the functioning of the nervous system and the experiential aspects of dreaming have begun to offer a dynamic understanding of the physiology of dreaming (Dang-Vu et al., 2007; Desseilles, Dang-Vu, Sterpenich, & Schwartz, 2011; Hobson, 2000). Such research has produced data demonstrating differing brain activations when comparing waking and sleeping states (Dang-Vu et al., 2007; Hobson, 2007). The relationship between various regions of the brain and cognitive, affective, and sensory processes in various states of consciousness are now understood, including within the states of consciousness in NREM and REM sleep (Dang-Vu et al., 2007; Hobson, 2007).

Research findings reveal that dreams occur during all types of sleep (NREM and REM). However, the majority of dreams and those with the most emotive and vivid

content occur during REM sleep (Dang-Vu et al., 2007; Desseilles et al., 2011; Hobson, 2007). During REM sleep, there are chemical shifts in the brain related to activation of the pontine tegmentum section of the pons, which changes the areas of activation in the brain (Dang-Vu, Schabus, Desseilles, Schwartz, & Maquet, 2007; Hobson, 2007).

Throughout REM sleep, the dorsolateral PFC (DLPFC), orbitofrontal cortex, posterior cingulate gyrus, precuneus, and the inferior parietal cortex areas of the brain show decreased activity. These areas are believed to correspond to executive and functional cognitive abilities including self-awareness, decision making, attentional control, and working memory (Dang-Vu et al., 2007; Desseilles et al., 2011). At the same time, the limbic/paralimbic system (including the amygdala, hippocampus, and HPA-axis), medial occipito-temporal cortex, inferior parietal convexity, and basal forebrain pathways are active. These regions of the brain are related to affective experience, visual representation, spatial representation, and physical desires respectively (Dang-Vu et al., 2007; Desseilles et al., 2011; Hobson, 2007). In addition, the hippocampal activation along with activation of the rest of the limbic/paralimbic system is connected to affective memory consolidation, contextualization of experiences, and integration of memories (Dang-Vu et al., 2007; De Gennaro et al., 2011; Desseilles et al., 2011). These findings support Hartmann's (2011) description of lessening conscious cognitive regulation of mental processes as an individual moves from waking to dreaming states and a strong affective basis for dreaming. In addition, the neuroscience findings suggest that dreaming may have an important role in processing memory, which is the foundation of the self-healing function of dreaming that Hartmann proposes.

Self-healing in dreaming.

Hartmann (2011) proposed that an important function of dreaming is to facilitate healing from trauma. He based this proposal on the relationship between emotion and dream imagery as well as research findings linking dreaming with memory processes. In dreaming, the emotional concerns of the dreamer prompt associations based on those concerns. For individuals with minor concerns, this may promote associations that lead to creative insights or alternate perspectives. When the emotional concerns of the dreamer become greater, as happens after experiencing trauma, the hyper-associative dream state becomes important for the healing process, and the dream state provides a physically safe-place for integrating trauma experiences and trauma related emotions with other imagery and memories in order to spread the affective load and aid psychological recovery (Hartmann, 2011).

The idea behind the assertion that dreaming helps individuals to recover from trauma is that traumas are an experience outside the norm of the dreamer that threaten fundamental aspects of the dreamer's physical, emotional, and or social self. Therefore, trauma is difficult to contextualize and integrate with other memories and as a result, retains an emotional intensity disconnected from other experiences (Brewin & Holmes, 2003; Brewin & Burgess, 2014; Cahill & Foa, 2007). Dreaming is a way for the trauma memory to be integrated into experience. According to CTD, PTNMs are stimulated by the dreamer's affective state and, due to the memory of the trauma being directly connected to the emotion and being disconnected from other experiences, memories of the trauma are often replayed. Then, the affectively stimulated associative linking process

connects the details of the trauma to other memories and mental imagery in order to spread the emotional intensity of the trauma across other memories and mental imagery (Hartmann, 2011). In other words, when an individual who is emotionally impacted by a trauma falls asleep and his or her body is kept safe by being largely immobilized by the natural sleep processes, his or her intense emotions stimulate memories of the trauma event. The dreamer's affective state then prompts an associative linking of the trauma event to other events in his or her memory and imagination based on the underlying emotions of the memories and mental imagery. The affective association connects the trauma experience to what is already known and understood in the dreamer's experience. Through this naturally occurring process, the trauma becomes part of the understood and felt experience of the dreamer, and the psychological impact of the trauma is lessened, enabling the trauma survivor to move forward in life (Hartmann, 2011).

Dreaming and memory.

The integration of emotional experiences with memories is the foundation of the healing process in dreaming proposed by Hartman (2011). The role of dreaming in memory integration, suggested by the activation of the limbic system during REM and NREM sleep, is supported by a variety of studies (De Gennaro et al., 2011; Deliens, Gilson, & Peigneux, 2014; Llewellyn, 2013; Wamsley et al., 2007; Wamsley, Tucker, Payne, Benavides, & Stickgold, 2010; Wamsley & Stickgold, 2010). There is solid support that REM and NREM sleep are linked to memory processes. Since, individuals report dreaming about 90% of the time when awakened from REM sleep and approximately 50% of the time when awakened from NREM sleep (Nielsen, 2000), there

is believed to be a strong link between dreaming and memory (De Gennaro et al., 2011; Deliens et al., 2014; Llewellyn, 2013; Wamsley et al., 2007, 2010; Wamsley & Stickgold, 2010). The link between memory processes and dreaming is further supported by observed brain activities using magnetic resonance imaging (MRI) in sleep in which the regions of the brain that are active are consistent with what would be expected based on the dream reports from the observed sleep (De Gennaro et al., 2011).

Memory processes occur differently in sleep depending on when in the night dreaming takes place, though the exact nature of these processes is debated (De Gennaro et al., 2011; Walker & Stickgold, 2004; Wamsley et al., 2007). Several studies suggest that early in the night, NREM sleep is linked to consolidation of non-declarative memory (i.e., memory that is procedural and not dependent on conscious thought), whereas, late in the night, REM sleep is linked to consolidation of declarative memory (i.e., memory that is readily accessible to the conscious mind, which includes episodic and semantic memories) (Walker & Stickgold, 2004; Wamsley et al., 2007). While there is no conclusive link between changing relationships in memory processes as REM cycles progress throughout the night, emerging research supports memory processes being linked to dreaming and the time of night at which dreaming occurs being linked to memory processes involving different levels of affective and associative linking as described by CTD. Multiple researchers (De Gennaro et al., 2011; Deliens et al., 2014; Llewellyn, 2013) have reported that emotional experiences are processed within REM and NREM sleep through the activation of the hypothalamus, amygdala, reward centers (i.e. ventral tegmental and nucleus acumbens areas), and hippocampus. The researchers

also report that NREM and REM sleep have greater emotional intensity later in the night (De Gennaro et al., 2011; Deliens et al., 2014; Llewellyn, 2013). Thus, dreaming is related to memory processes, emotion has an important role in those processes, and a full night of sleep is critical for the processes to fully occur. Such findings are consistent with the process of emotional integration that CTD proposes occurs in PTNMs following trauma.

Dream associations for healing.

At the core of the healing function of dreaming described in CTD are affectively directed associations that are part of the memory processes described above. Therefore, it is necessary to provide more clarification and support for the associations that occur in dreams. The associative linking that occurs in dreams has been most clearly defined and studied as the variable labeled *bizarreness*. *Bizarreness* in this context refers to the aspects of dreams that are improbable (e.g. you go on vacation to climb Mount Everest [unless of course you are a mountain climber who might do that]), unusual (e.g. you find a thousand dollars in your coat pocket), inconsistent (e.g. the person you are talking to appears to be your boyfriend and then seems to be your father), or impossible (e.g. a dog speaks English) compared to the dreamer's waking life (Colace, 2003). By examining *bizarreness*, the contents of dreams that are clearly not copying waking experiences are identified. According to Hartmann, when associations are cognitively regulated, there is less bizarreness in mental imagery, but as the affective concerns drive associations without cognitive regulation, as occurs in dreaming, the bizarreness increases (Hartmann, 2011; Hobson, Hoffman, Helfand, & Kostner, 1987). Observations of levels of

bizarreness across waking and sleeping states are consistent with this prediction (Dang-Vu, Schabus, Desseilles, Schwartz, & Maquet, 2007; Hartmann, 2011).

CTD predicts that with greater emotional intensity, there will be greater bizarreness in dreams. This also is consistent with the studies that have looked at this relationship. Researchers report that nightmares which cause sudden awakening are more emotionally intense and bizarre than bad dreams that do not awaken the dreamer (Robert & Zadra, 2014). Furthermore, researchers note that changes in the brain associated with greater emotional intensity also correspond with greater bizarreness in dream reports (De Gennaro et al., 2011), and that inducing greater emotional intensity leads to more bizarre daydreams compared to control groups (Hartmann et al., 2003).

Hartmann (2011) found from observations of dream series collected from traumatized individuals who had been recording dreams regularly both before and after a trauma, that following the trauma, the dreamer would initially experience PTNMs similar to the trauma event. Then, over a short period of time, the dream content would shift further from the actual experience and become more bizarre. Increased bizarreness involved incorporating threatening imagery of other forms than the actual trauma and combining elements of other remembered and imagined experiences with the trauma memory. Eventually, the emotional intensity, which began as very high following the trauma, would subside, leading to a lessening of bizarreness in the dreams, and dreaming would return to normal. None of these observed individuals developed PTSD, so it is unclear what changes in bizarreness occur in individuals with impaired trauma recovery (Hartmann, 1998, 2011). However, Hartmann did identify replicative and recurrent

nightmares as indicative of impairment in the role of dreaming to facilitate healing from trauma, but repeating nightmares (replicative and recurrent nightmares) have not been directly evaluated in regards to PTSD in research on individuals with PTSD.

CTD and PTSD

PTSD develops when psychological recovery from trauma does not occur successfully. One factor that may contribute to PTSD development rather than psychological recovery through the natural processes of self-healing described by Hartmann (2011) is impairment to the dreaming processes. Impairment of dreaming processes from a CTD perspective means that emotional memories of the trauma are not successfully linked with other memories and other mental imagery (Hartmann, 2011). This description of impaired recovery due to difficulty integrating memories of trauma with other memories is consistent with explanations from PTSD theories attributing the inability to incorporate trauma memories into memory storage to PTSD development (Brewin & Holmes, 2003; Cahill & Foa, 2007). An indication that memory integration is not occurring is the frequent presence of replicative and recurrent nightmares observed in individuals who develop PTSD (Mellman, David, Bustamante, Torres, & Fins, 2001; Phelps et al., 2008; Wittmann, Schredl, & Kramer, 2007). Among individuals with PTSD, estimates for replicative nightmares range from 42% to 60% and for recurrent nightmares from 30% to 35% (Phelps et al., 2008; Wittmann et al., 2007). From the perspective of CTD, these types of nightmares are a clue to why psychological recovery from trauma is impaired and because of the prevalence of replicative and recurrent nightmares in individuals suffering from PTSD, why nightmares are exclusively linked to

negative psychological symptoms and outcomes in PTSD theories and research (Davis, Pruiksma, Rhudy, & Byrd, 2011; Hartmann, 2011; Levin & Nielsen, 2007; Phelps et al., 2008). Below, research is reviewed regarding how insomnia impairs the memory integration process in dreaming, and descriptions of how this impairment may result in replicative and recurrent nightmares are provided.

Replicative and recurrent nightmares.

PTNMs fall into categories of replicative, recurrent, and associative (neither replicative nor recurrent). How PTNMs are currently understood in PTSD diagnosis and treatment compared to their conceptualization within a CTD framework warrants further clarification. All non-replicative PTNMs are widely considered to be dreaming experiences in dream research, however, there is debate about whether replicative nightmares, which are dreams due to their similarity to flashbacks and lack of change or resolution over time (Freud, 1955; Hartmann, 1998, 2011; Jung, 1974; Phelps et al., 2008). Phelps et al. (2008) describes replicative nightmares as occurring in both REM and Non-REM (NREM) sleep, and since the REM and NREM states of consciousness differ significantly in brain functioning from waking states in which flashbacks occur, this finding indicates replicative nightmares are likely a different phenomenon than flashbacks (Phelps et al., 2008). In addition, whether replicative nightmares are an exact reproduction of trauma events has been called into question because of the lack of detailed investigation about the experience. The lack of research creates uncertainty about whether reports of replicative nightmares differ in small ways (e.g. different viewing perspective of the event or slight variations in people, location, or objects) that are not

well identified in research on PTNMs. Hartmann suggests this as a possibility, stating, “...in all the cases I have examined in detail, the dream is not ‘just the way it was.’ There is at least one important change (p. 26).” This observation of limited bizarreness and transformation in replicative nightmares led Hartmann to describe replicative nightmares as impaired dreams in which the generation of metaphorical imagery important to the psychological healing function of dreams is inhibited (Hartmann, 2011).

Whether replicative nightmares are exact reproductions or just extremely similar to trauma events is not critical to understanding replicative nightmares. What is important to recognize is that replicative nightmares differ in an important way from normal dreaming. The critical difference between replicative nightmares and normal dreaming is the lack of change and transformation of the replicative nightmares over time. CTD highlights the idea that associations within nightmares are necessary for the healing function of dreams to occur, and therefore, the lack of new associations in the dream content of those with replicative nightmares must be better understood. The lack of new associations in dream content is also present in recurrent nightmares. Little specific research into recurrent nightmares exists even though the phenomenon is commonly reported (Levin & Fireman, 2002; Mellman, 2008; Phelps et al., 2008). Despite the distinctive lack of new associations in replicative and recurrent nightmares, current theories of PTSD regard all nightmares that begin following trauma (replicative, recurrent, and non-replicative) as intrusive, re-experiencing symptoms, which likely obscures the differing effects of these types of nightmares on PTSD symptoms and recovery (Phelps et al., 2008).

Recurrent and replicative nightmares are dreams in which the affectively driven memory integration process has been arrested. Recurring nightmares occur when the process of associative integration began but became locked in place. Even though the content of a recurrent nightmare may seem to bring in new material unlinked to the trauma when viewed as a single dream, the metaphoric connections are frozen. For example, a dream in which a lion chases the dreamer through the living room and attacks them is inconsistent with waking life and seems like a new creation, but if the dreamer has this dream over and over again, it is akin to dreaming of the actual trauma every night because the metaphoric links between the trauma and the dream are locked in place (Lakoff, 1993; Tay, 2012). In recurrent nightmares, there is no new bridging of the affect and content with other memories and imagined experiences and the proposed psychological healing function is therefore inactive.

In the case of replicative nightmares, the associative linking of emotions with memories and imagined experiences never even begins, instead the trauma experience is relived separate from other memories and imagined creations, causing distress and fear in the dreamer (Hartmann, 2011; Phelps et al., 2008). To explain why the healing process is arrested and recurrent and replicative nightmares occur, sleep, and more specifically the effects of insomnia, need explication. Thus insomnia and its relationship to PTNMs are described below.

Insomnia and PTNMs.

One proposed explanation for the impairment of the psychological healing function of dreams, indicated by the recurrent and replicative nightmares, is that insomnia

prevents the dream process from progressing to the point that the integration of emotions caused by trauma can occur (Hartmann, 2011; Kolk, Blitz, & Burr, 1984; Phelps et al., 2008). It is important to define insomnia. There is a clinical definition from the DSM-5 of insomnia as a chronic inability to sleep that has been present for at least three nights per week for at least three months and further requires that the lack of sleep not to be the result of another mental health or medical disorder nor be co-occurring with another sleep disorder (American Psychiatric Association, 2013). The problem with using this clinical definition is that, in relation to dreaming and PTNMs, what is of interest is the impairment of sleep regardless of the cause or the length of time, so long as the sleep impairment is co-occurring with the experiencing of PTNMs and/or dreaming. Therefore, insomnia in this study is defined more broadly as the “prolonged and usually abnormal inability to obtain adequate sleep” and this definition encompasses other terms used in sleep research such as poor sleep quality and impaired sleep (“Insomnia,” 2015).

A summary of findings supporting relationships between insomnia, impaired recovery from PTSD, and PTNMs is provided below. PTNMs, especially replicative and recurrent nightmares, are strongly linked to insomnia (Krakow, Hollifield, et al., 2000; Spoomaker, Schredl, & van den Bout, 2006) Sleep disturbances, including both PTNMs and insomnia, are correlated with greater severity of PTSD symptoms and slower recovery from PTSD (Babson et al., 2011; Germain, 2009; Pigeon et al., 2011; van Liempt, 2012). Krakow, Hollifield, et al. (2000) found that reducing nightmares through IRT also resulted in increased sleep quality and quantity, however, the mechanism for the change was unclear. Pigeon et al. (2011) conducted a study of IPV survivors with PTSD

and found an independent effect on PTSD from nightmares when examining the relationship of differing sleep disturbances (e.g. insomnia, nightmares, sleep apnea, etc.) but did not evaluate the relationship between nightmares and insomnia in this population. Hartmann (2011) reported observing that replicative nightmares generally occur during the beginning of sleep and suggests that the abrupt awakening and difficulty returning to sleep following replicative nightmares may be responsible for interfering with the psychological healing function of sleep proposed in CTD. Taken as a whole, the reviewed research supports the conclusion that insomnia and PTNMs are related phenomena and that both are associated with PTSD.

Insomnia and memory processes.

The relationship between insomnia, replicative and recurrent nightmares, and PTSD can be explained using a CTD framework. Hartmann (2011) proposes that insomnia impairs the psychological healing process of nightmares by preventing integration of the emotional trauma memory with existing memories and mental imagery and that the impairment of memory integration is indicated by recurrent and replicative nightmares. Research findings support the relationship between dreaming and memory integration through outcome research showing changes in memory based on whether individuals reached sleep stages in which dreaming occurs and through neuroscience research showing activation of brain regions linked to memory processes occurring during stages of sleep in which dreaming occurs and changing with the cycling of sleep stages (Llewellyn, 2013; Murkar, Smith, Dale, & Miller, 2014; Nere, Hashmi, Cirelli, &

Tononi, 2013). This research is consistent with CTD's description of insomnia leading to impaired dreaming and difficulty incorporating trauma memories.

Increased associative linking (bizarreness) in dreams that occur later in the cycling of sleep stages was identified in a research study conducted by Wamsley et al. (2007). That study examined the dreams of 20 volunteer undergraduate college students who were awoken at different times throughout the night in REM and NREM sleep stages to record their dreams (Wamsley et al., 2007). In that study, it was found that dream bizarreness was significantly greater later in the night compared with earlier in the night, with MANOVA analysis results of $F(1,19) = 6.06, p < 0.05$ for increased bizarreness in both REM and NREM dreams as the night progressed. The degree to which the dreams seemed like waking life was also assessed, and as expected based on the bizarreness score, the dreamlike quality of the reports also significantly increased for REM and NREM sleep between early and late night sleep; $F(1,19) = 9.28, p < 0.01$. This fits with the associative changes in dreams as sleep stages progress throughout the night.

Research conducted by Casagrande and Violani (1996) also studied 20 volunteer college students awakened throughout the night. In an ANOVA analysis looking at bizarreness with Time of Night (early or late), results showed a significant difference, with bizarreness greater during late in the night dreams, $F(1,18) = 40.47, p < 0.01$. Malinowski and Horton's (2014) research findings are consistent with bizarreness increasing in dreams later in the night, however, they report their sample size was too small for the effects to be statistically meaningful. Taken together, these studies consistently show dreams in the early stages of the night are less bizarre (more realistic)

than those that occur later in the night. Increased bizarreness for dreams later in the night supports speculation that memory processes related to dreaming may involve processes of bringing in recent events in the beginning of the night's cycling of sleep stages (sleeping individuals go through multiple cycles of non-REM (NREM) and REM sleep over the course of a normal nights sleep) before beginning to integrate those events into other memories and imagined experiences as the cycling of sleep stages progress throughout the night (Hartmann, 2011; Llewellyn, 2013).

Tying the integration more directly to the intense emotions from trauma are findings from studies that show more emotionally vivid dreaming and greater activation of brain regions associated with emotions in later stages of dreaming (Deliens et al., 2014; Deseilles et al., 2011). Llewellyn (2013) and Wamsley et al. (2007) attribute changes in memory integration throughout the night to observed changes in the chemical and brain region activation in REM and NREM sleep correlated with the circadian rhythms of the dreamer. These observations are consistent with studies indicating that REM and NREM states are related to memory but that the relationship of those states to memory varies as the time of night progresses; with sleep later in the night being important for emotional memory processes to occur (Dang-Vu et al., 2007; Llewellyn, 2013; Nielsen, Kuiken, Hoffmann, & Moffitt, 2001; Stickgold, Malia, Fosse, Propper, & Hobson, 1995; Wamsley et al., 2007). These later stages of dreaming are not reached in those experiencing insomnia, so the emotional memory integration processes are likely not occurring or occurring in a very limited manner.

The changes in dream content throughout the night and role of memory processes in those changes are consistent with the descriptions from CTD that describe the occurrence of replicative and recurrent nightmares among trauma survivors as being linked with insomnia. The replicative nightmares may result from repeating what is emotionally significant to the dreamer early in the sleep cycles (often an encapsulated memory of the complete trauma experience), and then before any integration of the experience can occur, the dreamer awakens. It can also account for the fixed nature of recurring dreams by creating a condition in which the already established metaphors that compose the recurring dream are repeated early in the sleep stage cycle, but the sleep impairment prevents further integration of those metaphors with other memories and imagined content (Hartmann, 2011; Phelps et al., 2008). This progressive nature of cycling sleep stages throughout the night would further account for insomnia and recurrent and replicative nightmares being strongly associated with higher PTSD symptom severity because of an impairment of the psychological healing role of the associative linking of memories of trauma experience with other memories and mental imagery, as suggested by Hartmann (2011). Though this explanation of the relationship between insomnia, repeating nightmares, and PTSD is consistent with CTD, it lacks strong research support. Direct research support for repeating nightmares correlating with greater PTSD and insomnia as described by the model would be an important step towards evaluating the proposed relationships.

AMPHAC/AND Neurocognitive Model

The AMPHAC/AND model, like CTD, proposes that dreaming is important to trauma recovery (Levin & Nielsen, 2009). In the AMPHAC/AND model, dreams are described as important for the extinction of fear memories. The AMPHAC/AND model looks at the relationship between brain regions in relation to nightmares and trauma, and based on known associations between the brain regions in relation to both PTSD and dreaming, proposes a model for explaining the process and function of dreaming and nightmares in relation to trauma recovery. In PTSD, what is believed to happen is the amygdala becomes hyperactive, and the brain areas responsible for calming that activation, the MPFC, ACC, and hippocampus, are impaired in their ability to provide that calming role (Nutt & Malizia, 2004). Levin and Nielsen (2009) propose that the relationship between these brain regions and experiences of trauma are also directly related to the experiences of nightmares among trauma survivors. Specifically, they propose that amygdala activation in response to trauma prompts nightmares about the trauma and that the hippocampal generation of contextual content in those nightmares, which is critical for fear extinction, is impaired by the ACC, which is linked to *affect distress* (AD) (defined below). Of primary significance to the current study are the relationship between the hippocampus and repeating nightmares (which because of being repeated are not generating new associations), and the link between AD and the ACC because of how the ACC may be impairing extinction memory generation in the hippocampus (Levin & Nielsen, 2007).

The AMPHAC/AND model has two primary cognitive and affective components important to the impairment of dreaming and resultant manifestation of nightmares, *affect load* (AL) and AD (Levin & Nielsen, 2009). AL refers to the number of distinct elements generating an affective response in an individual, and AD describes the affective reaction of the individual to events. For example, AL may consist of the experience of a chronic illness and caring for a sick relative. The AL on the individual is such that there are a variety of significant stressors acting upon that individual. On that same individual, the AD may be expressed by describing the affective reaction to those elements; the chronic illness causes a low level of constant fearful ruminations about becoming more debilitated by the illness, and the sick relative causes bouts of tearful despair because of an inability to do more to help that relative and a fear that the relative will die. AD is a trait related to an individual's learned and adaptive style of reacting to distress, so between individuals, the same experience could lead to differing affective reactions. The role of AL and AD in nightmares is basically that AL prompts the generation of nightmares and determines their frequency, while AD determines nightmare severity. It is these two aspects of distress, quantity (AL) and quality (AD), which result in dreaming impairment manifesting as nightmares, and it is AD that is primarily responsible for creation of pathological nightmares, such as PTNMs (Levin & Nielsen, 2007). Therefore, AD is an important area of focus, and as Levin and Nielsen (2007) relate AD directly to nightmare distress, the manifestation of AD measured as nightmare distress will be directly explored in this study.

On a neural level, the AMPHAC/AND model strongly links AD to the ACC (Levin & Nielsen, 2007). Levin and Nielsen (2007) describe a process in which elevated AD is linked to ACC dysfunction that then mediates the hippocampal generation of extinction memories that would otherwise be generated in response to signals from the amygdala. There is widespread support for the ACC being implicated in the experience of pain, including emotional pain (Eisenberger, 2015; Rotge et al., 2014). Studies also show that seeing pain in other individuals who are emotionally close to an individual prompt greater activation in the ACC (Rotge et al., 2014). Based on this as well as evidence showing increased ACC activation in dreaming (Desseilles et al., 2011), Levin and Nielsen predict that affective distress related to nightmares and known as nightmare distress is linked to the ACC and further predict that higher levels of nightmare distress are linked to activation of the ACC, which in turn, impedes the processes of extinction memory generation, which is important for trauma recovery.

The hippocampus is known to be very important in encoding and consolidating episodic memory and also seems to regulate fear expression and extinction memories (Deliens et al., 2014; Murkar et al., 2014). The hippocampus is closely tied to the amygdala and in combination, these two brain regions are believed to process emotional memories (Deliens et al., 2014). Research on the hippocampus indicates that it has an important role in contextualizing emotional memories (Deliens et al., 2014; Murkar et al., 2014), which is what also makes it likely to serve a critical role in generating extinction memories because extinction memories are a re-contextualizing of fear memories in a manner that allows for new relationship to be formed between fearful elements of

memory and affective responses to those memory elements (Levin & Nielsen, 2009). In PTSD, hippocampal activation is impaired (Woon, Sood, & Hedges, 2010), which is believed to be due to the inhibition of the fear memory extinction function of the hippocampus and the inability to consolidate episodic memories of the trauma. In dreaming, the hippocampus is normally hyperactive (Dang-Vu et al., 2007; Desseilles et al., 2011) and it is not clear whether this holds in the nightmares of those with PTSD. What the AMPHAC/AND model proposes is that the impairment/lessened activation of the hippocampus extends into sleep for those with PTSD and results in nightmares that provide little new contextualization for trauma experiences, with more severe PTSD resulting in more frequent replicative nightmares (Levin & Nielsen, 2009).

In relation to replicative and recurrent nightmares, the AMPHAC/AND model proposes a typology with replicative nightmares as the most severe form of nightmares and PTNMs that are not replicative as the second most severe nightmare form (Levin & Nielsen, 2007). This typology is suggested by research evidence but not supported directly by research evidence. The model does not directly account for non-replicative, recurrent nightmares despite highlighting the impairment of the hippocampus, a brain region directly linked to generating contextual associations, as a reason for dream impairment that leads to replicative nightmares. The link between hippocampal impairment and repeating nightmares is suggested by the description within the AMPHAC/AND model of the hippocampus providing contextualization to fear memories and the lack of new contextualization in replicative and recurrent nightmares (Levin & Nielsen, 2009; Levin & Nielsen, 2007). This link is suggested even more strongly by

research findings supporting decreased activation and less volume in the hippocampus for those experiencing PTSD, especially those with more severe PTSD (Woon et al., 2010).

In addition, the model draws a strong connection between a trait of AD and the severity of nightmare generation. There is broad evidence cited by Levin and Nielsen (2007, 2009) supporting the link between AD and nightmare severity, but the links do not distinguish between nightmares that are novel and those that are non-associative nor do they look at whether nightmare distress, which is strongly associated with AD (Hartmann, Elkin, & Garg, 1991; Levin & Fireman, 2001; Levin & Fireman, 2002), is differentially associated with novel and repeating nightmares. The lack of known relationship between nightmare distress and PTSD severity with repeating nightmares is therefore needed to better evaluate AD as a foundational stimulus for nightmare severity, consistent with what the AMPHAC/AND model proposes.

Nightmare distress.

Nightmare distress refers to the attribution of distress experienced in waking to remembered nightmares. This variable is strongly linked in the AMPHAC/AND model to the trait of AD and is identified as having a foundational role in generating PTNMs by Levin and Nielsen (2007, 2009). A description of research on this variable is provided below and used to contextualize the use of this variable in relation to repeating nightmares and PTSD in the current study.

Lancee and Schrijnemaekers (2013) conducted a study of 56 participants with frequent nightmares and found that the distress experienced on specific days is significantly related to having experienced a nightmare the night before after controlling

for variables including baseline nightmare distress, depression, anxiety, sleep distress, PTSD symptoms (excluding those who score above the threshold for active PTSD), sleep problems, and insomnia. This relationship between waking distress and nightmares is suggestive of the link between dreaming and waking distress.

Duval et al. (2013), in a study of 352 undergraduate female students, found nightmare distress was significantly related to psychopathology and history of childhood maltreatment but did not mediate the link between childhood maltreatment and nightmares. In this study, researchers found that nightmare distress accounted for a unique and significant portion of the variance in nightmare frequency. This study found significant results for these relationships in a non-clinical population. However, PTSD symptoms were not evaluated, which leaves it unclear as to whether nightmare distress might be related to impairment in trauma recovery as suggested by Levin and Nielsen (2009).

Böckermann et al. (2014) performed a factor analysis on the Nightmare Distress Questionnaire (NDQ). This study looked at a population of 213 participants (84% female) recruited from the general population to participate in a nightmare treatment therapy. There was a significant relationship found between nightmare distress and psychopathology, insomnia, and nightmare frequency, and it was found that nightmare distress better accounted for psychopathology than nightmare frequency. This study further supports a need to better evaluate the relationship between nightmare distress and PTSD among trauma survivors.

In summary, what studies indicate is that the distress attributed to nightmares is related to greater psychological suffering, that the distress is not specifically attributable to the frequency of nightmares, the distress is related to insomnia, and there is no understanding of the relationship between nightmare distress and whether the nightmares are replicative, recurrent, or of novel content (Belicki, 1992a; Böckermann et al., 2014; Duval et al., 2013). Based on this, the suggested role of nightmare distress/AD in impaired trauma recovery and increased repeating nightmares seems plausible but lacks direct support, and therefore, is appropriate to directly investigate in this study.

CTD and the AMPHAC/AND Neurocognitive Model

The contextual linking of emotional trauma experiences in the AMPHAC/AND model is very similar to the associative linking process proposed by Hartmann (2011). Where they primarily differ is that the AMPHAC/AND model proposes that cognitive and affective processes drive the associative/contextual linking, whereas CTD proposes that affective processes create the dream associations. Also, CTD proposes dreaming as existing on an associative continuum with waking that allows for broader conceptualization of the dream process in relation to waking life as compared to the AMPHAC/AND model that narrowly focuses on one possible function of dreaming; fear-memory extinction (Levin & Nielsen, 2009). There is a great deal of similarity in the connections the theories make between dreaming and neurological processes, with the AMPHAC/AND model more thoroughly describing the link between the specific brain processes and dreaming and nightmares. However, the supporting links between brain processes and the AMPHAC/AND model is also consistent with CTD (Hartmann, 2011;

Levin & Nielsen, 2009; Levin & Nielsen, 2007). Finally and directly related to this study, both CTD and the AMPHAC/AND neurocognitive model highlight the generation of new associations/contextualization as a primary function of dreaming that is necessary for trauma recovery; with CTD highlighting insomnia as a possible cause of the impairment of new associations and the AMPHAC/AND model highlighting AD/nightmare distress as the likely cause of that impairment (Hartmann, 2011; Levin & Nielsen, 2007, 2009).

Current PTNM Treatments

The conceptualization of trauma experiences leading to a psychic manifestation distinct from other forms of psychological distress (e.g. major depressive disorder and generalized anxiety disorder) is now classified as PTSD (Andreasen, 2010). Within PTSD research, the foundational ideas that trauma leads to negative psychological symptoms and that PTNMs are one of the most prominent symptoms of PTSD are widely recognized (Levin & Nielsen, 2007; Phelps, Forbes, & Creamer, 2008; Spoomaker & Montgomery, 2008). Based on the current understanding of PTNMs as a symptom resulting from PTSD, PTNMs are mainly addressed by treating PTSD broadly (Brewin & Holmes, 2003; Cahill & Foa, 2007). Current treatment approaches for PTSD are effective for many individuals suffering from nightmares but not all, and additionally, even for those who successfully recover from PTSD, nightmares may remain after treatment. A meta-analysis of studies on 26 evidence based PTSD treatment approaches conducted by Bradley, Greene, & Russ (2005) indicated that 67% of individuals who completed treatment no longer met the criteria for PTSD. However, more than half of those who recovered still had significant symptoms, including nightmares, which could negatively

impact their functionality. The reason for the continuation of nightmares after other symptoms resolve is not well understood, and therefore supports the need for more research on PTNMs (Spoomaker & Montgomery, 2008).

In addition to treating PTSD broadly to address nightmares, there are treatments specifically targeting nightmares. Behavioral treatments used to specifically address nightmares include systematic desensitization, progressive deep muscle relaxation (PDMR), imagery rehearsal therapy (IRT), and cognitive behavioral therapy (CBT) for insomnia. Other than the behavioral approaches, the most common treatment is the drug prazosin, which is used to treat high blood pressure as well as anxiety, PTSD, and Panic Disorder. Although each of these interventions have been reported to decrease nightmare severity and frequency (Aurora et al., 2010; Schoenfeld, Deviva, & Manber, 2012) a task force commissioned by the American Academy of Sleep Medicine to determine the best treatments for nightmares recommended only IRT and prazosin (Aurora et al., 2010). The task force's evaluation of nightmare treatments further indicated that there is insufficient research and understanding of nightmare treatment, a conclusion echoed by reviews of research on nightmares and nightmare treatment (Aurora et al., 2010; Levin & Nielsen, 2009; Mellman, 2008; Phelps et al., 2008; Schoenfeld et al., 2012; Spoomaker & Montgomery, 2008). Currently, research findings show both strong positive effects and also limitations to effectiveness for the two well supported approaches to treating nightmares, IRT and prazosin, but there is still much debate over how these treatments lead to the decrease of nightmares (Casement & Swanson, 2012; Kung, Espinel, & Lapid, 2012; Ortuno, Seda, Welsh, Halbower, & Edinger, 2013).

Imagery rehearsal therapy.

IRT is the main counseling treatment used to specifically address nightmares (Aurora et al., 2010). The treatment entails having the dreamer re-script nightmares to give the nightmares a positive conclusion and then visualize the newly scripted dream daily for 10-20 minutes. As mentioned above, research has demonstrated that IRT is effective at reducing the intensity and frequency of nightmares, and additionally, it has been shown to reduce PTSD symptoms more broadly (Moore & Krakow, 2010).

Relating this research more directly to the experiences of some IPV survivors, both Hollifield et al. (2014) and Krakow et al. (2001) explored the effectiveness of IRT on survivors of sexual assault. Krakow et al.'s (2001) study on IRT found significant reductions in nightmares, insomnia, and PTSD compared to control groups among 91 women who had survived sexual assault, had PTSD, and completed the study. However, for the three-month follow-up, 44 of the treatment group and 34 of the control group did not complete the study. This was out of 169 who had originally agreed to participate. The high-dropout obviously created some challenge to interpretation. In 2014, Hollifield et al. conducted another controlled study on the effectiveness of IRT for 168 sexual assault survivors with PTSD and nightmares. That study did not report any dropouts and found significant improvement in PTSD, nightmares, and insomnia at the three-month follow-up, and it found those improvements were maintained at the six-month follow-up with no additional treatment. The significant improvements in insomnia, nightmares, and PTSD are consistent with Casement and Swanson's (2012) meta-analysis findings based on examining 13 studies of IRT treatment.

The reason for the broad and significant effects of IRT treatment on PTSD, nightmares, and insomnia is not understood (Casement & Swanson, 2012). The primary reasons put forward are that IRT produces habituation, improved sleep, cognitive reconditioning, increased sense of mastery, and/or emotional catharsis. The research on IRT conflicts habituation and emotional catharsis as the reason for improvement because IRT treatments vary in whether there is an element of exposure to the content of the nightmare, which is necessary for both habituation and emotional catharsis, without any outcome effects (Casement & Swanson, 2012; Germain et al., 2004). In addition, improved sleep as the sole cause for PTSD improvement is contradicted by research findings that adding cognitive behavioral therapy for insomnia (CBTI) to IRT treatments improves sleep symptoms beyond what is found from IRT alone without any additional benefits to PTSD symptoms (Schoenfeld et al., 2012). Cognitive reconditioning can make sense as a reason for nightmare improvement but lacks explanatory power for the improvement in PTSD symptoms beyond those directly related to sleep and dreaming because nightmares are regarded solely as an intrusive symptom of PTSD. Finally, mastery over cognitive imagery is put forward as a reason for the positive outcomes of IRT by Germain et al. (2004) and this needs a more detailed explanation, which follows.

The mastery explanation is based on a conceptualization of PTSD as resulting from an inability to effectively manage the internal imagery resulting from trauma. Therefore, through the exercise of consciously changing dream imagery it is proposed that success in developing greater control over internal imagery in dreams extends to greater control over thoughts and reactions in waking and subsequent reduction in PTSD

symptoms. Germain et al.'s (2004) study found that mastery elements, defined as elements of the re-scripted dreams, occurred in many of the dreams of individuals following IRT treatment, but these elements did not necessarily correspond in any exact way with the established dream scripts. This presents a significant problem to the theory of mastery because it is unclear how well a sense of mastery can be developed when the positive dream changes include nightmare cessation, incorporation of scripted dream changes, and unscripted positive changes but do not demonstrate the conscious ability to make a dream or even parts of dreams occur in the scripted form. Therefore, the theory that individuals will interpret nonspecific changes with an ability to control inner experiences and imagery lacks support.

There is another potential reason for IRT effectiveness based in CTD that has not been put forward. That reason is the dream scripting mirrors the healing function of nightmares by taking emotionally evocative nightmare imagery and combining it with other imagery; thereby stimulating the integration of the trauma experience into the memories and imagined experiences of the nightmare sufferer (Hartmann, 2011), or through another similar lens, new contextualization is generated through the developed scripts that are still linked closely enough to the trauma to prompt extinction memory experiences in the new dreams/nightmares (Levin & Nielsen, 2009). This process provides an explanation that is better connected to PTSD research attributing difficulty in integrating trauma experience into memory as a significant contributor to PTSD development (Brewin, 2001, 2014; Cahill & Foa, 2007). Based on this conceptualization, the dream scripting in IRT prompts the incorporation of the trauma experience into the

memory through transformation and combination of the trauma memory with existing memories and creations of the imagination (Hartmann, 2011) and/or through the development of new associations between trauma memories and less frightening contexts (Levin & Nielsen, 2009). Increasing understanding of whether predictions from CTD and the AMPAC/AND model are consistent with what is experienced by IPV survivors has the potential to improve understanding of how IRT is effective and through that understanding, how to bolster its positive effects.

Prazosin.

The other primary and research supported approach to address nightmares is Prazosin. Prazosin, like all pharmacological approaches to nightmare treatment, is used to suppress nightmares or nightmare recall (Aurora et al., 2010). Prazosin accomplishes this goal by reducing CNS adrenergic activity in the brain. Results from studies indicate it significantly reduces nightmares and improves sleep with few side-effects (Aurora et al., 2010; Raskind et al., 2007). Prazosin seems to return users to normal REM sleep patterns and this coincides with increased sleep, fewer nightmares, and improvement on broader PTSD measures. While this is very promising, a major drawback to prazosin is that studies consistently showed that nightmares return when usage is stopped (Kung et al., 2012). The cause of the effect of prazosin is not entirely clear (Raskind & Peskind, 2003; Taylor et al., 2009). That cessation of the medication results in the return of nightmares is indicative of a suppressive function and not a healing function.

Summary of PTNM treatments.

Studies comparing IRT and prazosin indicate that they have equivalent effects with a majority of participants having nightmare reductions of greater than 50% (Casement & Swanson, 2012; Kung et al., 2012; Ortuno et al., 2013). Long-term, they both reduce nightmares (Casement & Swanson, 2012; Kung et al., 2012). However, IRT participants experience fewer nightmares after treatment concludes, while prazosin only remains effective with continued usage (Casement & Swanson, 2012; Kung et al., 2012). Another factor differentiating the two is dropout rates. Dropout rates in prazosin studies were low, with most studies indicating less than 10% dropout rates (Kung et al., 2012). For IRT, the rate was higher, averaging 27% across studies (Casement & Swanson, 2012). The high rate of dropouts is a significant problem for IRT and may be related to a variety of reasons including a lack of a clear explanation for why IRT is effective.

In conclusion, nightmare elimination is the current focus of PTNM treatments. Prazosin accomplishes this through changing brain chemicals to avoid nightmare generation, and IRT approaches it through a rescripting of the nightmares (Germain et al., 2004; Moore & Krakow, 2010; Nappi, Drummond, & Hall, 2012). However, the lack of understanding of the distinctive characteristics of nightmares that occur in PTSD (replicative, recurrent, and non-replicative) and the relationship of the PTNM types to PTSD makes interpreting the effects of nightmare treatments unclear. This lack of understanding may also obscure relationships between nightmares and trauma and may lead to treatments impeding internal psychological processes for managing trauma, such as the healing function of non-repeating nightmares proposed by Hartmann (2011)

(Phelps et al., 2008). To increase knowledge of dreaming after trauma and develop better treatments, Phelps et al. (2008) identifies the need for integrating dream and PTSD research, and further identifies CTD as a leading dream theory consistent with current neuroscience and cognitive research. The AMPHAC/AND model also fits the need for integration of dream and PTSD research that Phelps et al. calls for, and likely was not highlighted by Phelps et al. because the AMPHAC/AND model was not fully presented until 2009, a year after the review by Phelps et al.

Conclusion

PTNMs are a significant problem for PTSD sufferers, and specifically, are a serious problem for IPV survivors. The history of dreams in healing and trauma recovery across cultures supports a link between the content of nightmares and the healing process. However, it has remained a challenge to effectively address or even account for nightmares in psychological theories of trauma and PTSD. More recent developments in neuroscience have identified likely causes of PTSD, and the process of memory consolidation and integration is widely acknowledged as a critical aspect of PTSD generation. Neuroscience research has also identified dreaming as being strongly linked to memory consolidation and integration. Both dreaming and PTSD being related to memory processes along with the strong associations between replicative and recurrent nightmares and insomnia in PTSD suggests that nightmares may play a fundamental role in PTSD generation and maintenance. CTD provides a way to understand the relationship between nightmares and PTSD, proposing that nightmares may have a significant role in recovery from trauma and that insomnia may be impairing that process. The

AMPHAC/AND model also proposes that dreaming has an important role in trauma recovery through the generation and rehearsal of fear extinction memories. The AMPHAC/AND model also introduces nightmare distress as a variable related to the trait of AD that may be an important factor in the impairment of the generation and rehearsal of fear extinction memories in dreaming. The basic relationships between nightmare distress, insomnia, PTSD symptom severity, and repeating nightmares (replicative and recurrent nightmares) is testable and needed to better evaluate the proposed relationship of variables in CTD and the AMPHAC/AND model. Because of the negative impact of nightmares on IPV survivors, these predictions will be tested using participants who have experienced IPV in the hope that the information generated from this study will have positive benefits to treatment approaches for IPV survivors.

CHAPTER III

METHODOLOGY

Previously, PTNM researchers have focused on the negative effects of nightmares for individuals with PTSD and how to eliminate them, but little attention has been directed to understanding the relationship of the types of nightmares that occur following trauma to insomnia, PTSD symptom severity, and the distress nightmares generate (nightmare distress). The reason for the lack of attention to types of PTNMs in relation to other variables is due to the conceptualization of PTNMs as a secondary, intrusive, re-experiencing symptom of PTSD rather than a primary symptom and the absence of a theoretical reason for differentiating between nightmare types. Based on dream and neuroscience research, the Contemporary Theory of Dreaming (CTD) and the AMPHAC/AND neurocognitive model propose that dreaming has an important function in trauma recovery and that the function can be impaired, resulting in repeating nightmares. CTD proposes insomnia as a cause for impairment of the trauma recovery function of dreaming, while the AMPHAC/AND model proposes that nightmare distress results in impairment of new contextual imagery in dreaming being generated by the hippocampus. The relationship between repeating nightmares (replicative and recurrent nightmares), insomnia, PTSD, and nightmare distress has not been directly studied or evaluated in relation to CTD or the AMPHAC/AND model. Therefore, using a correlation survey design, the relationship of those variables was explored. This

exploration focused on survivors of IPV due to the high incidence of PTSD and negative impact of nightmares among IPV survivors (Black et al., 2010; Rasmussen, 2007).

Research Questions and Hypotheses

The relationship between the variables of PTSD symptom severity, insomnia, replicative nightmare frequency, recurrent nightmare frequency, frequency of replicative or recurrent nightmares, time since the last replicative or recurrent nightmare, and nightmare distress were examined through the following three research questions (RQs). This set of RQs guided exploration of whether the CTD predictions for the process of psychologically healing from dreams holds in a population of IPV survivors that includes survivors exhibiting a range of PTSD symptoms.

The research questions and associated hypotheses follow:

1. Research question (RQ1)- Is there a significant correlational relationship between the frequency of recurrent or replicative nightmares and the measures for insomnia, nightmare distress, and PTSD symptom severity reported over the past month among IPV survivors?

Hypothesis- a) Ratings of insomnia, PTSD symptom severity, and nightmare distress for the past month will significantly and positively correlate with repeating nightmare frequency over the past month, both individually and in combination, among a sample of IPV survivors. b) In addition, insomnia and PTSD symptom severity will correlate significantly more strongly with the frequency of repeating nightmares compared to nightmare distress. c) Insomnia and PTSD symptom severity

will not significantly differ in terms of the frequency of repeating nightmares.

2. RQ2- Is there a significant correlational relationship between the time since the last replicative or recurrent nightmare and PTSD symptom severity among IPV survivors?

Hypothesis- Time since the last replicative or recurrent nightmare will significantly and negatively correlate with PTSD symptom severity among a sample of IPV survivors.

3. RQ3- Is there a significantly different correlational relationship between the frequency of replicative nightmares and insomnia compared to the frequency of recurrent nightmares and insomnia?

Hypothesis- Both replicative and recurrent nightmare frequencies will positively correlate with insomnia, but replicative nightmare frequency will correlate more strongly with insomnia.

Participants

Adult survivors of IPV, who were over the age of 21 and who were experiencing posttraumatic nightmares were recruited as participants in the study. To avoid contributing to suffering, participants were only allowed to participate if they were currently out of any abusive relationship and were experiencing nightmares. Participants were recruited through volunteer sampling in conjunction with an interest network for IPV survivors, through social media sites supporting survivors of IPV, through a variety of state coalitions against domestic violence, and through agencies directly working with

survivors of IPV. All participants were given informed consent documents to read and sign that were approved by the University of North Carolina at Greensboro, Institutional Review Board (IRB). In addition, all participants were provided with contact information for supportive services and instructions for how to access those services. In the informed consent, all participants were informed that they could discontinue the survey at any time. It was determined that 55 participants were needed to have sufficient statistical power for the analyses. This number was generated by a G*Power analysis based on the variables that will be used in data analysis and the necessary effect size ($f^2 = 0.15$) and power (0.80) for the study.

One hundred sixty individuals viewed the survey. Twenty individuals who entered the survey never answered the eligibility questions. Thirty one participants did not meet the eligibility requirements. Twenty six participants who qualified for the study based on their answers to the eligibility questions did not answer any other questions than the eligibility questions. This left 83 participants who answered some portion of the survey. Eight participants answered demographic questions but did not complete the instruments. This resulted in 75 participants who completed at least a portion of the survey. Of those 75, one participant's responses were discarded because of answers that did not make sense on the fill in responses and the lack of variation in all other responses (i.e., for each analysis, the participant used the same response for each question in an instrument). One other participant's responses were eliminated because after stating they were 21 years old in the beginning of the study, they stated they were 15 years old. The final number of participants whose responses were used was 73, and the number of

participants completing the entire survey was 57. This leaves a 52% total completion rate for those individuals who started the survey.

Demographics.

Participants' ages ranged from 21 to 73 years old with a mean age of 36.41 (SD = 11.03). Sixty-nine of the participants were Caucasian (97.26%), one participant was African American (1.37%), one participant was Hispanic (1.37%), and two participants identified as both Caucasian and Native American (2.74%). Sixty-four participants were women (87.67%), four were men (5.48%), two participants selected other (2.74%), and three participants chose not to answer the question (4.11%). Forty-four participants reported having children (60.27%) and 29 reported not having children (39.73%). Fifty-two participants reported having seen a counselor due to their most recent experience of abuse (71.23%) and 21 reported not having seen a counselor due to their most recent experience of abuse (28.77%). Forty reported their nightmares began after their most recent experience of abuse (54.79%), 10 reported that their nightmares changed after their most recent experience of abuse (13.69%), and 20 participants reported taking medication for nightmares (27.40%). Of those 20, 16 reported that their nightmares have changed since the medication began with four reporting the nightmares became more disturbing, eight reporting they became less frequent, six became less disturbing. Additionally, there were two participants who reported that their nightmares became both more frequent and less frequent. This last participant also reported that their nightmares also became more disturbing. One participant reported that in addition to the nightmares being less frequent and less disturbing, they stopped altogether.

Significant abuse was reported by participants with 56 of 67 respondents reporting physical abuse (76.71% of respondents with 6 not responding), 60 of 67 reporting emotional abuse (82.19% of respondents with 6 not responding), 58 of 67 reporting verbal abuse (79.45% of respondents with 6 not responding), and 46 of 66 reporting sexual abuse (63.01% of respondents with 7 not responding).

Years since the last abusive relationship was explored. The time ranged from 0 months to 40 years. To analyze the data, the responses were converted into years with months being entered as percentage of years. The mean number of years was 6.52 (SD = 7.09) indicating that 68% of the participants had been out of the abusive relationship between 0 and 13.61 years.

Forty-five of 68 respondents had experienced abuse in more than one relationship (61.64% with 5 not responding). Of those reporting more than one abusive relationships, 17 (23.29%) reported two other abusive relationships, 14 (19.18%) reported one other abusive relationship, six (8.22%) reported four other abusive relationships, three (4.11%) reported three other abusive relationships, and one participant reported each of the following, six (1.37%), seven (1.37%), nine (1.37%), and 10 (1.37%) other abusive relationships with only one participant reporting more than one abusive relationship and not entering the number of additional abusive relationships experienced. Further demographic information is provided in Table 1.

Table 1. Demographics of Study Participants

Demographic Characteristics	n	%
RELATIONSHIP STATUS		
Single	14	19.2
Married	21	28.8
Divorced	9	12.3
Separated	4	5.5
Dating but not in a committed relationship	1	1.4
In a committed relationship but not living together	7	9.6
In a committed relationship and living together	15	20.5
Widowed	1	1.4
No Response	1	1.4
TOTAL	73	100.0
EDUCATION LEVEL		
High School Diplomas or GEDs	17	23.6
Associates Degree	14	19.4
Bachelors Degree	19	26.4
Graduate Degree	17	23.6
No High School Diploma or GED	3	4.2
Other	2	2.8
TOTAL	72	100.0
HOUSEHOLD INCOME		
Under \$30,000	24	32.9
\$30,000- \$59,000	27	37.0
\$60,000- \$100,000	13	17.8
Over \$100,000	9	12.3
TOTAL	73	100.0

Instruments

Demographics- In order to contextualize results from the assessments and participant responses, information regarding participants' age, ethnicity, comfort in taking a survey in English, psychotherapeutic history (including whether they have received counseling

following their experience of IPV and the perceived benefit of counseling), psychotropic medications (including whether they are taking any medications for nightmares and what the effects they have noticed the medications having on their nightmares), what kinds of abuse they experienced, and whether they have a history of abuse occurring prior to the abuse that occurred in their most recent abusive relationship. The question about language will evaluate whether the participant is able to adequately comprehend the consent document and assessments, and if a lack of proficiency is expressed, they will not be asked to complete the survey due to concerns about informed consent and ability to correctly interpret survey questions.

IPV Questionnaire- Using six questions, information about the nature of the IPV abuse they experienced was assessed. This information includes the type of relationship in which the abuse occurred, the length of the relationship, the time since the relationship ended, and if there were abusive relationships that preceded the most recent one.

Nightmare Frequency- This information was collected using fourteen questions specifically adapted for this study. The aim of this instrument was to explore the types and frequencies of nightmares among IPV survivors. This instrument assessed the number of replicative and recurrent nightmares and also included questions to assess when the last replicative or recurrent nightmare occurred, and that information was used to compare PTSD symptom severity to the amount of time since the last replicative or recurrent nightmare.

PTSD Checklist-5 (PCL-5)- This instrument was used to assess the current PTSD symptoms of participants. The PCL-5 (Weathers et al., 2013) is a 20 item, self-report

measure that is congruent with the DSM-V diagnostic criteria for PTSD. The items use a five-point Likert scale from “Not at all”(0) to “Extremely”(4) and takes approximately 5-10 minutes to complete (Weathers et al., 2013). A total severity score is obtained by summing all item scores, and symptom cluster scores can also be obtained by summing criterion subscale scores (Weathers et al., 2013). The symptom clusters are the same as in the DSM-V; intrusion, avoidance, negative alterations in cognitions and mood, and alterations in arousal and reactivity.

The PCL-5 is designed for use in civilian and military populations and replaces the previous PTSD Checklists, used in civilian (PCL-C), military (PCL-M), and specific (PCL-S) populations, that corresponded with the DSM-IV-TR. The PCL-5 is most similar to the PCL-S because neither of those assessments specifies the type of trauma to which the respondent was exposed (Weathers et al., 2013). The changes from previous PCLs to the PCL-5 involved increasing the number of questions from 17 to 20, aligning the questions with the new symptom criteria, and changing the Likert scale numbers from 1-5 to 0-4. These changes result in different scale scores than on previous PCLs. The cut-point scores are described as being lower on the PCL-5 than on past PCLs, with an overall cut-point score of 38 advised and cut-point scores for criteria suggested as 11-14 points lower than on previous PCLs (Weathers et al., 2013). It is not clear what symptom ratings in the criteria would be sufficient to indicate a diagnosis of PTSD. Previously, using the DSM-IV-TR symptom clusters and criteria for diagnosis according to those clusters, scores of three or higher on at least one item of re-experiencing symptoms, three items of avoidance symptoms, and two items of arousal symptoms would indicate a

PTSD diagnosis was appropriate (Blanchard & Jones-Alexander, 1996; Weathers, Litz, Herman, Huska, & Keane, 1993). Following the same symptom cluster scoring approach using the new DSM-V diagnostic criteria and adjusting for the new Likert scale numbering on the PCL-5, an indication of PTSD would be a score of two or higher on one intrusion, one avoidance, two negative alterations in cognitions and mood, and two alterations in arousal and reactivity symptom items (Weathers et al., 2013; Weathers et al., 1993). As with previous uses of PCLs, this scoring gives a strong indication of PTSD, but the duration of symptoms and trauma exposure also need to be assessed to assure proper diagnosis. For best results according to Ruggiero, Del Ben, Scotti, and Rabalais (2003) and also supported by Blanchard and Jones-Alexander (1996), looking for scores above cut-points for both individual criteria and overall is the best indication of PTSD.

The reliability and validity of the new scale has preliminary support, and it appears very similar to the previous PCLs and is the only self-report symptom scale the U.S. Department of Veterans Affairs is listing as an approved “DSM-5 validated measure” (“DSM-5 validated measures,” 2014). A recent study demonstrated a Cronbach’s alpha of .94, test-retest reliability of 0.73, and construct validity of .95. This supports the continuing psychometric strength of the updated version and consistency with past versions. Previously, psychometrics for the PCL-S, PCL-M, and PCL-C all showed consistently strong validity and reliability (Blanchard & Jones-Alexander, 1996; Ruggiero et al., 2003; Weathers et al., 1993). Ruggiero et al. (2003) found Cronbach’s alpha scores of 0.94 for the PCL-C overall and individual symptom cluster scores of 0.85 for re-experiencing, 0.85 for avoidance, and 0.83 for hyper-arousal. In addition he found

a one-week test-retest reliability of 0.88. Those findings align with Adkins, Weathers, McDevitt-Murphy, and Daniels (2008) findings of a 0.91 Cronbach's alpha overall and a test-retest reliability of 0.87 for the PCL-S. Adkins et al. also determined high convergent validity for the PCL-S when comparing its ratings to those of six other assessments designed to measure PTSD symptom severity. In this study, the PCL-5 had a Cronbach's alpha score of 0.92, which closely aligns with the scores from previous studies.

The proposed study used the overall symptom score in analysis. Due to the fact that the researcher's aim was to look for a range of symptom severity across a population of participants who currently have and do not have PTSD, the lack of diagnostic specificity in the scoring was acceptable. What was most critical for the current study was a continuum of scores that accurately reflected the subjects' experiences. The PCL-5 provided that continuum.

Pittsburgh Sleep Quality Index (PSQI)- Buysse, Reynolds, Monk, Berman, and Kupfer (1989) developed the PSQI in 1989 to assess sleep quality and quantity over the past month. The PSQI contains 19 items, including both open and multiple-choice questions. There is a global scoring system for the multiple-choice questions, resulting in individual item scores of one to three. Those item scores are then combined to provide a total score of sleep quality from 0-21. Scores of less than five indicate a positive sleep quality, while scores greater than five indicate negative sleep quality (Buysse et al., 1989).

The PSQI has been evaluated in a many studies has been shown to have good psychometrics and concurrent validity with other measures of sleep quality. The internal consistency has ranged between Cronbach's alpha scores of 0.80 and 0.85, and the test-

retest reliability has been $r = 0.85-0.87$ (Backhaus, Junghanns, Brooks, Riemann, & Hohagen, 2002; Buysse et al., 1989; Carpenter & Andrykowski, 1998). In the current study, a slightly lower Cronbach's alpha of 0.77 was found, but this is very close to the range of 0.80-0.85 reported in previous studies.

Concurrent validity with other sleep measures has been consistently greater than 0.69 (Carpenter & Andrykowski, 1998), and the PSQI has been shown to be highly correlated with sleep logs (Backhaus et al., 2002). In addition, Backhaus et al. (2002) reports that global PSQI scores of greater than five resulted in a sensitivity for sleep disturbances in insomnia patients of 98.7 and a specificity for sleep disturbances in that population of 84.4, and the results from several studies indicate that the global PSQI score correlates strongly with other specific measures of insomnia ($r = 0.80$ for the Insomnia Severity Index [ISI] [Morin, Belleville, Bélanger, & Ivers, 2011] and $r = 0.73$ for the Pittsburgh Insomnia Rating Scale [PIRS] [Moul, Pilkonis, Miewald, Carey, & Buysse, 2002])

The ability to identify and quantify the presence of insomnia is important within the context of the current study. The lack of sustained sleep of good quality in survivors of IPV with differing levels of PTSD symptoms is what is being measured in this study. The cause of the insomnia for this study can be due to a range of sleep disorders or to other medical or mental health disorders, so the ability of the PSQI to measure sleep impairment inclusive of a range of causes in the global score is appropriate for this study (Backhaus et al., 2002; Buysse et al., 1989; Carpenter & Andrykowski, 1998). Further supporting the PSQI for use in this study is the finding of Casement, Harrington, Miller,

and Resick (2012) that in a population of women with PTSD, the PSQI global score was demonstrated to be successful at identifying clinically significant insomnia. Therefore, the global score from the PSQI was used to assess for sleep insomnia in this study.

Nightmare Distress Questionnaire (NDQ)- The NDQ is the most widely used measure for understanding the distress attributed to nightmares (Böckermann et al., 2014). The NDQ uses 13, five-point Likert scales and generates a total score of nightmare distress from 13 to 65, with higher scores indicating greater distress (Belicki, 1992b). The questions have Likert scales of *always* (1) to *never* (5) on 10 questions, two questions use *not at all* (1) to *a great deal* (5), and one question uses *not at all interested* (1) to *extremely interested* (5). The NDQ was originally designed by Belicki in 1985 as a seven-item measure and was updated to its present form by Belicki in 1992 (Belicki, 1992). The NDQ has been used in a variety of studies and it has been shown to measure a different but related aspect of the nightmare experience than nightmare frequency (Belicki, 1992a, 1992b; Duval et al., 2013; Martinez, Miro, & Arriaza, 2005). In addition, A study by Duval et al. (2013) found that nightmare distress accounted for 20.3% of the variance in disturbed dreaming frequency (defined as vivid dreams that have intense negative emotion [Levin & Nielsen, 2007; Zadra, Pilon, & Donderi, 2006]) in a study evaluating the frequency of disturbed dreaming in 352 undergraduate, female students. In fact, nightmare distress was a better predictor of disturbed dreaming frequency than history of childhood abuse (measured by the Childhood Trauma Questionnaire) or waking psychopathology (measured by the State-Trait Anxiety Inventory and the Beck Depression Inventory) (Duval et al., 2013). Belicki (1992a) conducted a study looking at nightmare distress in relation to nightmare

frequency and also found that nightmare distress and not nightmare frequency significantly correlated with psychopathology as measured by the Symptom Checklist-90-Revised (SCL-90-R) and the Fear Survey Schedule-II (FSS-II).

The NDQ shows good psychometrics on internal consistency and convergent validity based on the limited number of studies in which it has been used (Böckermann et al., 2014; Martinez et al., 2005). However, despite the use of the NDQ in over 10 studies, there is no available information on test-retest reliability. Across four studies involving 540 volunteer undergraduate participants, Belicki (1992b) found an internal consistency calculated by Cronbach's alpha ranging from 0.83 to 0.88. In two more recent studies examining the factorial structure of the NDQ, the Cronbach's alpha scores of internal consistency were found to be 0.80 in both studies (Böckermann et al., 2014; Martinez et al., 2005), and in a recent study by Steine et al. (2012) focused on survivors of sexual abuse, the Cronbach's alpha was determined as 0.90. The Cronbach's alpha of 0.92 in the current study closely fits with Steine et al.'s score.

Convergent validity was found for NDQ in its association with the Nightmare Effects Scale (NES) ($r = 0.57$ at $p < 0.01$) and with the shared association of NDQ and NES with Beck Anxiety Inventory (BAI) and Beck Depression Inventory (BDI) (associations between the NES and NDQ and the BAI and BDI were all between $r = 0.31$ and 0.40 at $p < 0.01$) (Martinez et al., 2005). The NES assesses the effects of nightmares on specific areas of waking life, while the NDQ asks for the subjective reaction to nightmares. These two areas of assessment are similar but would not be expected to completely overlap, so the findings described above support NDQ's convergent validity.

Two factor analyses have demonstrated that three factors make up the NDQ (Böckermann et al., 2014; Martinez et al., 2005). The factors are described as consistent with the variable of nightmare distress and are described by Bockermann et al. (2014) as *general distress*, *impact on sleep*, and *impact on daytime reality*. The Cronbach alphas for these three factors are 0.80, 0.64, and 0.51 respectively, and all three factors are highly and significantly correlated with the total NDQ score (Böckermann et al., 2014).

In this study, the NDQ will be used to understand the subjective effect of nightmares. With the permission of the author to modify the measure, the time frame of question number 12 was changed from “in the last year” to “in the last month” in order to better correspond with the time frame used by the other instruments in this study. Additionally, in the instructions preceding the measure, participants were asked to respond to the questions based on their experience of nightmares over the last month. The final nightmare distress score was calculated by adding the individual Likert scores to get the total score. That total score was the one used in data analysis as the variable nightmare distress.

Pilot

For the pilot study, a convenience sample of six experts on IPV reviewed the survey. The experts included professors researching IPV, survivors of IPV, and professionals working with IPV survivors. The expert reviewers were asked to provide feedback on its clarity and sensitivity to IPV survivors, and they identified several areas to further clarify, a) confidentiality, b) language describing IPV, and c) consistency of language usage on IPV. This feedback was used to modify the survey. To increase clarity

around confidentiality the following sentence was added to the confidentiality section of the Informed Consent form, “If disclosure is required by court order, survey information would be provided but in that information will be no names or identifiers of participants because that information is not being requested or recorded with the survey.” To address the need for clear language describing IPV, IPV was defined as “actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression by a boyfriend, girlfriend, partner, or spouse.” To address consistency of IPV language, the above definition for IPV was used throughout the survey. In addition, there were a few items with small errors in wording or grammar; these items were edited to correct the errors. The version of the survey reviewed by the IPV experts reviewed is in Appendix D and the updated version of the survey based on the expert reviewers response is in Appendix C of this manuscript.

In addition to the critical feedback described above, there was consistent feedback from reviewers that the survey was sensitive to IPV survivors. Five of the six reviewers also commented that the topic of PTNMs for this population is very interesting. One reviewer reported that she commonly refers IPV survivors to counselors because of nightmares, and expressed a belief that it is very important to increase knowledge about nightmares among survivors of IPV because it is unclear how to best treat the nightmares.

A second round of expert review of the survey was initiated after modifications to the survey were made following the first expert review and as a result of changes to the study design following the dissertation proposal of the study. In the second piloting review, experts were asked to go through the survey and again provide feedback on

clarity, sensitivity, ease of use, and suggestions for improvement. These experts were doctoral students in counseling who had experience in counseling a wide range of clients, including those who had experienced IPV, and who had received training on counseling individuals with trauma. As part of their review of the survey, experts were encouraged to answer questions in the survey from the perspective an IPV survivor might answer them in order to better provide feedback on the functionality of the survey. No survey data was collected from these experts.

Feedback from the expert reviews was used to make modifications to the study. Three reviewers described the scale questions in the NDQ as confusing because three of the questions used an order of answering choices that were in reverse of the other questions. With permission from the creator of the NDQ to modify it to suit the study, the order of the answer choices was reversed to make them consistent throughout the survey. One reviewer described the need for asking participants to add the designations “AM” or “PM” when answering questions about sleep and waking times. A brief request for the inclusion of “AM” or “PM” was added to those questions. One reviewer stated that the example given describing a repeating nightmare was confusing. To address this, an additional statement was added to the definition of repeating nightmares at the beginning of the Nightmare Frequency Questionnaire and to the first question on repeating nightmares within the questionnaire. The statement was, “These repeating nightmares may be similar to waking life experiences or very different from anything ever experienced in waking life.” A further clarification defining nightmares that replay the abuse was also added. That statement is as follows, “These nightmares are similar in

content to flashbacks.” The survey sent to reviewers in the second round of expert reviews is included in Appendix B and the final version is included in Appendix A.

Procedure

Before taking the survey, participants were informed of the purpose, risks, voluntary nature, and confidentiality of the survey as is consistent with IRB approval. In addition, participants were provided contact information for supportive agencies and instructions on obtaining that support. A strong and clear statement was given to participants that no direct identifying information, such as names or IP addresses was being collected and all information collected will be kept confidential.

The survey was in an electronic form developed in the Qualtrics program. This format has been used successfully with IPV survivors in previous studies and has the benefit of clarity in format and improved ability to accurately score assessments. The 15 minute long survey began with a description of the purpose of the study, risks that may result from participation, voluntary nature of the study, and information about how participant information would be used and remain confidential. Following an acknowledgement of this information and acceptance to participate, the survey began. Participants then answered questions about their trauma experiences, PTSD symptoms, insomnia, nightmare types and frequencies, and nightmare distress.

Upon completion, each survey was assigned an identification number that was used as the identifier for data analyses. The data generated was entered into SPSS for analysis. The results of the analyses were written into a brief summary with implications and sent to the IPV experts who reviewed the survey prior to its use. The feedback they

provided was used to write the final results and discussion sections in a way that was sensitive to the needs and concerns of IPV survivors while clearly addressing the findings and implications.

Data Analysis

Two correlation matrices and a linear regression analysis were first employed to better understand the relationship between PTNMs and PTSD and answer the RQs. Then, multivariate regressions were performed for RQ1 and RQ3 to further understand the relationship between the variables in order to more thoroughly answer the RQs. All of the statistical analyses in the current study were done using SPSS (IBM Corp., 2013) with two exceptions. To determine the effect sizes and power of analyses the program G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) was utilized, and in order to perform a Fischer z transformation, a program from VassarStats (Lowry, 2015) was used. In this cross-sectional study, the regression analyses were conducted to understand the amount of variance in the criterion variable explained by the predictor variable or variables, either independently or in combination. The variables used in this study were measured using the Nightmare Distress Questionnaire (NDQ), Pittsburgh Sleep Quality Index (PSQI) (total score), replicative nightmare frequency, recurrent nightmare frequency, frequency of repeating nightmares (recurrent and replicative nightmares), Posttraumatic Checklist-5 (PCL-5) (total score), and time since last replicative or recurrent nightmare. Originally, the variables of frequency of repeating nightmares (replicative and recurrent nightmares), replicative nightmares, and recurrent nightmares were to be measured by the ratio of each of those PTNM types to total number of nightmares but due to inconsistencies in the

reported total number of PTNMs compared to the number of recurrent and replicative nightmares, the reported number of repeating nightmares, replicative nightmares, and recurrent nightmares were used in place of the frequency scores for analysis. This approach is based on the belief that the error that arose was due to a flaw in the survey questions. The flaw believed to be most likely responsible for 33% of respondents reporting a combined number of replicative and recurrent nightmares larger than the total number of nightmares reported was asking for the total number of PTNMs before asking for the number of specific types of nightmares and not allowing survey respondents to go back and change their answers in the online survey. The assumption therefore is that by asking for specifics about types of dreams, individuals were prompted to recall more about the dreams they had experienced in the last week, which allowed them to answer with better recall. Those answers about the specific nightmares, namely, the number of replicative and number of recurrent nightmares, were the answers used in data analysis.

Before each regression analysis, the assumptions of normality, linearity, and no significant outliers were tested to confirm that the analyses were appropriate for the variables, and with the correlational matrices, multicollinearity was also tested to assure that the tests met the assumption of not having multicollinearity. A listing of the data analysis and variables for each RQ and hypothesis is shown in Table 2.

The two correlation matrices focus on different variables. RQ1 will be evaluated using insomnia, nightmare distress, and PTSD symptom severity as predictors and frequency of nightmares that are either replicative or recurrent as the criterion. RQ3 will use replicative nightmare frequency and recurrent nightmare frequency as predictors and

insomnia as the criterion. RQ2 will be a linear regression using time since last recurrent or replicative nightmare as the predictor and PTSD symptom severity as the criterion.

The necessary sample size for the study was determined from G*Power analysis based on the number of variables and the desired effect size and power. The linear regression analyses determined the minimum number of participants for analysis. In the G*Power analysis, the effect size was set at $f^2 = 0.15$ and the power at 0.80. This data was used by G*Power to determine that the total sample size needed to be a minimum of 55 participants.

For each regression analysis, the overall and, when present, individual relationships between the predictors and criterion were provided and evaluated. Only the predictors that demonstrated a significant F value (significance measured at $p \leq 0.05$) were compared. The comparisons were made based on the value R^2 , which describes the percentage of variance in the criterion explained by a predictor. Based on that comparison, the RQs and their hypotheses were evaluated.

Table 2. Description of Research Questions and Data Analyses

Research Question	Hypothesis	Independent variables	Dependent variables	Data analysis
RQ1: Is there a significant correlational relationship between the frequency of repeating nightmares (recurrent and replicative nightmares) and the measures for insomnia, nightmare distress, and PTSD symptom severity reported over the past month among IPV survivors?	<p>a) Ratings of insomnia, PTSD symptom severity, and nightmare distress for the past month will significantly and positively correlate with repeating nightmare frequency over the past month, both individually and in combination, among a sample of IPV survivors.</p> <p>b) In addition, insomnia and PTSD symptom severity will correlate significantly more strongly with the frequency of repeating nightmares compared to nightmare distress.</p> <p>c) Insomnia and PTSD symptom severity will not significantly differ in terms of the frequency of repeating nightmares.</p>	<ol style="list-style-type: none"> 1. Nightmare Distress (NDQ) 2. Repeating Nightmares 3. Insomnia (PSQI) 	PCL-5	Correlational Matrix with multivariate regression
RQ2: Is there a significant correlational relationship between the time since the last replicative or recurrent nightmare and PTSD symptom severity among IPV survivors?	Time since the last replicative or recurrent nightmare will significantly and negatively correlate with PTSD symptom severity among a sample of IPV survivors.	<ol style="list-style-type: none"> 1. Time since last Replicative or Recurrent Nightmare 	PTSD Symptom Severity (PCL-5)	Linear regression
RQ3: Is there a significantly different correlational relationship between the frequency of replicative nightmares and insomnia compared to the frequency of recurrent nightmares and insomnia?	Both replicative and recurrent nightmare frequencies will positively correlate with insomnia, but replicative nightmare frequency will correlate more strongly with insomnia.	<ol style="list-style-type: none"> 1. Replicative Nightmare frequency 2. Recurrent Nightmare frequency 	Insomnia (PSQI)	Correlational Matrix with multivariate regression

CHAPTER IV

RESULTS

The purpose of this study was to explore the relationship of replicative and recurrent posttraumatic nightmares to insomnia, nightmare distress, and Posttraumatic Stress Disorder among survivors of intimate partner violence. This chapter contains the detailed results of the analyses conducted to test the research questions presented in Chapters I and III. The chapter begins with an overview of the study sample, including demographics descriptors, psychotherapeutic history, and experiences of trauma across the lifespan. Descriptive statistics for each of the standardized assessments used in the study are presented, including ranges, means, standard deviations and the alpha reliability coefficient. Complete results of the statistical analyses used to test each research question and an overview of all study results conclude the chapter.

The variables in the study were analyzed using regression and correlation analyses. Before conducting the analyses, the variables were examined, descriptive data was explored, and the assumptions were checked. Following that, the analyses were conducted and then based on those analyses, post-hoc analyses were also conducted.

The RQs on which the analyses were based are as follows:

1. RQ1- Is there a significant correlational relationship between the frequency of repeating nightmares (recurrent and replicative nightmares) and the measures for insomnia, nightmare distress, and PTSD symptom severity reported over the past

- month among IPV survivors?
2. RQ2- Is there a significant correlational relationship between the time since the last repeating nightmare (replicative and recurrent nightmares) and PTSD symptom severity among IPV survivors?
 3. RQ3- Is there a significantly different correlational relationship between the frequency of replicative nightmares and insomnia compared to the frequency of recurrent nightmares and insomnia?

Reliability

An analysis was conducted to evaluate the reliability of the instruments used in the study. The results of the reliability analyses revealed the following Cronbach's alpha scores: 0.87 for the NDQ, 0.92 for PCL-5, and 0.77 for PSQI. These scores were ascertained by examining all the scores for each instrument. For participants who did not answer every question in an instrument, their scores on that instrument were excluded from analysis. The Cronbach's alpha scores for each of the three instruments were assessed using the following number of responses: N = 61 for the PSQI, N = 71 for the NDQ, and N = 69 for the PCL-5. The difference in N sizes is due to some surveys being incomplete or incorrectly completed.

Descriptive Information and Analyses

Information from the participant demographics and instrument scores were gathered to better understand characteristics of participants. Overall, the participants reported high levels of insomnia, nightmare distress, and PTSD. All but two of the participants had PSQI scores greater than five, which indicates they were experiencing

moderate to severe difficulty with sleep (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989). Of the 60 participants who completed the PSQI instrument, 97% had difficulty sleeping. In addition, since the mean of scores on the PSQI was 11.7 with a standard deviation of 3.35 and range from 5 to 21, most participants had a high level of insomnia. Using the Veterans Administrations suggested cut-off score of 38, it was found that 51 participants scored above the cut-off score on the PCL-5 and three scored at the cut-off point. This means that 74% of the participants' scores indicated the likelihood of PTSD. The mean PTSD score was 49.26 with a standard deviation of 14.64 and range from 10 to 76. The NDQ score range for participants was from 28 to 60, while the range of possible scores is 13 to 65 with higher scores indicating greater distress. There is no clear cut-off score on this scale. The mean NDQ score for participants was 44.06 with a standard deviation of 8.24. This indicates that nightmare distress was high for participants in this study.

After eliminating the outliers for the total number of repeating nightmares, the number of non-associative nightmares participants experienced in the last month ranged from 0 to 60, with the mean number of nightmares being 15.47 with a standard deviation of 13.63. Making up the total repeating nightmares were replicative and recurrent nightmares. Replicative nightmare frequency ranged from 0 to 56 for the past month with a mean of 7.99 and standard deviation of 11.32. Recurrent nightmare frequency ranged from 0 to 64 with a mean of 9.61 and a standard deviation of 11.05.

The reported time since the last repeating nightmare ranged from 1 to 2,880 days with a mean of 61.09 days and a standard deviation of 356.45. There were six responses

over 30 days and four responses between half a month and a full month. Because few participants reported it had been over 15 days since their last repeating nightmare, only the 56 responses of half a month or less (0-15 days) were used in this study. For the responses of half a month or less, the mean was 3.95 with a standard deviation of 3.89. Tables 3 and 4 provide information about participant scores on the constructs.

Table 3. Descriptive Data for PTSD Symptom Severity, Insomnia, and Nightmare Distress

Variable	Items	N	M	SD	α	Range		Skew
						Potential	Actual	
PCL-5	20	69	49.26	14.64	0.92	0-80	10-76	-0.449
PSQI	19	60	11.70	3.35	0.77	0-21	5-21	0.026
NDQ	13	70	44.06	8.24	0.87	13-65	28-60	-0.136

Note. PCL-5 = PTSD Symptom Severity; PSQI = Insomnia; NDQ = Nightmare Distress.

Table 4. Descriptive Data for Repeating Nightmares, Replicative Nightmares, Recurrent Nightmares, and Time Since the Last Repeating Nightmare

Variable	N	M	SD	Range	Skew
Repeating Nightmares	66	15.47	13.63	0-60	1.02
Replicative Nightmares	67	7.99	11.32	0-56	2.49
Recurrent Nightmares	67	9.61	11.05	0-64	2.44
Time Since the Last Repeating Nightmare	56	3.95	3.89	1-15	1.83

Descriptive analyses were conducted to better understand how demographic characteristics of participants were related to study variables. Due to the lack of variation

in gender and ethnicity in the study, analyses were not run to examine the relationship between these demographic variables and the study constructs.

After eliminating the one significant outlier for the demographic variable, Age, it was analyzed in relation to the main study variables using a bivariate correlation analysis and was found to be significantly and negatively correlated with PTSD ($r = -0.348$, $p = 0.004$, $N = 68$). This finding indicates that in the participant sample, older participants had lower PTSD symptom severity. Neither income nor participation in counseling following the most recent trauma experience were found to be significant when examined in relation to the study variables. An analysis of variance (ANOVA) was run on income and the study variables and an independent sample t test was conducted for counseling attendance. An independent sample t test analysis was run to examine if differences existed between participants who reported taking medication for nightmares and those who did not for each of the variables in the study. This analysis indicated no significant differences between groups for any of the study variables.

To investigate the role that years since the IPV ended might play in how participants experienced the study variables, each participants years since IPV was entered into a bivariate correlation analysis with all the main variables used in analyses. The demographic variable of years since the IPV ended was generated from entering the number of years reported and adding the percentage of a year that participants had entered as months (e.g., 1 year and 6 months was entered at 1.5 years). No significant relationships were found.

A t-test was run to determine whether participants having children were significantly different in terms of their mean scores on the study variables compared to those without children. A significant difference in mean scores on recurrent nightmares between groups ($t = 1.20$, $p = 0.002$) was found. The group sizes were 43 with children and 24 without children. A post-hoc G*Power (Faul et al., 2007) analysis was run and it was determined that the power was too low for this finding to be interpretable (0.36).

Finally, independent t- tests were run to explore relationships between types of abuse experienced and the main study variables. In these analyses it was found that participants who reported experiencing physical abuse compared to those who did not differed significantly in their mean scores on PSQI ($t = -0.94$, $p = 0.025$), Time Since the Last Repeating Nightmare ($t = 1.23$, $p = 0.04$), and Repeating Nightmare ($t = -1.04$, $p = 0.043$). However, this was not a meaningful analysis because there were few participants who did not endorse having experienced physical abuse: eight of 57, eight of 54, and 11 of 63 respectively. For the tests, a post-hoc G*Power (Faul et al., 2007) analysis was run and the power was not sufficient on any of the t tests to indicate that the results were interpretable (0.19, 0.26, and 0.32 respectively). A significant difference in mean scores was found between participants who reported experiencing emotional abuse and those who did not in relation to the variable Replicative Nightmares ($t = -0.74$, $p = 0.049$). For this analysis, 56 participants had endorsed emotional abuse and seven had not. A post-hoc G*Power (Faul et al., 2007) analysis indicated the power was too low (0.23) to give any credibility to this observed difference in means. Verbal abuse did not correlate significantly with any of the study variables. The difference in mean scores between

those who had experienced sexual abuse and those who had not on the variable of Time Since the Last Repeating Nightmare was significant ($t= 2.30, p = 0.025$). This finding is based on an N of 54 with 41 participants reporting experiencing sexual abuse. A post-hoc G*Power (Faul et al., 2007) analysis shows this analysis had a medium effect size (Cohen's $d = 0.62$) but a power of 0.61, which suggests the need for caution in interpreting this finding.

Analyses for RQ1

Research question one asked: Is there a significant correlational relationship between the frequency of repeating nightmares (recurrent and replicative nightmares) and the measures for insomnia, nightmare distress, and PTSD symptom severity reported over the past month among IPV survivors?

Table 5. Psychometric Properties of the Variables in RQ1

Variables	N	M	5% Trimmed Mean	SD	Range	Skew
PCL-5	69	49.26	49.67	14.64	10-76	-0.45
PSQI	61	11.70	11.67	3.34	5-21	0.03
NDQ	70	44.06	44.11	8.24	28-60	-0.14
Repeating Nightmares	68	17.34	15.42	17.26	0-84	1.72
Repeating Nightmares without Outliers	66	15.47	14.49	13.63	0-60	1.02

Note. PCL-5 = PTSD Symptom Severity; PSQI = Insomnia; NDQ = Nightmare Distress.

Descriptive analyses were conducted for the variables in the first RQ. All the variables met the test for normality and did not contain significant outliers except for the

variable of Repeating Nightmares. Repeating Nightmares was significant on the Shapiro-Wilk normality test and therefore, did not meet normality. In addition, Repeating Nightmares had two significant outliers. In the descriptives, the 5% trimmed mean showed that the mean for Repeating Nightmares with the 5% of highest and lowest values removed was 15.29 compared to 17.20 with the highest and lowest 5% of scores included. This difference between means seemed large, and a multivariate regression using Repeating Nightmares, PCL-5, NDQ, and PSQI was run and Cook's D was generated to test for outliers. The regression indicated that two outliers within the variable, Repeating Nightmares, were significantly affecting the results (the Cook's D scores for these two outlying variables were 0.15 and 0.21, which exceeded the threshold score for Cook's D that was calculated using the formula $4/[N-k-1]$ that equaled 0.08 in this case), therefore they were eliminated. To test whether the non-normal distribution of Repeating Nightmares was problematic for the regression, the studentized and standardized residuals were both examined for normality. These error terms were not significant on the Shapiro-Wilk test, and therefore, the multivariate regression met the normality assumption. The multivariate regression also indicated that multicollinearity was not a problem as the tolerances ranged from 0.50 to 0.70. These tolerances are well above the tolerance score of 0.20, at or below which multicollinearity is indicated.

After assuring that the variables met the assumptions, a bivariate correlation was conducted. The results of the bivariate regression provided the following correlation matrix (Table 6).

Table 6. Bivariate Correlations of Variables in RQ1

Variable	Repeating Nightmares	PSQI	NDQ	PCL-5
Repeating Nightmares	-			
	0.350**			
PSQI	(N = 56)	-		
	0.538**	0.519**		
NDQ	(N = 64)	(N = 59)	-	
	0.488**	0.384**	0.590**	
PCL-5	(N = 62)	(N = 57)	(N = 66)	-

Note. PCL-5 = PTSD Symptom Severity; PSQI = Insomnia; NDQ = Nightmare Distress.

** $p \leq 0.01$ (2-tailed).

From the correlation matrix, it can be seen that there are significant relationships between repeating nightmares, PTSD, insomnia, and nightmare distress. These relationships are all at Pearson product-moment correlation coefficient values (r values) that indicate moderate correlation.

Based on the analysis, the hypothesis may be evaluated. The hypothesis for RQ1 was:

- a) *Ratings of insomnia, PTSD symptom severity, and nightmare distress for the past month will significantly and positively correlate with repeating nightmare frequency over the past month, both individually and in combination, among a sample of IPV survivors.*
- b) *In addition, insomnia and PTSD symptom severity will correlate significantly more strongly with the frequency of repeating nightmares compared to nightmare distress.*

c) Insomnia and PTSD symptom severity will not significantly differ in their correlational relationship with the frequency of repeating nightmares.

The first part of the hypothesis (a), namely that the ratings of insomnia, PTSD symptom severity, and nightmare distress for the past month will significantly and positively correlate with repeating nightmare frequency over the last month both individually and in combination, was partially confirmed with all variables individually correlating with repeating nightmares significantly and positively. Evaluating the combination of independent variables in relation to repeating nightmares required a multivariate regression to test the hypothesis, which is described below.

The second part of the hypothesis (b), that insomnia and PTSD symptom severity will correlate significantly more strongly with the frequency of repeating nightmares compared to nightmare distress must be rejected. Instead it was found that nightmare distress was most strongly related to repeating nightmares ($r = 0.538$, $p < 0.001$, $N = 64$), followed by PTSD symptom severity ($r = 0.488$, $p < 0.001$, $N = 62$) and insomnia ($r = 0.350$, $p = 0.008$, $N = 56$), in that order.

Finally, the third part of the hypothesis (c) that insomnia and PTSD symptom severity will not significantly differ in their correlational relationship with the frequency of repeating nightmares was accepted after running a Fischer's z transformation for correlation coefficients. This analysis was conducted using the online program from VassarStats (Lowry, 2015). The results of this analysis showed that the PSQI score was not significantly different from the PCL-5 score ($z = -0.89$, 2-tail $p = 0.37$).

A multivariate regression was then run to better understand the relationship between the variables. A stepwise multivariate regression was first run with repeating nightmares as a criterion variable and NDQ, PCL-5, and PSQI as predictor variables. The analysis was used to evaluate the hypothesis that nightmare distress, PTSD symptom severity, and insomnia in combination would significantly correlate with repeating nightmares (Results are in Table 7). Based on this analysis, it was determined that the variables in combination did not significantly and positively correlate with repeating nightmares, as only nightmare distress was significant in the model (Beta = 0.57, $p < 0.001$), accounting for 32% of the variance in repeating nightmares. Therefore, the hypothesis was rejected because in combination all the variables did not significantly contribute to explaining the variance in repeating nightmares. A post-hoc G*Power (Faul et al., 2007) analysis of the regression analysis indicated a large effect size (Cohen's $f^2 = 0.49$) and a power of 0.99.

Table 7. Stepwise Regression Analysis of Dependent Variable, Repeating Nightmares, and Independent Variables, Nightmare Distress, PTSD Symptom Severity, and Insomnia

Independent Variable	B	SE B	β	t	p	ΔR^2
STEP 1						0.32
NDQ	0.96	0.19	0.57	4.96*	0.000	
EXCLUDED VARIABLES						
PSQI				0.25	0.804	
PCL-5				1.99	0.052	

Note. PCL-5 = PTSD Symptom Severity; PSQI = Insomnia; NDQ = Nightmare Distress. Dependent Variable = Repeating Nightmares.

* $p \leq 0.001$ (2-tailed).

Post-hoc analysis for RQ1.

PTSD is a condition that many IPV survivors face. Understanding the relationship between PTSD and insomnia, repeating nightmares, and nightmares distress was a central focus of the current study. Therefore, a stepwise multivariate was run with PCL-5 as the criterion variable and NDQ, Repeating Nightmares, and PSQI as predictor variables (See results in Table 8). This regression indicated that 38.4% (the adjusted R square value) of the variance in PTSD symptom severity was explained by nightmare distress and that this relationship was significant below a p value of 0.001. In this model, nightmare distress was the only significant coefficient affecting the variance of the model. Meaning that nightmare distress correlated strongly with PTSD symptom severity for IPV survivors in this study

A post-hoc G*Power (Faul et al., 2007) analysis was run on this model to calculate the power and effect size. Based on that analysis, it was determined that the analysis had a large effect size (Cohen’s $f^2 = 0.62$) and a power of 99.98.

Table 8. Stepwise Regression Analysis of the Dependent Variable, PTSD Symptom Severity, and Independent Variables, Nightmare Distress, Repeating Nightmares, and Insomnia

Independent Variable	B	SE B	β	t	p	ΔR^2
STEP 1						0.38
NDQ	1.08	0.19	0.63	5.73*	0.000	
EXCLUDED VARIABLES						
Repeating Nightmares				1.99	0.052	
PSQI				0.55	0.587	

Note. PSQI = Insomnia; NDQ = Nightmare Distress. Dependent Variable = PTSD Symptom Severity.
*p ≤ 0.001 (2-tailed).

Since the instrument, PSQI, was found not to contribute to the model and to be more weakly correlated with PTSD symptom severity in the correlation matrix, the stepwise multivariate regression was rerun without the variable, insomnia, to better evaluate the relationship between the independent variables, PTSD symptom severity and nightmare distress, with the dependent variable, repeating nightmares. The results of this analysis are below in Table 9.

Table 9. Stepwise Regression Analysis of the Dependent Variable, PTSD Symptom Severity, and Independent Variables, Nightmare Distress and Repeating Nightmares

Independent Variable	B	SE B	β	t	p	ΔR^2
STEP 1						0.34
NDQ	1.01	0.18	0.59	5.57**	0.000	
STEP 2						0.39
NDQ	0.74	0.20	0.44	3.66**	0.001	
Repeating Nightmares	0.31	0.13	0.30	2.51*	0.015	

Note. PSQI = Insomnia; NDQ = Nightmare Distress. Dependent Variable = PTSD Symptom Severity.

**p ≤ 0.001 (2-tailed).

*p ≤ 0.05 (2-tailed).

In the stepwise multivariate regression with only repeating nightmares and nightmare distress as independent variables, the model explained 39.3% of the variance in PTSD symptom severity, and both repeating nightmares and nightmare distress were significant coefficients in the model. From this analysis, it may be concluded that both repeating nightmares (Beta = 0.298, p = 0.015) and nightmare distress (Beta = 0.435, p = 0.001) are significantly correlated with PTSD symptom severity and account for different portions of the variance, with repeating nightmares accounting for a smaller portion than

nightmare distress. This is shown in the partial correlations which indicate that if in the analysis nightmare distress is controlled, then the Pearson r relationship between repeating nightmares and PTSD symptom severity is 0.315 at $p = 0.015$, and if repeating nightmares is controlled, then the relationship between nightmare distress and PTSD symptom severity is $r = 0.436$ at $p = .001$.

A post-hoc G*Power (Faul et al., 2007) analysis was run on this regression analysis to determine the power and effect size. Based on that analysis, it was determined that the effect size was large (Cohen's $f^2 = 0.65$) at a power of 99.99.

Analyses for RQ2

Research question two asked, is there a significant correlational relationship between the time since the last replicative or recurrent nightmare and PTSD symptom severity among IPV survivors? The constructs of Time Since the Last Repeating Nightmare and PCL-5 were first analyzed to test for outliers and normality. PCL-5 was normal and without outliers. Time Since the Last Repeating Nightmare was not normal based on a significant result on the Shapiro-Wilk normality test and a very large skewness and kurtosis, and in addition, it had eight significant outliers based on Cohen's D . The Q-Q plot along with the number of outliers suggested the possibility of a non-normal distribution, however there was not enough data outside of a half a month time period (15 days) to justify a transformation. Instead, a time period of 15 days was used. This time period was chosen because half a month was a time period that contained the majority of participant responses and would therefore, allow for the responses to be interpretable in relation to the PCL-5 scores. Using the time frame of 15 days resulted in

the elimination of 10 participants responses, leaving 53 participants for analysis. When the Time Since the Last Repeating Nightmare data from the past 15 days was analyzed for normality, the skewness was 1.825 and kurtosis was 2.506. The Shapiro-Wilk normality test was still significant, indicating that the variable did not fit a normal distribution. However, based on the answers being reports of time and the lack of outliers, the regression analysis was run with Time Since the Last Repeating Nightmare adjusted to only contain responses of up to 15 days time. Psychometric properties of the variables for RQ2 are provided in Table 10.

Table 10. Psychometric Properties of the Variables in RQ2

Variables	N	M	5% Trimmed Mean	SD	Range	Skew
PCL-5	69	49.26	49.67	14.64	10-76	-0.45
Time Since the Last Repeating Nightmare	65	61.57	8.98	359.20	1-2880	7.80
Time Since the Last Repeating Nightmare without Outliers	56	3.95	3.53	3.89	1-15	1.83

Note. PCL-5 = PTSD Symptom Severity.

After running the analysis, it was found that a significant negative correlation existed between Time Since the Last Repeating Nightmare and PTSD symptom severity ($r = -0.33$; $p = 0.007$) (see results in Table 11). The R squared value of the analysis indicated that 11.1% of the change in variance in PTSD symptom severity was accounted

for by Time Since the Last Repeating Nightmare and that this relationship was significant at $p = 0.015$.

Table 11. Linear Regression Analysis of Time Since the Last Repeating Nightmare and PTSD Symptom Severity

Independent Variable	B	SE B	β	t	p	R^2
Time Since the Last Repeating Nightmare	-1.25	0.50	-0.33	-2.52*	0.015	0.11

Note. Dependent Variable = PTSD Symptom Severity.

* $p \leq 0.05$ (2-tailed).

The studentized and standardized residuals were analyzed for normality and found to be normal based on not being significant in the Shapiro-Wilk test and having a skewness of -0.475 and -0.484 and a kurtosis of -0.472 and -0.490 respectively. Therefore, the normality assumption for the regression was passed.

A post-hoc G*Power (Faul et al., 2007) analysis indicated that the analysis achieved a medium effect size (Cohen's $f^2 = 0.12$) and a power of 0.71, which is a lower power than the target power of 0.80.

The results of this analysis support the acceptance of the hypothesis that time since the last replicative or recurrent nightmare would significantly and negatively correlate with PTSD symptom severity. However, the lower power indicates that the results need to be regarded cautiously.

Analyses for RQ3

Research question three asked, is there a significantly different correlational relationship between the frequency of replicative nightmares and insomnia compared to

the frequency of recurrent nightmares and insomnia? The variables of insomnia, replicative nightmares, and recurrent nightmares were first analyzed to test for outliers and normality. Table 12 details the psychometric properties of the variables. The instrument, PSQI, was normal and without outliers based on a Cohen's D analysis. Both replicative nightmares and recurrent nightmares were not normally distributed based on the Shapiro-Wilk normality test and both contained outliers. Because the outliers were consistent with previous research reports on the frequent occurrence of PTNMs in IPV survivors (Krakow et al., 2002; Rasmussen, 2007), the outliers were left in after this exploratory analysis. In order to assess for whether the outliers were problematic in the regression and whether the normality assumption for the regression was met, a multivariate regression was conducted. In that regression, the studentized and standardized residuals were found to be normal based on the Shapiro-Wilk normality test and the skewness and kurtosis were 0.155 and 0.020 respectively for the standardized residual and 0.161 and 0.010 respectively for the studentized residual. The analysis showed that the outliers in replicative nightmares and recurrent nightmares were not significant so they were not excluded. The multivariate regression also indicated that multicollinearity was not a problem as the tolerances for both replicative nightmares and recurrent nightmares in relation to the instrument, PSQI, were 0.938. These tolerances are above the tolerance score of 0.1, at or below which multicollinearity is indicated (Tabachnick & Fidell, 2001). Based on these analyses, it was determined that both multicollinearity and normality assumptions were met.

Table 12. Psychometric Properties for the Variables in RQ3

Variables	N	M	5% Trimmed Mean	SD	Range	Skew
PSQI	61	11.70	11.67	3.34	5-21	0.03
Replicative Nightmares	67	7.99	6.41	11.32	0-56	2.49
Recurrent Nightmares	67	9.61	8.30	11.05	0-64	2.44

Note. PSQI = Insomnia.

The correlational matrix of the variables indicates that only replicative nightmares ($r = 0.344$, $p = 0.008$) are significantly correlated with insomnia (See results in Table 13). The hypothesis for RQ3 was that both replicative and recurrent nightmare frequencies will positively correlate with insomnia, but replicative nightmare frequency will correlate more strongly with insomnia. Since, only replicative nightmares significantly correlated with insomnia, the hypothesis was rejected. A stepwise multivariate regression was then conducted to better allow for an evaluation of the relationship between the variables (See results in Table 14).

Table 13. Bivariate Correlation of Insomnia, Replicative Nightmares, and Recurrent Nightmares

Variable	PSQI	Replicative Nightmares	Recurrent Nightmares
PSQI	-		
Replicative Nightmares	0.34* (n = 58)	-	
Recurrent Nightmares	0.08 (n = 58)	0.18 (n = 66)	-

Note. PSQI = Insomnia.

* $p \leq 0.05$ (2-tailed).

Table 14. Stepwise Regression Analysis of the Dependent Variable, Insomnia, and Independent Variables, Replicative Nightmares and Recurrent Nightmares

Independent Variable	B	SE B	β	t	p	ΔR^2
STEP 1						0.10
Replicative Nightmares	0.10	0.04	0.34	2.74*	0.008	
EXCLUDED VARIABLE						
Recurrent Nightmares				0.16	0.874	

Note. Dependent Variable = Insomnia.

* $p \leq 0.01$ (2-tailed).

In the stepwise multivariate regression, only replicative nightmares significantly contributed to the model and were used in the analysis. Recurrent nightmares did not significantly contribute to the model based upon the non-significant Beta of 0.020 at $p = 0.874$. The R square of the regression model with only replicative nightmares as a predictor variable was 0.103 at $p = 0.008$, indicating that 10.3% of the variance in insomnia is accounted for by replicative nightmares. The residuals of this analysis were tested and found to be normal, satisfying the normality assumption.

A post-hoc G*Power (Faul et al., 2007) analysis of the data revealed that this regression had a medium effect size (Cohen's $f^2 = 0.13$) at a power of 0.78, which is very close to the target power of 0.80.

Post-hoc analyses for RQ3.

Since in the analyses related to the first RQ it was found that PTSD is significantly and strongly correlated with Repeating Nightmares and Repeating Nightmares are composed of both replicative and recurrent nightmares, a bivariate

correlation and stepwise multivariate regression were conducted to better allow for an evaluation of how replicative and recurrent nightmares correlate with PTSD. This analysis was also conducted to follow up on the concept suggested by Levin and Nielsen's (2010) Neurocognitive model. This model suggests that repeating nightmares result from impaired hippocampal activation and the impaired generation of extinction memories that accompanies that impaired hippocampal activation. Based on this, it would be expected that both types of repeating nightmares would significantly correlate with PTSD symptom severity.

The analysis using PTSD symptom severity as the dependent variable and recurrent nightmares and replicative nightmares as independent variables was run. The results of this analysis indicate a significant relationship between the independent variables and PTSD symptom severity (See results in Table 15). The model accounted for 20.8% percent of the variance in PTSD symptom severity, and both variables significantly contributed to the model. The Beta coefficients of the two independent variables (Replicative Nightmares at Beta = 0.339 at $p = 0.005$ and Recurrent Nightmares at Beta = 0.293 at $p = 0.014$) further reflected the strength of relationship between the independent variables and PTSD symptom severity. This result, taken with the finding that only replicative nightmares are significantly, though moderately, correlated with insomnia, suggests that all repeating nightmares have a significant relationship with PTSD symptom severity and that the manifestation of the type of repeating nightmare, either replicative or recurrent, may be impacted by the degree of sleep impairment individuals are experiencing. A post-hoc G*Power (Faul et al., 2007) analysis revealed

that this regression had a large effect size (Cohen's $f^2 = 0.26$) at a power of 0.95, indicating a strong power.

Table 15. Stepwise Regression Analysis of the Dependent Variable, PTSD Symptom Severity, and Independent Variables, Replicative Nightmares and Recurrent Nightmares

Independent Variable	B	SE B	β	t	p	ΔR^2
STEP 1						0.14
Replicative Nightmares	0.47	0.15	0.39	3.27**	0.002	
STEP 2						0.21
Replicative Nightmares	0.41	0.14	0.34	2.93**	0.005	
Recurrent Nightmares	0.37	0.15	0.29	2.53*	0.014	

Note. Dependent Variable = PTSD Symptom Severity.

** $p \leq 0.01$ (2-tailed).

* $p \leq 0.05$ (2-tailed).

Results Summary

The results of the analyses led to a rejection of hypotheses one parts (a) and (b) and hypothesis three and the acceptance of hypothesis one part (c) and hypothesis two. Specifically, the results from the analyses for RQ1 show that repeating nightmares correlate strongly and significantly with PTSD and nightmares distress and significantly and moderately with insomnia, that PTSD and nightmare distress correlate significantly and strongly with insomnia, that PTSD and insomnia do not significantly differ in the strength of their relationship with repeating nightmares, and that the variance in repeating nightmares was only significantly explained by nightmare distress when all variables were entered into a stepwise regression. Nightmare distress accounted for 32% of the

variance in repeating nightmares. The results from the analysis for RQ2 show that there is a significant, moderate, negative correlation between time since IPV was last experienced and PTSD and that the time since the last IPV was experienced explains 11.1% of the variance in PTSD scores. The analyses for RQ3 show that replicative nightmares are significantly and moderately correlated with insomnia, while recurrent nightmares are not significantly correlated with insomnia. The results also show that 10% of the variance in insomnia is accounted for by replicative nightmares.

In addition to the main analyses, post-hoc analyses were performed to better understand the relationship between variables. In those analyses, it was found in a stepwise regression that nightmare distress and repeating nightmares in combination accounted for 38% of the variance in PTSD. It was also found that both replicative and recurrent nightmares correlate moderately with PTSD, and in a stepwise regression, the variables of replicative and recurrent nightmares in combination accounted for 21% of the variance in PTSD.

CHAPTER V

DISCUSSION

Intimate partner violence survivor quote (C. Murray, personal communication, October 29, 2014):

...I am starting to think that maybe I could begin another relationship. My nightmares are getting less. I am making more friendships that I can call true friends and a support network.

The present study sought to assess relationships between replicative and recurrent posttraumatic nightmares and insomnia, nightmare distress, and Posttraumatic Stress Disorder in survivors of interpersonal violence. Chapter IV presented detailed findings regarding the participants, instruments and hypotheses involved in the present study. The present chapter will provide a discussion of the study participants, assessments and statistical analyses as well as a discussion of the limitations of the study. The chapter will conclude by providing insights into how these findings contribute to the growing body of knowledge relating to Contemporary Theory of Dreaming and the AMPHAC/AND Neurocognitive Model, counseling practice, and counselor education in addition to potential future research directions that could further inform this line of research.

This study builds on past research on the PTNMs of IPV survivors along with the work supporting CTD and the AMPHAC/AND model. Previously researchers have shown that PTNMs of IPV survivors are often disturbing (Rasmussen, 2007), are linked

to PTSD (Krakow et al., 2002; Pigeon et al., 2011; Rasmussen, 2007), can be difficult to treat (Phelps et al., 2008; Spoomaker & Montgomery, 2008), and are reported to manifest in replicative and recurrent forms (Krakow et al., 2002; Mellman et al., 2001; Rasmussen, 2007; Wittmann et al., 2007). However, past researchers have not directly looked at the relationship between the frequency of types of repeating nightmares and PTSD in IPV survivors, nor in other individuals suffering from PTSD. Both CTD and the AMPHAC/AND model provide explanations for the generation of repeating nightmares along with proposing nightmares that create new associations may facilitate recovery from trauma, while repeating nightmares are an impairment of the trauma recovery process (Hartmann, 2011; Levin & Nielsen, 2009). CTD suggests that insomnia leads to the generation of repeating nightmares (Hartmann, 2011), while the AMPHAC/AND model attributes affective distress (measured as nightmare distress in this study) as the cause of repeating nightmares (Levin & Nielsen, 2007). The present study explored the relationship between types of repeating nightmares and PTSD. In addition, this study looked at two other variables linked to the generation of repeating nightmares, namely insomnia, as proposed in CTD, and nightmare distress, as postulated by the AMPHAC/AND model.

There are a number of findings from the current study that extend our understanding of the role that PTNM's play in the lives of IPV survivors. Broadly, the results of analyses indicated that the distress survivors attributed to nightmares along with the number of repeating nightmares they experienced significantly correlated with the severity of the PTSD symptoms they were experiencing. In other words, IPV survivors

who reported experiencing distress related to their PTNMs also reported greater PTSD symptoms. Adding more detail to this finding is that insomnia seemed to have a weaker relationship to PTSD symptoms than nightmare distress or repeating nightmare frequency. This indicates nightmare distress was more impactful and the frequency with which an IPV survivor experienced repeating nightmares was more indicative of PTSD symptoms than was insomnia. Of the two types of nightmares that make up repeating nightmares, only replicative nightmares were found to significantly, though weakly, correlate with insomnia. However, both replicative and recurrent nightmares correlated significantly with PTSD symptom severity at nearly equal levels. In aggregate, what these findings suggest is that among the sample of IPV survivors who participated in the current study, insomnia was not a key reason for repeating nightmares as suggested by Hartmann (2011) in his Contemporary Theory of Dreaming, instead repeating nightmares were most strongly linked to affective distress as posited by Levin and Nielsen's (2009) AMPHAC/AND neurocognitive model. The implications and findings of this study are explored in more detail in the following sections beginning with an examination of the individual RQs in relation to findings and concluding with the broader theoretical implications, counseling implications, and limitations of the study.

Research Question 1- Discussion

Research question one explored the relationship between repeating nightmare frequency, insomnia, nightmare distress, and PTSD symptom severity. The hypothesis for this research question was:

a) Ratings of insomnia, PTSD symptom severity, and nightmare distress for the past month will significantly and positively correlate with repeating nightmare frequency over the past month, both individually and in combination, among a sample of IPV survivors.

b) In addition, insomnia and PTSD symptom severity will correlate significantly more strongly with the frequency of repeating nightmares compared to nightmare distress.

c) Insomnia and PTSD symptom severity will not significantly differ in terms of the frequency of repeating nightmares.

The variables of insomnia, PTSD symptom severity, and nightmare distress significantly correlated with repeating nightmares individually but not in combination. Insomnia did not significantly correlate with repeating nightmares when in combination with PTSD symptom severity and nightmare distress. Part a) of the hypothesis was therefore rejected. Insomnia and PTSD symptom severity did not correlate more strongly with the frequency of repeating nightmares compared to nightmare distress, in fact it was found that nightmare distress was correlated more strongly with repeating nightmare frequency than insomnia or PTSD. Therefore, the second part of the hypothesis (b) was rejected. Finally, the final part of the hypothesis (c) stated that insomnia and PTSD symptom severity would not significantly differ in relation to the frequency of repeating nightmares. This third part of the hypothesis was confirmed, as it was found that the Pearson correlations of insomnia and PTSD to repeating nightmares did not significantly differ in strength.

The rejection of the first two parts of the hypothesis for RQ1 has implications for CTD, however the confirmation of part (c) suggests that comparative interpretation of the differing strengths of the correlations of repeating nightmares to insomnia and PTSD is not possible. The idea that insomnia may be primarily responsible for the generation of repeating nightmares appears to be contradicted by the finding of only medium correlation between the variables. If insomnia were a significant cause of repeating nightmares, then a much stronger correlation between the variables should have been found. However, even with the rejection of the RQ1 hypothesis parts (a) and (b), the relationship between repeating nightmares and PTSD appeared strong based on the higher correlation between those variables. This finding suggests that the CTD proposal that repeating nightmares are linked to an impairment of recovery from trauma may have some validity (Hartmann, 2011).

The findings that resulted from the analyses of RQ1 suggest that Levin and Nielsen's (2009) AMPHAC/AND model of nightmares are a better fit for the findings than what would be expected based on Hartmann's (2011) CTD. The strength of the relationship between nightmare distress and PTSD and repeating nightmares and the comparative weaker relationship between insomnia and repeating nightmares contraindicates the predictions of the CTD. Levin and Nielsen (2009) proposed that nightmare distress is related to affective distress, which is the way an individual perceives emotional pain. Affective distress is described as a learned reaction to emotional pain that is related most strongly to the anterior cingulate cortex (ACC) region of the brain (Eisenberger, 2015; Rotge et al., 2014). Levin and Nielsen (2007) describe how differing

affective distress responses correspond to differing activations of the ACC. Since the ACC modulates the hippocampus and the hippocampus is thought to be significantly responsible for the generation of new fear extinction memories (Levin & Nielsen 2007, 2009), the finding that nightmare distress is strongly linked to more severe PTSD symptoms is therefore consistent with Levin and Nielsen's AMPHAC/AND model.

Due to the fact that the current study was cross-sectional, the causal relationship between variables cannot be evaluated. Therefore, future studies examining these variables and including changes in frequencies of associative nightmares and repeating nightmares should use a longitudinal design. A longitudinal design would significantly contribute to understanding whether the relationship between variables fits with CTD or the AMPHAC/AND model. Research findings demonstrating that associative nightmares precede decreases in PTSD symptom severity would provide direct support for both CTD and the AMPHAC/AND model. Finding that insomnia consistently occurs on the same nights as repeating nightmares, would support Hartmann's (2011) idea that insomnia leads to repeating nightmares. Finding that affective distress precedes repeating nightmares would support the AMPHAC/AND model. Subsequently, a longitudinal design could serve to clarify important questions related to this line of inquiry.

Research Question 2- Discussion

The second research question explored the relationship between the variables PTSD symptom severity and Time Since the Last Repeating Nightmare. The hypothesis stated that, *Time since the last replicative or recurrent nightmare will significantly and negatively correlate with PTSD symptom severity among a sample of IPV survivors.* This

hypothesis was accepted cautiously due to the power of 0.71. The medium sized significant, negative correlation between the variables of PTSD symptom severity and Time Since the Last Repeating Nightmare is consistent with what was expected from the theorized relationships between repeating nightmares and PTSD in both CTD and the AMPHAC/AND model, though the current study design did not allow for any evaluation of causal relationships. CTD describes dreaming and nightmares as having a healing role through the generation of new associations, and further describes the impairment of that association as contributing to individuals experiencing difficulty in recovering from trauma. The AMPHAC/AND model describes the generation of new extinction memories in dreaming as important to trauma recovery, therefore the finding that more repeating nightmares were correlated with greater PTSD symptom severity is consistent with the model.

Research question two was developed to explore the relationship between Time Since the Last Repeating Nightmare and PTSD symptom severity, however the sample of IPV survivors in the study had little variability in time since their last repeating nightmare. In fact, of the 63 participants, 53 reported times since the last repeating nightmare of 15 days or less. Both CTD and the AMPHAC/AND model that associative dreams contribute to trauma recovery, but this relationship lacks clear research support or understanding. In other words, if there is a relationship between repeating nightmares and PTSD maintenance, it is not clear how frequently repeating nightmares need to occur in order to be indicative of impairment. Therefore, it is not clear if the length of time since the last repeating nightmare analyzed in this study is enough to accurately portray the

relationship between Time Since the Last Repeating Nightmare and PTSD symptom severity. However, despite the lack of variability, a significant relationship between time since the last repeating nightmare and PTSD was found.

The findings of previous researchers led to the expectation that as time since the last repeating nightmare increased a decrease in PTSD would be observed; this was indeed what was found in the current study. The expectation for the finding was based on past studies that for those with PTSD compared to those without PTSD, replicative nightmares and all nightmares were more frequently reported in PTSD sufferers (Krakow et al., 2002; Phelps et al., 2008; Pigeon et al., 2011; Pigeon, Campbell, Possemato, & Ouimette, 2013). The fact that the current study focused on all repeating nightmares and the variable of time since the last repeating nightmare were both new approaches to understanding the relationship between PTNMs and PTSD, and therefore, are important additions to the research currently existing.

The findings of the current study lead to the conclusion that as the time since the last repeating nightmare increases, there is a decrease in PTSD symptom severity. This finding is consistent with earlier research findings suggesting that replicative nightmares and recurrent nightmares occur in those with PTSD, and adds to the earlier research by providing support for the idea that the two vary together.

This finding that as time since the last repeating nightmare increases, PTSD symptom severity decreases supports the propositions in both CTD and the AMPHAC/AND model that repeating nightmares are linked to impaired trauma recovery. The finding also suggests the possibility that it is not the presence of nightmares per say,

but the presence of repeating nightmares that is linked to impaired trauma recovery. To better evaluate this idea, future researchers must examine associative and repeating nightmares in relation to PTSD. If future researchers find that associative dreaming increases as repeating nightmares decrease, this would support the healing role of associative nightmares put forward by CTD and the AMPHAC/AND model. In addition, future findings that time since the last repeating nightmare was not a result of the dreamer failing to remember repeating nightmares but instead was due to the occurrence of associative dreams would better support the proposed healing role.

As it stands, it is unclear what rationale best explains the relationship between time since the last repeating nightmare and PTSD symptom severity. It is possible that a lack of dreaming is linked to recovery from trauma, or that as the symptoms of PTSD decrease the frequency of repeating nightmares is, as a result decreased. Other possibilities include an idea put forward by the AMPHAC/AND model, namely that affective distress impairs the dreaming process leading to repeating nightmares, and then, the occurrence of repeating nightmares prevents the generation of new fear-extinction memories in dreaming. Another possibility is Hartmann's idea that sleep impairment prevents individuals from reaching the later cycles of sleep that allow for dreaming that integrates trauma emotion into the individuals' memories and calms the emotion. The possibility is rendered less likely based on the results of RQ1. However, the AMPHAC/AND explanation is consistent with the findings from the RQ1 (i.e., nightmare distress was strongly correlated with both repeating nightmares and PTSD).

In order to better evaluate the finding that time since the last repeating nightmare and PTSD symptom severity are significantly and inversely correlated, more research is needed. Research evaluating the frequencies of both repeating nightmares and associative nightmares for individuals in relation to PTSD in a longitudinal study would help to explain the causal relationships between repeating nightmares, associative nightmares, and PTSD.

Research Question 3- Discussion

The final research question examined the variables insomnia, replicative nightmares, and recurrent nightmares. The hypothesis for this question was, *Both replicative and recurrent nightmare frequencies will positively correlate with insomnia, but replicative nightmare frequency will correlate more strongly with insomnia.* The hypothesis was based on the CTD proposal that insomnia impairs normal associative dreaming resulting in repeating nightmares, as well as research that describes REM sleep as important for consolidating emotional memories as REM sleep occurs in cycles throughout the night, with later cycles being more linked to emotion and increased associative content. The hypothesis for RQ3 was rejected because only replicative nightmares were significantly correlated with insomnia. The correlation between replicative nightmares and insomnia was at a medium size, while recurrent nightmares were not significantly related to insomnia. This finding was contrary to the CTD idea that insomnia may be a significant cause of the impairment of normal dreaming that leads to repeating nightmares. The findings also suggest that replicative nightmares may still be related to insomnia, though any causal link is unclear.

Previous researchers have shown that there are high levels of insomnia and high levels of over-all nightmares occurring among individuals with PTSD (Krakow et al., 2002; Nadorff et al., 2013; Pigeon et al., 2011, 2013). Additionally, researchers have also found that high levels of insomnia and replicative nightmares coexist in populations of individuals with PTSD (Davis, Byrd, Rhudy, & Wright, 2007; Davis et al., 2011). However, no researchers have looked for correlations between replicative and recurrent nightmares and insomnia for individual with PTSD or IPV survivors. Therefore, the current finding that replicative nightmares correlate significantly with insomnia, while recurrent nightmares do not among IPV survivors, is new and extends the extant research. Specifically, the current findings make it clear that distinctions between replicative and recurrent nightmares appears to be important for better understanding the relationship of PTNMs to other variables.

The finding in RQ1 that repeating nightmares had a strong relationship with PTSD as well as the relationship between associative dreaming and trauma recovery (described in both CTD and the AMPHAC/AND model) suggested the need to conduct a post-hoc analysis of the relationships of replicative nightmares, recurrent nightmares, and PTSD symptom severity. The result of this analysis revealed that both replicative nightmares and recurrent nightmares had medium and significant relationships to PTSD symptom severity. The relationship between both replicative nightmares and PTSD and recurrent nightmares and PTSD is consistent with the idea that a lack of new associations in nightmares is related to impaired trauma recovery.

Based on the two analyses, insomnia was significantly related to replicative nightmares but not to recurrent nightmares, while both replicative and recurrent nightmares had a significant relationship to PTSD symptom severity. Does this finding indicate that replicative and recurrent nightmares are phenomena related to trauma recovery that manifest differently due to the presence of insomnia? This is a possible interpretation of the findings based on the proposition of the AMPHAC/AND model that hippocampal impairment results in the lack of generation of new fear extinction memories in nightmares (Levin & Nielsen, 2007), and the research supporting differential hippocampal activation across the sleep cycle (Deliens et al., 2014; Desseilles et al., 2011). Such a conclusion is speculative however, and requires more research to confirm if there is, in fact, a causal relationship between insomnia and replicative nightmare generation, between nightmare distress and replicative and recurrent nightmares, and between associative dreams (dreams providing opportunities for new fear extinction memories) and PTSD symptom recovery.

In light of the finding that only replicative nightmares are significantly correlated with insomnia, the CTD proposal that insomnia prompts repeating nightmares appears unlikely. However, that does not mean that insomnia plays no role in the generation of replicative nightmares. The finding of the current study that only replicative nightmares were significantly correlated with PTSD symptom severity prompts the question of whether the two types of repeating nightmares are different phenomenon? An argument against the two types of repeating nightmares being different phenomena is the similar and significant correlation strength both had with PTSD symptom severity. This is

consistent with the proposals from both CTD and the AMPHAC/AND model that it is the impairment of new associations in dreaming and nightmares that inhibits trauma recovery. Clearly, more research is needed to further evaluate these relationships. Although the findings are consistent with the AMPHAC/AND model in particular, they lack the causal indicators needed for a more thorough evaluation of the AMPHAC/AND model.

Another important aspect of the current findings, as they relate to current understandings of PTNMs, is the significant relationship between both replicative and recurrent nightmares and PTSD symptom severity. The fact that both correlations were of similar strength has not been observed in previous research. Phelps et al. (2008) pointed out that there were no credible explanations for the presence of recurrent nightmares that are not replicative in PTSD theories. Furthermore, the similar relationship between replicative and recurrent nightmares and PTSD and categorization of both types as non-associative creates a new approach to understanding and studying the PTNMs that are commonly experienced by individuals with PTSD. The similar correlation strength also adds support to both CTD and AMPHAC/AND's proposals that repeating nightmares are linked to an impairment of trauma recovery.

Implications for CTD and the AMPHAC/AND Model

The results of the current study have implications for the utility of both CTD and the AMPHAC/AND model. Both models describe the generation of associations in dreaming as important for trauma recovery. The significant association between repeating nightmares and PTSD as found in the current study support the proposals in both models.

The finding of a relationship between replicative and recurrent nightmares in regards to PTSD symptom severity among IPV survivors supports the idea from both AMPHAC/AND and CTD that impairment in generating new associations impairs recovery from trauma. The CTD suggests that new associations allows individuals to link emotions related to trauma to other mental images and memories. Through this linkage, the emotions from the traumatic experience are lessened (Hartmann, 2011). The shared significant relationship between PTSD symptom severity and replicative and recurrent nightmares is expected based on this theory. Interestingly, the finding of the current study that insomnia was not correlated to both types of repeating nightmares among IPV survivors is inconsistent with the CTD proposition that insomnia is the cause of repeating nightmares. However, the cross-sectional nature of the current study makes this finding only suggestive. Having a clearer reason within CTD for why repeating nightmares are generated would strengthen the theory.

The finding that nightmare distress strongly correlates with both repeating nightmares and PTSD symptom severity is highly consistent with Levin and Nielsen's (2009) AMPHAC/AND model. The creation of new fear extinction memories through the generation of new associative nightmares and dreams is proposed within the AMPHAC/AND model, which further proposes that affective distress can lead to the impairment of fear extinction memories in dreams and nightmares. Levin and Nielsen (2007) identify nightmare distress as a measure of affective distress related to nightmares. The finding in the current study that high nightmare distress correlates with higher levels of PTSD symptom severity and a greater frequency of repeating nightmares is consistent

with the predictions from the model. The clear explanation of the interactions between brain regions and how they account for the nature of different nightmare experiences based on associative content is a strength of the model. The findings in support of the model indicate that more research is needed to further test the validity of the AMPHAC/AND model. In light of the significant need for effective treatment approaches for IPV survivors with PTSD, such future research will be timely.

Implications for IPV Survivors

The findings of the current study have implications for IPV survivors. Frequent nightmares and PTSD are common consequences for survivors, and as reported in Chapter II, those nightmares are often horrific and can have a profound negative impact for long periods of time after the abuse has ended. Therefore, it is important to better understand the relationship between nightmares and PTSD. The current study took a novel approach to examining the relationship by focusing on nightmares that do not change over time, replicative and recurrent nightmares, from the perspective of two recent theories on the role of nightmares in processing emotions. The findings have been discussed above, but not in terms of what the finding mean for IPV survivors. These implications are described below.

The finding that both recurrent and replicative nightmares, separately and in combination, are significantly correlated with PTSD symptom severity has implications for clinical assessment. Counselors whose clients report recurrent or replicative nightmares should further explore these individuals' trauma histories and assess for PTSD symptoms. This suggestion is consistent with current recommendations for clinical

assessment. The current research also found evidence that clients expressing significant stress because of nightmares may be more likely to be experiencing PTSD. However, the finding that nightmare distress seems to be more strongly related to PTSD than insomnia has not been reported by previous researchers. The great majority of participants in this study reported experiencing insomnia and PTSD symptoms above the cut-off scores. Therefore, it is important to bear in mind that the study implications are based on participants with differing degrees of insomnia and PTSD symptoms rather than participants with and without insomnia and PTSD symptoms.

The finding that insomnia is less strongly related to PTSD symptom severity than repeating nightmares and nightmare distress among IPV survivors also has implications for counseling practice. Currently, insomnia and nightmares are often treated with medication, however, how these medications affect PTNMs is not well known. The one medication, Prazosin, that is supported by research for directly treating nightmares, is known to suppress all dreaming (Kung et al., 2012). If associative nightmares and dreams have a role in supporting trauma recovery, then as is suggested by CTD and the AMPHAC/AND model, the suppression of all nightmares and dreams may be contraindicated. The current study found that more frequent repeating nightmares are linked to greater PTSD symptom severity, which is consistent with the predictions of CTD and the AMPHAC/AND model regarding the importance of generating associative content in dreaming for trauma recovery to occur. However, it is beyond the scope of the current findings to conclude that associative dreaming facilitates trauma recovery. Nevertheless, a practical implication for working with IPV survivors is to use approaches

such as Imagery Rehearsal Therapy (IRT) as a first line approach to address nightmares rather than a referral for medications to suppress nightmares. IRT is a treatment that requires individuals to rehearse new dream scripts and has been shown to significantly reduce nightmare frequency and intensity along with significantly reducing PTSD symptoms (Casement & Swanson, 2012).

The strongest statistical relationship found in the current study was between nightmare distress and PTSD symptom severity followed by the relationship between nightmare distress and repeating nightmares. These relationships are consistent with predictions from the AMPHAC/AND model and may have implications for treatment. Working with IPV survivors to reduce levels of nightmares distress through approaches such as IRT or other research supported dream work approaches including Hill's (1996) Cognitive Experiential Dream Work approach (Casement & Swanson, 2012; Hill, 2004) is warranted based on the current findings. Being able to address a significant negative experience that is confusing, frightening, and long-lasting is important for treatment. In the words of one IPV survivor (as previously reported in Chapter II) that Dr. Christine Murray shared from her research:

It's not over for me. I can't wait for the day when I look back upon my abusive past and it doesn't make me cry and when I don't have nightmares and flashbacks and am afraid to walk alone at night.

Providing a way of working with nightmares and reducing the frequency and distress from nightmares may help survivors to reach a point in which the emotions and

experiences of abuse are no longer appearing in nightmares. That is likely to be very valuable in the healing process of IPV survivors such as the one quoted above.

Supporting IPV survivors in finding new ways to understand and work with their nightmares is consistent with the results of IRT treatment for individuals dealing with nightmares. Casement and Swanson (2012) conducted a meta-analysis showing that IRT significantly decreased the frequency of nightmares and significantly decreased the symptom severity of PTSD across differing populations. The results from the meta-analysis along with the strong relationship between nightmare distress and PTSD found in this study suggests that it is advisable to use IRT for IPV survivors with PTSD who are experiencing nightmares. Counselors may also consider exploring the efficacy of other approaches for helping IPV survivors understand and work with their nightmares.

In practical terms, the findings of this study suggest that repeating nightmares and PTSD have a strong relationship and that counselors should ask IPV survivors about repeating nightmares and clients reporting repeating nightmares should be asked about trauma they have experienced. In the event of a survivor reporting replicative PTNMs, it is important to evaluate for insomnia. The strong relationships between nightmare distress, repeating nightmares, and PTSD further indicates that it may be clinically advisable to work to lessen the nightmare distress of clients, which may be accomplished through the use of behavioral interventions such as Imagery Rehearsal Therapy.

Implications for Research

There are implications for future research based on the findings of the current study. First, evaluating the relationship between nightmares in which new associations

are generated and repeating nightmares in relation to the variables of PTSD, nightmare distress, and insomnia would add valuable information to this line of research. A study examining these variables in a longitudinal research design would be particularly useful for determining whether nightmare distress may be leading to repeating nightmare generation and whether associative nightmares may be contributing to a lessening in PTSD symptom severity. Specifically, to better identify possible causal relationships between variables, a longitudinal study examining participants' insomnia, nightmare distress, and PTSD for specific nights along with the presence of repeating nightmares and non-repeating (associative) dreams and nightmares during the same nights needs to be conducted. A day-to-day assessment of these variables over at least several weeks would allow for the possibility of better evaluating whether associative dreams and nightmares precede improvement in PTSD symptoms and whether repeating nightmares precede the maintenance or worsening of PTSD symptoms. The strong associations found between nightmare distress and repeating nightmares and between repeating nightmares and PTSD symptom severity, along with Levin and Nielsen's (2009) model describing the relationship between the variables provides a strong foundation for justifying a longitudinal study of these relationships.

The relationship of repeating nightmares and associative nightmares on trauma recovery could also be examined through comparative research between a group of individuals recovering from trauma and taking medication to suppresses nightmare generation (i.e., Prazosin), and a group recovering from trauma and not taking nightmare suppression medication. Understanding the changes in associative dreams and

nightmares, repeating nightmares, PTSD symptom severity, nightmare distress, and insomnia between these two groups would help to explain how the variables relate to one another and if associative nightmares contribute to trauma recovery or repeating nightmares contribute to PTSD maintenance.

It is important to understand the frequency of associative dreams and nightmares and repeating nightmares among individual IPV survivors, and how the relationship among these variables changes over time in relation to PTSD, insomnia, and nightmare distress. The current study attempted to generate a cross-sectional understanding of the frequency of repeating nightmares in relation to the variables of PTSD symptom severity, insomnia, and nightmare distress. A future study that generated data on frequencies of associative and repeating nightmares for individuals would be very helpful for increasing understanding of these differing types of PTNMs in IPV survivors. In addition, a qualitative study gathering information from IPV survivors on their experiences with dreams and nightmares following IPV and the changes in those dreams and nightmares as the survivors experienced PTSD symptoms and/or recovery would further help to clarify the relationship of associative and repeating dreams and nightmares to the psychological recovery of survivors from IPV.

Limitations

There are limitations to this study. In terms of data for analysis, originally the ratio score of repeating nightmares to total nightmares was intended for use in evaluating changes in PTNM types (associative and non-associative). However, the number of participants who reported a greater number of recurrent and replicative nightmares in

combination compared to total PTNMs required the use of reported frequency of repeating nightmares instead of the ratio score originally planned. This inconsistency is likely due to asking a broad question about total nightmares before asking questions about specific nightmare types without allowing participants to go back and revise their original answers. In addition, the lack of specific questions about associative nightmares prevented an updated calculation of total nightmares. The findings related to repeating nightmares in this study are based on the accuracy of the frequency of repeating nightmares reported by participants. However, the contradiction in total nightmare frequency reported to combined repeating nightmare frequency raises a question as to whether the scores were indeed accurate.

All participants completed the research survey online, which necessarily limits the research to those who have access to computers or electronic devices and are able to use them to complete the survey. It is possible this may have affected the validity of research findings for the overall population of IPV survivors. The participants in this study consisted almost entirely of females who have experienced IPV. Therefore, study findings are not generalizable to males who have experienced IPV and may not be relevant for those who have experienced other forms of trauma. In addition, study participants were almost entirely white/Caucasian. Therefore, findings may not generalize to participants other than those who are white/Caucasian. Finally it is not known how the experiences, reactions, and relationships between variables generalize to the experiences of individuals experiencing IPV in same-sex relationships.

In regards to the study design, there are several limitations to consider. The defining of replicative and recurrent nightmares within the study is not a commonly used distinction and therefore, may have been confusing for participants. It is also unclear how well individuals were able to recall nightmares. Asking participants to describe how many nightmares were replicative or recurrent over the last week and then asking if that was typical for a month was an attempt to improve the recall accuracy, but it is unclear if this approach was effective. In addition, the questions about nightmare frequency were designed by the author to quantify the number of different dream types. Attempts were made to assure clarity and sensitivity for the questions, but since the questions had not been used before, it is unclear whether the problems that arose were a result of instrument design and/or challenges in participant report. A further limitation is the use of a survey in English for all participants, as this may contribute to validity problems because of differences in understandings terms, particularly around nightmares, dreaming, and mental health issues.

There are further limitations to the data analysis. First, the study was cross-sectional and therefore, did not provide predictive information, only relationships. Subsequently, for any significant finding, no information was generated as to the cause of the observed relationships. Secondly, due to the questions in the survey instruments asking about symptoms within the previous month and because participants were in a naturalistic setting, other external variables may have influenced the relationships between variables in ways that were unobservable in the data being collected.

Nightmares do seem to be influenced by culture (Edgar, 2003; Hollan, 2009) and medication (Kung et al., 2012; van Liempt, Vermetten, Geuze, & Westenberg, 2006), but the relationships are not well understood and there was not a large enough sample size nor enough cultural variability to analyze such differences in this study. The lack of understanding of those relationships makes generalizing results potentially problematic.

Conclusion

The results of the current study provided valuable new information about the PTNMs experienced by IPV survivors and the relationship of those PTNMs to PTSD, insomnia, and the distress attributed to the nightmares. Nightmare distress was most strongly linked to repeating nightmares and PTSD among a sample of IPV survivors. Furthermore, the two types of nightmares that make up repeating nightmares (i.e., replicative and recurrent nightmares) were very similar in terms of the strength of their relationship to PTSD. It was also found that as time since repeating nightmares increased, PTSD symptom severity decreased within the 15-day period of time evaluated. In addition, it was observed that insomnia is significantly associated with replicative nightmares but not recurrent nightmares, and that insomnia was less strongly correlated to PTSD than repeating nightmares or nightmare distress. Taken together, these findings indicate that the proposal from CTD that insomnia causes repeating nightmares was not supported by the data and may be an incorrect proposition. The AMPHAC/AND model's proposal that affective distress, as measured by nightmare distress, leads to the generation of repeating nightmares is very consistent with the findings.

As regards future research, the findings in the current study that support the AMPHAC/AND model raises the need for longitudinal research into the relationship between the variables (i.e., associative and repeating nightmares, PTSD, insomnia, and nightmare distress) to further assess causal links among IPV survivors. This evaluation is needed because PTNMs are not well understood, are very prevalent among IPV survivors, and because current PTSD treatments may be impairing an important internal mechanism promoting trauma recovery.

There are several implications for practice. Based on the findings of this study, it may be beneficial to address PTNMs in IPV survivors with treatments focused on lowering the distress attributed to nightmares. An approach to doing this is IRT, which, as is consistent with what would be expected in the AMPHAC/AND model, has been found to reduce the frequency and intensity of nightmares and lower PTSD symptom severity (Casement & Swanson, 2012). Clinically, individuals who endorse having repeating nightmares should be assessed for trauma and for insomnia based on the finding of a significant positive association between repeating nightmares and those variables.

With respect to theory, both CTD and the AMPHAC/AND model offer conceptualizations of dreaming and nightmares that link new associations to trauma recovery and the impairment of new associations to delayed or arrested trauma recovery. The results of this study are consistent with this basic conceptualization from both models. However, the mechanism for the generation of the types of PTNMs is consistent with the AMPHAC/AND model. Therefore, it appears plausible that the neurocognitive

explanation put forward in the model, which describes affective distress as impairing the hippocampal generation of new associations, may be accurate.

It is hoped that the current study is a meaningful step towards generating a better understanding of PTNMs among IPV survivors and will additionally, contribute to developing better treatment approaches for those survivors suffering from PTNMs. The relationships between variables found in this study should therefore be considered with recognition of the emotional pain and struggle that individuals endure as they seek to recover from their IPV experiences. Furthermore, it is hoped that recognition of the suffering experienced by IPV survivors will motivate future research on PTNMs and more effective treatment approaches for bringing healing to survivors.

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APPENDIX A
FINAL SURVEY

Dreaming after Trauma

Q1.1 Welcome to the survey web-site for the study, "Dreaming After Trauma: Exploring the Relationship of Replicative and Recurrent Posttraumatic Nightmares to Insomnia, Nightmare Distress, and Posttraumatic Stress Disorder among Survivors of Intimate Partner Violence." You will begin by answering five questions to determine whether you are eligible to participate in this study. Please click "NEXT" below to continue to these questions.

Q83 Eligibility Questionnaire

Q1.2 Are you at least 21 years of age?

- Yes (1)
- No (2)

Q1.3 Have you experienced actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression by a boyfriend, girlfriend, partner, or spouse?

- Yes (1)
- No (2)

Q1.4 Are you currently out of any relationship in which you have experienced actual or attempted abuse, violence, or aggression?

- Yes (1)
- No (2)

Q88 Have you experienced any nightmares (this includes any disturbing or frightening dreams) in the past month?

- Yes (1)
- No (2)

Q1.5 This survey is written in the English language. Do you feel able to complete a survey written in the English language?

- Yes (1)
- No (2)

Answer If Are you at least 21 years of age? No Is Selected Or Have you experienced physical, sexual or emotional abuse by a boyfriend or girlfriend or spouse?... No Is

Selected Or Are you currently out of any relationship in which you have experienced actual or attempted abuse, violence, or aggression? No Is Selected Or This survey is written in the English language. Can you read in the English language? No Is Selected Or Have you experienced any nightmares or disturbing dreams because of the abuse? No Is Selected

Q1.6 Based on the responses you provided on the previous page, you do not meet the eligibility criteria to be able to participate in this study. Thank you for your time in providing your responses. Please do not attempt to access this survey any further. Should you need any resources related to past or current experiences of intimate partner violence, we refer you to the following organizations: The National Coalition Against Domestic Violence (<http://www.ncadv.org/>) The National Network to End Domestic Violence (<http://www.nnedv.org/>) The National Domestic Violence Hotline (<http://www.thehotline.org/>; 1-800-799-SAFE). Again, thank you for your time.

If Based on the responses you ... Is Displayed, Then Skip To End of Survey

Q1.7 Because you answered "yes" to the previous 5 questions, you are eligible to participate in this study. Please read the following informed consent document to learn more about this study and determine whether you want to participate. Informed Consent Form The University of North Carolina at Greensboro Project Title: Dreaming after trauma: Exploring the relationship of replicative and recurrent posttraumatic nightmares to insomnia, nightmare distress, and posttraumatic stress disorder among survivors of intimate partner violence Principal Investigator: Alwin Wagener Faculty Advisor: Dr. Scott Young

What are some general things you should know about research studies? You are being asked to take part in a confidential, anonymous research study. Your participation in the study is voluntary. You may choose not to join, or you may withdraw your consent to be in the study, for any reason, without penalty. Research studies are designed to obtain new knowledge. This new information may help people in the future. There may not be any direct benefit to you for being in the research study. There also may be risks to being in research studies. If you choose not to be in the study or leave the study before it is done, it will not affect your relationship with the researcher or the University of North Carolina at Greensboro. Details about this study are discussed in this consent form. It is important that you understand this information so that you can make an informed choice about being in this research study. You will be asked to print a copy of this consent form. If you have any questions about this study at any time, you should ask the researchers named in this consent form. Their contact information is below. What is the study about? This is a research project. Your participation is voluntary. The purpose of this study is to gather information about the posttraumatic nightmares of survivors of intimate partner violence in order to better understand how those nightmares relate to insomnia and symptoms of posttraumatic stress disorder and how much those nightmares contribute to the waking distress of survivors. These nightmares are often reported as very frightening and disturbing and often repeat the actual or attempted abuse, violence, or aggression experienced by IPV survivors. Understanding the relationship between types of

nightmares and insomnia, nightmare distress, and PTSD may increase understanding of nightmares and lead to better understanding of the needs of survivors and more empowering ways to support survivors like you who may be struggling with the aftermath of abuse, violence, and aggression, so your participation in this survey is valuable. Why are you asking me? You have been asked to participate in this study because you report that you were in a relationship in which you were abused by a former partner (i.e. you experienced Intimate Partner Violence; IPV). By IPV, we mean that you experienced, actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression by a former intimate partner (e.g., boyfriend/girlfriend, life partner, spouse). In addition, you are being asked because you report experiencing nightmares. **Because we do not want to contribute to current suffering, we will only invite participants who are out of any abusive relationship.** Other criteria to be eligible to participate in this study include (a) being at least 21 years old and (b) being able to participate in a survey that is written in the English language. What will you ask me to do if I agree to be in the study? If you agree to be in the study, you will be asked to complete a questionnaire that will take about 15 minutes. First you will be asked questions to allow the researcher to better understand who you are. Those questions will include your age, race/ethnicity, education, relationship status, whether you have children and their ages, income, whether you are taking medications for nightmares, and experience with counseling in relation to recovery from the actual or attempted abuse, violence, or aggression you experienced. Following that, you will be asked questions about the actual or attempted abuse, violence, or aggression you experienced, symptoms of distress you are having now, your sleep, distress from nightmares, and how often you experience nightmares. As this survey asks you to reflect upon the trauma you experienced and nightmares you are experiencing, there is potential for you to feel emotional and psychological discomfort. Therefore, if at any time you feel you need to stop the survey, you may stop with either the option of returning to it in the future or completely stopping. There is no penalty for stopping. To assure that you have support for any emotional or psychological discomfort, contact information for support is provided in the next section of this consent form. If at any time you have any questions about the study, please contact the Principal Investigator, Alwin Wagener, at 828-215-8872 or aewagene@uncg.edu.

Is there any audio/video recording? There is no audio/video recording associated with this study.

What are the risks to me? The Institutional Review Board at the University of North Carolina at Greensboro has determined that participation in this study poses minimal risks to participants. There is risk that participants will experience some emotional distress as a result of reporting recent nightmares and reflecting on past experiences of abuse. Please note that you do not need to answer any question you do not feel comfortable answering. In the event that emotional distress occurs the following referrals are provided: The National Coalition Against Domestic Violence (<http://www.ncadv.org/>) The National Network to End Domestic Violence (<http://www.nnedv.org/>) The National Domestic Violence Hotline

(<http://www.thehotline.org/>; 1-800-799-SAFE). If you have questions, want more information or have suggestions, please contact the principal investigator, Alwin Wagener at 828-215-8872 or aewagene@uncg.edu or the Faculty Advisor for the study, Dr. Scott Young, at 336-334-3464 or jyoung3@uncg.edu. If you have any concerns about your rights, how you are being treated, concerns or complaints about this project or benefits or risks associated with being in this study please contact the Office of Research Integrity at UNCG toll-free at (855)-251-2351.

Confidentiality: All information obtained in this study is strictly confidential and anonymous. No identifying information will be collected, and all data obtained from participants will be kept confidential and will only be reported in an aggregate format (by reporting only combined results and never reporting individual ones). All questionnaires will be concealed, and no one other than the primary investigator will have access to them. The data collected will be stored in the HIPPA-compliant, Qualtrics-secure database until it has been deleted by the primary investigator.

Confidentiality with Internet Research: Absolute confidentiality of data provided through the Internet cannot be guaranteed due to the limited protections of Internet access. Please be sure to close your browser when finished so no one will be able to see what you have been doing.

Are There Any Benefits to Society as a Result of Taking Part in This Research? It is hoped that this study will generate valuable information that will increase understanding of posttraumatic nightmares and will allow for the development of improved treatments for posttraumatic nightmares.

Are There Any Benefits to Me as a Result of Taking Part in This Research? There are no direct benefits to participants in this study.

Will it Cost Me Anything? There are no costs to you or payments made for participating in this study.

Compensation: Participants who complete the survey questionnaire and who wish to participate in the drawing will be placed in a drawing for five \$20 gift certificates to Amazon. Those who withdraw will not have the option to participate in the drawing. The chance of winning will depend on the number of participants, but it is expected that about 100 participants will complete the survey.

What if I want to leave the study? You have the right to refuse to participate or to withdraw at any time, without penalty. If you do withdraw, it will not affect you in any way. If you choose to withdraw, you may request that any of your data that has been collected be destroyed unless it is in a de-identifiable state. The investigators also have the right to stop your participation at any time. This could be because you have had an unexpected reaction, or have failed to follow instructions, or because the entire study has been stopped.

What about new information/changes in the study? If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you.

Voluntary Consent by Participant: By participating in the survey you are agreeing that you read, or it has been read to you, and you fully understand the contents of this

document and are openly willing and consent to take part in this study. You are also agreeing that all of your questions concerning this study have been answered. By participating in the survey, you are agreeing that you are 18 years of age or older and are agreeing to participate, or have the individual specified above as a participant participate, in this study described to you by Alwin Wagener.

Q87 Please download and print out a copy of the Informed consent form that you just read by clicking on the link below. Informed consent form

Q1.8 I have read, understood, and printed a copy of the above consent form and desire of my own free will to participate in this study.

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Survey

Q82 In the following questions, you will be asked to provide demographic information. All the information you provide in this survey is confidential and no information that can be used to identify you is being collected. Throughout this survey, the term "abuse" will be used broadly to refer to any experience of "actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression by a former intimate partner (e.g., boyfriend/girlfriend, life partner, spouse)." Although each experience has its unique meaning, this use of the term "abuse" has been done to improve the clarity of the survey.

Q2.1 What is your age?

Age: (1)

Q2.2 What is your race/ethnicity? (Please check all that apply)

- White/Caucasian (1)
- African American (2)
- Hispanic (3)
- Asian (4)
- Native American (5)
- Pacific Islander (6)
- Other (7)

Q2.3 What is your gender?

- Male (1)
- Female (2)
- Other (3)

Q98 What is your current relationship status? (Please click on the response that best applies to your current situation.)

- Single (1)
- Married (2)
- Separated (3)
- Divorced (4)
- Dating, but not in a committed relationship (5)
- In a committed relationship, not living together (6)
- In a committed relationship, living together (7)
- In a legally-recognized civil union/domestic partnership, not married (8)
- Other (Please specify) (9) _____

Q99 Do you have any children?

- Yes (1)
- No (2)

Q101 If you have children, please list their ages.

Q100 What is the highest level of education you completed?

- High school diploma/GED (1)
- Associate's degree (2)
- Bachelor's degree (3)
- Graduate degree (4)
- Other (Please specify) (5) _____

Q102 What is your current household income level?

- Under \$30,000 (1)
- \$30,000 to \$59,000 (2)
- \$60,000 to \$100,000 (3)
- Over \$100,000 (4)

Q2.4 Have you attended sessions with a counselor because of your most recent experience of abuse?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To Are you using any medication to help ...

Q2.5 How helpful has counseling been in recovery from the most recent abuse you experienced?

- Not helpful (1)
- A little helpful (2)
- Helpful (3)
- Very helpful (4)

Q79 You reported that you experience nightmares. Did your nightmares begin after the most recent abuse you experienced?

- Yes (1)
- No (2)

If Yes Is Selected, Then Skip To You indicated earlier that you have e...

Q80 Did your nightmares change after the most recent abuse you experienced?

- Yes (1)
- No (2)

Answer If Did your nightmares change because of the actual or attempted abuse, violence, or aggression you experienced? Yes Is Selected

Q81 What changes have you noticed in your nightmares since your most recent experience of abuse? (Select all that apply)

- More frequent (1)
- More disturbing or frightening (2)
- Less frequent (3)
- Less disturbing or frightening (4)

Answer If Have you attended sessions with a counselor because of your most recent experience of actual or attempted abuse, violence, or aggression from a boyfriend/girlfriend, partner, or spouse? Yes Is Selected

Q2.6 How helpful has counseling been in making your nightmares less frequent or disturbing?

- Not helpful (1)
- A little helpful (2)
- Helpful (3)
- Very helpful (4)

Q2.7 Are you taking any medication to treat nightmares?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Block

Q2.8 List the medication(s) you are taking that were prescribed to treat nightmares.
(accurate spelling is not necessary)

Q2.9 Have your nightmares changed since you began taking the medication or medications?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Block

Q2.10 How have your nightmares changed since you began taking the medication or medications? (select all that apply)

- More frequent (1)
- More disturbing or frightening (2)
- Less frequent (3)
- Less disturbing or frightening (4)
- They completely stopped (5)

Q84 For the following thirteen questions, you will be asked about your reaction to your nightmares. Please answer these questions based on the nightmares you have experienced in the past month.

Q85 When you awaken from a nightmare, do you find you keep thinking about it and have difficulty putting it out of your mind?

- Always (5)
- Often (4)
- Sometimes (3)
- Rarely (2)
- Never (1)

Q86 Do you ever find yourself avoiding or disliking or fearing someone because they were in your nightmare?

- Always (5)
- Often (4)
- Sometimes (3)
- Rarely (2)
- Never (1)

Q87 Are you ever afraid to fall asleep for fear of having a nightmare?

- Always (5)
- Often (4)
- Sometimes (3)
- Rarely (2)
- Never (1)

Q88 After you awaken from a nightmare, do you have difficulty falling back asleep?

- Always (5)
- Often (4)
- Sometimes (3)
- Rarely (2)
- Never (1)

Q89 Do nightmares interfere with the quality of your sleep?

- A great deal (5)
- Definitely (4)
- Somewhat (3)
- Slightly (2)
- Not at all (1)

Q90 Do you have difficulties coping with nightmares?

- Always (5)
- Often (4)
- Sometimes (3)
- Rarely (2)
- Never (1)

Q91 Do you feel you have a problem with nightmares?

- Always (5)
- Often (4)
- Sometimes (3)
- Rarely (2)
- Never (1)

Q92 Do nightmares affect your well-being?

- A great deal (5)
- Definitely (4)
- Somewhat (3)
- Slightly (2)
- Not at all (1)

Q93 Do you ever have the feeling that something which happened in your nightmare has really occurred?

- Always (5)
- Often (4)
- Sometimes (3)
- Rarely (2)
- Never (1)

Q94 Do your nightmares foretell the future?

- Always (5)
- Often (4)
- Sometimes (3)
- Rarely (2)
- Never (1)

Q95 When you have a nightmare, does it ever seem so real that when you awaken you have difficulty convincing yourself it's "just a dream"?

- Always (5)
- Often (4)
- Sometimes (3)
- Rarely (2)
- Never (1)

Q96 In the past month have you considered seeking professional help for your nightmares?

- Always (5)
- Often (4)
- Sometimes (3)
- Rarely (2)
- Never (1)

Q97 If a therapy program were available which might help you control, or to stop having nightmares, how interested would you be in participating?

- Extremely interested (5)
- Very interested (4)
- Somewhat interested (3)
- Slightly interested (2)
- Not at all interested (1)

Q3.1 For the following questions, please answer in relation to your most recent experience of abuse, with abuse referring to the actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression by a former intimate partner (e.g., boyfriend/girlfriend, life partner, spouse). At the end of these questions, you will be asked if you had earlier relationships in which you experienced abuse.

Q3.2 How long did the relationship last in which you experienced abuse?(Please enter your answer using numbers)

Years (1)

Months (2)

Q3.3 What was the most significant level of commitment you had with this partner?

- Dating but not in a committed relationship (1)
- In a committed relationship, not living together (2)
- In a committed relationship, living together (3)
- Married (4)
- In a legally-recognized civil union, not married (5)
- Other (please specify) (6) _____

Q3.4 What forms of abuse did you experience in this relationship? (Check all that apply.)

- Physical abuse (1)
- Emotional abuse (2)
- Verbal abuse (3)
- Sexual abuse (4)
- Other (Please specify) (5) _____

Q3.7 How many years and months has it been since this relationship ended? (Please enter your answer using numbers)

Years (1)

Months (2)

Q3.9 Have you been in any relationships in which you experienced abuse other than the one described above?

- Yes (1)
- No (2)

Answer If Have you been in any abusive relationships other than the one described above? Yes Is Selected

Q96 How many relationships in which you experienced abuse, other than the one described above, have you experienced?

Q97 In the following questions, you will be asked about symptoms that often develop after abuse. Please select the one answer for each question that best describes how much you have been bothered by the symptom. In the questions below, "stressful experience" means the abuse you experienced, with abuse referring to the actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression by a former intimate partner (e.g., boyfriend/girlfriend, life partner, spouse).

Q4.1

In the past month, how much were you bothered by:

	Not at all (0)	A little bit (1)	Moderately (2)	Quite a bit (3)	Extremely (4)
Repeated, disturbing, and unwanted memories of the stressful experience? (1)	<input type="radio"/>				
Repeated, disturbing dreams of the stressful experience? (2)	<input type="radio"/>				
Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)? (3)	<input type="radio"/>				
Feeling very upset when something reminded you of the stressful experience? (4)	<input type="radio"/>				
Having strong physical reactions when something reminded you	<input type="radio"/>				

<p>of the stressful experience (for example, heart pounding, trouble breathing, sweating)? (5)</p>					
<p>Avoiding memories, thoughts, or feelings related to the stressful experience? (6)</p>	○	○	○	○	○
<p>Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)? (7)</p>	○	○	○	○	○
<p>Trouble remembering important parts of the stressful experience? (8)</p>	○	○	○	○	○
<p>Having strong negative beliefs about yourself, other people, or the world (for</p>	○	○	○	○	○

<p>example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)? (9)</p> <p>Blaming yourself or someone else for the stressful experience or what happened after it? (10)</p> <p>Having strong negative feelings such as fear, horror, anger, guilt, or shame? (11)</p> <p>Loss of interest in activities that you used to enjoy? (12)</p> <p>Feeling distant or cut off from other people? (13)</p> <p>Trouble experiencing positive</p>	<input type="radio"/>				
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

feelings (for example, being unable to feel happiness or have loving feelings for people close to you)? (14)					
Irritable behavior, angry outbursts, or acting aggressively? (15)	<input type="radio"/>				
Taking too many risks or doing things that could cause you harm? (16)	<input type="radio"/>				
Being “superalert” or watchful or on guard? (17)	<input type="radio"/>				
Feeling jumpy or easily startled? (18)	<input type="radio"/>				
Having difficulty concentrating? (19)	<input type="radio"/>				
Trouble falling or staying asleep? (20)	<input type="radio"/>				

Q5.1 We are now interested in learning about your sleep habits. The following questions relate to your usual sleep habits during the past month only. Your answers should indicate the most accurate reply for the majority of days and nights in the past month.

Q5.2 During the past month, what time have you usually gone to bed at night? (Please enter AM or PM with the time)

BED TIME (1)

Q5.3 During the past month, how long (in minutes) has it usually taken you to fall asleep each night?

NUMBER OF MINUTES (1)

Q5.4 During the past month, what time have you usually gotten up in the morning?(Please enter AM or PM with the time)

GETTING UP TIME (1)

Q5.5 During the past month, how many hours of actual sleep did you get at night? (This may be different than the number of hours you spent in bed.)

HOURS OF SLEEP PER NIGHT (1)

Q5.6 For each of the remaining questions, check the one best response.

Q5.7 During the past month, how often have you had trouble sleeping because you...

	Not during the past month (0)	Less than once a week (1)	Once or twice a week (2)	Three or more times a week (3)
Cannot get to sleep within 30 minutes (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wake up in the middle of the night or early morning (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have to get up to use the bathroom (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cannot breathe comfortably (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cough or snore loudly (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel too cold (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel too hot (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Had bad dreams (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have pain (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other reason(s), please describe (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q5.8 During the past month, how would you rate your sleep quality overall?

- Very good (0)
- Fairly good (1)
- Fairly bad (2)
- Very bad (3)

Q5.9 During the past month, how often have you taken medicine to help you sleep (prescribed or "over the counter")?

- Not during the past month (0)
- Less than once per week (1)
- Once or twice a week (2)
- Three or more times a week (3)

Q5.10 During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activities?

- Not during the past month (0)
- Less than once per week (1)
- Once or twice a week (2)
- Three or more times a week (3)

Q5.11 During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?

- No problem at all (0)
- Only a very slight problem (1)
- Somewhat of a problem (2)
- A very big problem (3)

Q98 In the questions that follow, you will be asked about your nightmares. For the purpose of this survey, Nightmares are all disturbing or frightening dreams. There are also two frequently reported types of nightmares that you will be asked about. 1. Nightmares that Replay the abuse - These are nightmares in which you dream about the abuse you experienced in exactly the same way it happened. 2. Repeating nightmares that do not exactly replay the abuse - These are nightmares that happen the same way over and over again but do not exactly copy the abuse. These repeating nightmares may be similar to waking life experiences or very different from anything ever experienced in waking life. The term abuse is used to refer to the actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression by a former intimate partner (e.g., boyfriend/girlfriend, life partner, spouse).

Q6.1 In the past week, about how often did you have: (Please include nightmares and dreams that happened in naps and daytime sleep in your answer.)

	2 or more times every night (14)	Once every night (7)	6 times (6)	5 times (5)	4 times (4)	3 times (3)	2 times (2)	Once (1)	Not at all (0)
Nightmares (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dreams that were not nightmares (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Answer If In the past week, about how often did you have: (Please include nightmares and dreams that happen... Nightmares - 2 or more times every night Is Selected

Q74 In the past week, about how many nightmares did you have each night? (Please enter the number below)

Q78 Is the number of nightmares you experienced in the last week typical for what you have experienced over the last month?

- Yes (1)
- No (2)

Answer If Is the number of nightmares you experienced in the last week typical for what you have experienced over the last month? No Is Selected

Q89 About how many nightmares did you have in the last month?

Number of nightmares: (1)

Q6.2 Have you ever had a nightmare that replayed the abuse you experienced? Example: In the dream I am being chased and hit by my abusive partner in the same way it happened in waking life.

- Yes (1)
- No (2)

If No Is Selected, Then Skip To Individuals who experience trauma som...

Q6.3 When was the last time you experienced a nightmare that was a replay of the abuse you experienced? Please enter your answer in the space or spaces that best describes when your most recent nightmare that copied the abuse happened.

- Days ago (1)
- Months ago (2)
- Years ago (3)

Q6.4 Have you ever had a repeating nightmare that was not an exact copy of the abuse you experienced? These repeating nightmares may be similar to waking life experiences or very different from anything ever experienced in waking life. Example: I dream I am being chased by a lion every night even though I have never been chased by a lion.

- Yes (1)
- No (2)

If No Is Selected, Then Skip To In the last week, how many nightmares...

Q80 When was the last time you had a repeating nightmare that was not an exact copy of the abuse you experienced? Please enter your answer in the space or spaces that best describes when your most recent repeating nightmare happened.

- Days ago (1)
- Months ago (2)
- Years ago (3)

Answer If Individuals who experience abuse sometimes report having nightmares that copy the abuse. (example... Yes Is Selected

Q6.6 In the past week, about how often did you have nightmares that:

	2 or more times every night (14)	Once every night (7)	6 times (6)	5 times (5)	4 times (4)	3 times (3)	2 times (2)	Once (1)	Not at all (0)
Replayed the abuse: (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Answer If In the past week, about how often did you have nightmares that: - 2 or more times every night Is Selected

Q76 In the past week, about how many nightmares that replayed the abuse did you have each night? (Please enter the number below)

Answer If In the past week, about how often did you have nightmares that: - 2 or more times every night Is Selected Or In the past week, about how often did you have nightmares that: - Once every night Is Selected Or In the past week, about how often did you have nightmares that: - 6 times Is Selected Or In the past week, about how often did you have nightmares that: - 5 times Is Selected Or In the past week, about how often did you have nightmares that: - 4 times Is Selected Or In the past week, about how often did you have nightmares that: - 3 times Is Selected Or In the past week, about how often did you have nightmares that: - 2 times Is Selected Or In the past week, about how often did you have nightmares that: - Once Is Selected Or In the past week, about how often did you have nightmares that: - Not at all Is Selected

Q92 Is the number of nightmares that replayed the abuse in the last week typical for what you have experienced over the last month?

- Yes (1)
- No (2)

Answer If Is the number of nightmares that replayed the actual or attempted abuse, violence, or aggression... No Is Selected

Q93 About how many nightmares that replayed the abuse did you have in the last month?
Number of nightmares replaying the abuse: (1)

Answer If Individuals who experience trauma sometimes report repeating nightmares that are not copies of th... Yes Is Selected

Q87 In the past week, about how often did you have:

	2 or more times every night (14)	Once every night (7)	6 times (6)	5 times (5)	4 times (4)	3 times (3)	2 times (2)	Once (1)	Not at all (0)
Repeating nightmares that were not an exact copy of the abuse you experienced (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Answer If In the past week, about how often did you have nightmares that: - 2 or more times every night Is Selected

Q79 In the past week, about how many repeating nightmares that were not an exact copy of the abuse did you experience?(Please enter the number below)

Answer If In the past week, about how often did you have nightmares that: - 2 or more times every night Is Selected Or In the past week, about how often did you have nightmares that: - Once every night Is Selected Or In the past week, about how often did you have nightmares that: - 6 times Is Selected Or In the past week, about how often did you have nightmares that: - 5 times Is Selected Or In the past week, about how often did you have nightmares that: - 4 times Is Selected Or In the past week, about how often did you have nightmares that: - 3 times Is Selected Or In the past week, about how often did you have nightmares that: - 2 times Is Selected Or In the past week, about how often did you have nightmares that: - Once Is Selected Or In the past week, about how often did you have nightmares that: - Not at all Is Selected

Q94 Is the weekly number of repeating nightmares that were not an exact copy of the abuse you experienced typical for what you have experienced over the last month?

- Yes (1)
- No (2)

Answer If Is the number of nightmares that repeated but were not an exact replay of the actual or attempted... No Is Selected

Q95 How many repeating nightmares that were not an exact copy of the abuse you experienced did you have in the last month?

Number of repeating nightmares: (1)

Q8.1 The survey is now complete. Thank you very much for your time and effort in completing this survey. If you would like to participate in the drawing for a \$20 gift certificate to Amazon, please click the link below. After clicking the link, you will be taken to a separate site where you will be asked to provide an email address to which the gift certificate can be sent if you win. The reason for the separate site is to keep your survey results separate and unconnected to any identifying information including email addresses. The email will be kept confidential and stored separately from your survey results. All emails will be deleted after the gift certificates are sent to the winners. Link to the drawing: Amazon gift certificate drawing Should you feel that you would like to seek additional resources related to your experiences of intimate partner violence, please contact the following organizations: The National Coalition Against Domestic Violence (<http://www.ncadv.org/>) The National Network to End Domestic Violence (<http://www.nnedv.org/>) The National Domestic Violence Hotline (<http://www.thehotline.org/>; 1-800-799-SAFE).Again, thank you for your time.

APPENDIX B

SECOND SURVEY REVISION

Dreaming after Trauma

Q1.1 Welcome to the survey web-site for the study, "Dreaming After Trauma: Exploring the Relationship of Replicative and Recurrent Posttraumatic Nightmares to Insomnia, Nightmare Distress, and Posttraumatic Stress Disorder among Survivors of Intimate Partner Violence." You will begin by answering five questions to determine whether you are eligible to participate in this study. Please click "NEXT" below to continue to these questions.

Q83 Eligibility Questionnaire

Q1.2 Are you at least 21 years of age?

- Yes (1)
- No (2)

Q1.3 Have you experienced actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression by a boyfriend, girlfriend, partner, or spouse?

- Yes (1)
- No (2)

Q1.4 Have you been out of any relationship in which you experienced actual or attempted abuse, violence, or aggression for at least one year?

- Yes (1)
- No (2)

Q88 Have you experienced any nightmares (this includes any disturbing or frightening dreams) in the past month?

- Yes (1)
- No (2)

Q1.5 This survey is written in the English language. Do you feel able to complete a survey written in the English language?

- Yes (1)
- No (2)

Answer If Are you at least 21 years of age? No Is Selected Or Have you experienced physical, sexual or emotional abuse by a boyfriend or girlfriend or spouse?... No Is

Selected Or Have you been out of any abusive relationship for at least one year? No Is Selected Or This survey is written in the English language. Can you read in the English language? No Is Selected Or Have you experienced any nightmares or disturbing dreams because of the abuse? No Is Selected

Q1.6 Based on the responses you provided on the previous page, you do not meet the eligibility criteria to be able to participate in this study. Thank you for your time in providing your responses. Please do not attempt to access this survey any further. Should you need any resources related to past or current experiences of intimate partner violence, we refer you to the following organizations: The National Coalition Against Domestic Violence (<http://www.ncadv.org/>) The National Network to End Domestic Violence (<http://www.nnedv.org/>) The National Domestic Violence Hotline (<http://www.thehotline.org/>; 1-800-799-SAFE). Again, thank you for your time.
If Based on the responses you ... Is Displayed, Then Skip To End of Survey

Q1.7 Because you answered "yes" to the previous 5 questions, you are eligible to participate in this study. Please read the following informed consent document to learn more about this study and determine whether you want to participate. Informed Consent Form The University of North Carolina at Greensboro Project Title: Dreaming after trauma: Exploring the relationship of replicative and recurrent posttraumatic nightmares to insomnia, nightmare distress, and posttraumatic stress disorder among survivors of intimate partner violence Principal Investigator: Alwin Wagener Faculty Advisor: Dr. Scott Young What are some general things you should know about research studies? You are being asked to take part in a confidential, anonymous research study. Your participation in the study is voluntary. You may choose not to join, or you may withdraw your consent to be in the study, for any reason, without penalty. Research studies are designed to obtain new knowledge. This new information may help people in the future. There may not be any direct benefit to you for being in the research study. There also may be risks to being in research studies. If you choose not to be in the study or leave the study before it is done, it will not affect your relationship with the researcher or the University of North Carolina at Greensboro. Details about this study are discussed in this consent form. It is important that you understand this information so that you can make an informed choice about being in this research study. You will be asked to print a copy of this consent form. If you have any questions about this study at any time, you should ask the researchers named in this consent form. Their contact information is below. What is the study about? This is a research project. Your participation is voluntary. The purpose of this study is to gather information about the posttraumatic nightmares of survivors of intimate partner violence in order to better understand how those nightmares relate to insomnia and symptoms of posttraumatic stress disorder and how much those nightmares contribute to the waking distress of survivors. These nightmares are often reported as very frightening and disturbing and often repeat the actual or attempted abuse, violence, or aggression experienced by IPV survivors. Understanding the relationship between types of nightmares and insomnia, nightmare

distress, and PTSD may increase understanding of nightmares and lead to better understanding of the needs of survivors and more empowering ways to support survivors like you who may be struggling with the aftermath of abuse, violence, and aggression, so your participation in this survey is valuable. Why are you asking me? You have been asked to participate in this study because you report that you were in a relationship in which you were abused by a former partner (i.e. you experienced Intimate Partner Violence; IPV). By IPV, we mean that you experienced, actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression by a former intimate partner (e.g., boyfriend/girlfriend, life partner, spouse). In addition, you are being asked because you report experiencing nightmares. Because we do not want to contribute to current suffering, we will only invite participants who (a) have been out of any abusive relationship for at least one year and (b) report that they have had no recent experiences of physical, sexual, or emotional/psychological victimization by a current or former partners within the past year. Other criteria to be eligible to participate in this study include (a) being at least 21 years old and (b) being able to participate in a survey that is written in the English language. What will you ask me to do if I agree to be in the study? If you agree to be in the study, you will be asked to complete a questionnaire that will take about 15 minutes. First you will be asked questions to allow the researcher to better understand who you are. Those questions will include your age, race/ethnicity, education, relationship status, whether you have children and their ages, income, whether you are taking medications for nightmares, and experience with counseling in relation to recovery from the actual or attempted abuse, violence, or aggression you experienced. Following that, you will be asked questions about the actual or attempted abuse, violence, or aggression you experienced, symptoms of distress you are having now, your sleep, distress from nightmares, and how often you experience nightmares. As this survey asks you to reflect upon the trauma you experienced and nightmares you are experiencing, there is potential for you to feel emotional and psychological discomfort. Therefore, if at any time you feel you need to stop the survey, you may stop with either the option of returning to it in the future or completely stopping. There is no penalty for stopping. To assure that you have support for any emotional or psychological discomfort, contact information for support is provided in the next section of this consent form. If at any time you have any questions about the study, please contact the Principal Investigator, Alwin Wagener, at 828-215-8872 or aewagene@uncg.edu. Is there any audio/video recording? There is no audio/video recording associated with this study. What are the risks to me? The Institutional Review Board at the University of North Carolina at Greensboro has determined that participation in this study poses minimal risks to participants. There is risk that participants will experience some emotional distress as a result of reporting recent nightmares and reflecting on past experiences of abuse. Please note that you do not need to answer any question you do not feel comfortable answering. In the event that emotional distress occurs the following referrals are provided: The National Coalition Against Domestic Violence (<http://www.ncadv.org/>) The National Network to End Domestic Violence (<http://www.nnedv.org/>) The National Domestic Violence Hotline (<http://www.thehotline.org/>; 1-800-799-SAFE). If you have questions,

want more information or have suggestions, please contact the principal investigator, Alwin Wagener at 828-215-8872 or aewagene@uncg.edu or the Faculty Advisor for the study, Dr. Scott Young, at 336-334-3464 or jsyoung3@uncg.edu. If you have any concerns about your rights, how you are being treated, concerns or complaints about this project or benefits or risks associated with being in this study please contact the Office of Research Integrity at UNCG toll-free at (855)-251-2351. Confidentiality: All information obtained in this study is strictly confidential and anonymous. No identifying information will be collected, and all data obtained from participants will be kept confidential and will only be reported in an aggregate format (by reporting only combined results and never reporting individual ones). All questionnaires will be concealed, and no one other than the primary investigator will have access to them. The data collected will be stored in the HIPPA-compliant, Qualtrics-secure database until it has been deleted by the primary investigator. Confidentiality with Internet Research: Absolute confidentiality of data provided through the Internet cannot be guaranteed due to the limited protections of Internet access. Please be sure to close your browser when finished so no one will be able to see what you have been doing. Are There Any Benefits to Society as a Result of Taking Part in This Research? It is hoped that this study will generate valuable information that will increase understanding of posttraumatic nightmares and will allow for the development of improved treatments for posttraumatic nightmares. Are There Any Benefits to Me as a Result of Taking Part in This Research? There are no direct benefits to participants in this study. Will it Cost Me Anything? There are no costs to you or payments made for participating in this study. Compensation: Participants who complete the survey questionnaire (answer all the questions and reach the end of the survey) and who wish to participate in the drawing will be placed in a drawing for five \$20 gift certificates to Amazon. Those who withdraw will not have the option to participate in the drawing. The chance of winning will depend on the number of participants, but it is expected that about 100 participants will complete the survey. What if I want to leave the study? You have the right to refuse to participate or to withdraw at any time, without penalty. If you do withdraw, it will not affect you in any way. If you choose to withdraw, you may request that any of your data that has been collected be destroyed unless it is in a de-identifiable state. The investigators also have the right to stop your participation at any time. This could be because you have had an unexpected reaction, or have failed to follow instructions, or because the entire study has been stopped. What about new information/changes in the study? If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you. Voluntary Consent by Participant: By participating in the survey you are agreeing that you read, or it has been read to you, and you fully understand the contents of this document and are openly willing and consent to take part in this study. You are also agreeing that all of your questions concerning this study have been answered. By participating in the survey, you are agreeing that you are 18 years of age or older and are agreeing to participate, or have the individual specified above as a participant participate, in this study described to you by Alwin Wagener.

Q1.8 I have read, understood, and printed a copy of the above consent form and desire of my own free will to participate in this study.

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Survey

Q82 In the following questions, you will be asked to provide demographic information. All the information you provide in this survey is confidential and no information that can be used to identify you is being collected. Throughout this survey, the term "abuse" will be used broadly to refer to any experience of "actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression by a former intimate partner (e.g., boyfriend/girlfriend, life partner, spouse)." Although each experience has its unique meaning, this use of the term "abuse" has been done to improve the clarity of the survey.

Q2.1 What is your age?

Age: (1)

Q2.2 What is your race/ethnicity? (Please check all that apply)

- White/Caucasian (1)
- African American (2)
- Hispanic (3)
- Asian (4)
- Native American (5)
- Pacific Islander (6)
- Other (7)

Q2.3 What is your gender?

- Male (1)
- Female (2)
- Other (3)

Q98 What is your current relationship status? (Please click on the response that best applies to your current situation.)

- Single (1)
- Married (2)
- Separated (3)
- Divorced (4)
- Dating, but not in a committed relationship (5)
- In a committed relationship, not living together (6)
- In a committed relationship, living together (7)
- In a legally-recognized civil union/domestic partnership, not married (8)
- Other (Please specify) (9) _____

Q99 Do you have any children?

- Yes (1)
- No (2)

Q101 If you have children, please list their ages.

Q100 What is the highest level of education you completed?

- High school diploma/GED (1)
- Associate's degree (2)
- Bachelor's degree (3)
- Graduate degree (4)
- Other (Please specify) (5) _____

Q102 What is your current household income level?

- Under \$30,000 (1)
- \$30,000 to \$59,000 (2)
- \$60,000 to \$100,000 (3)
- Over \$100,000 (4)

Q2.4 Have you attended sessions with a counselor because of your most recent experience of abuse?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To Are you using any medication to help ...

Q2.5 How helpful has counseling been in recovery from the most recent abuse you experienced?

- Not helpful (1)
- A little helpful (2)
- Helpful (3)
- Very helpful (4)

Q79 You reported that you experience nightmares. Did your nightmares begin after the most recent abuse you experienced?

- Yes (1)
- No (2)

If Yes Is Selected, Then Skip To You indicated earlier that you have e...

Q80 Did your nightmares change after the most recent abuse you experienced?

- Yes (1)
- No (2)

Answer If Did your nightmares change because of the actual or attempted abuse, violence, or aggression you experienced? Yes Is Selected

Q81 What changes have you noticed in your nightmares since your most recent experience of abuse? (Select all that apply)

- More frequent (1)
- More disturbing or frightening (2)
- Less frequent (3)
- Less disturbing or frightening (4)

Answer If Have you attended sessions with a counselor because of your most recent experience of actual or attempted abuse, violence, or aggression from a boyfriend/girlfriend, partner, or spouse? Yes Is Selected

Q2.6 How helpful has counseling been in making your nightmares less frequent or disturbing?

- Not helpful (1)
- A little helpful (2)
- Helpful (3)
- Very helpful (4)

Q2.7 Are you taking any medication to treat nightmares?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Block

Q2.8 List the medication(s) you are taking that were prescribed to treat nightmares.
(accurate spelling is not necessary)

Q2.9 Have your nightmares changed since you began taking the medication or medications?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Block

Q2.10 How have your nightmares changed since you began taking the medication or medications? (select all that apply)

- More frequent (1)
- More disturbing or frightening (2)
- Less frequent (3)
- Less disturbing or frightening (4)
- They completely stopped (5)

Q84 For the following thirteen questions, you will be asked about your reaction to your nightmares. Please answer these questions based on the nightmares you have experienced in the past month.

Q85 When you awaken from a nightmare, do you find you keep thinking about it and have difficulty putting it out of your mind?

- Always (1)
- Often (2)
- Sometimes (3)
- Rarely (4)
- Never (5)

Q86 Do you ever find yourself avoiding or disliking or fearing someone because they were in your nightmare?

- Always (1)
- Often (2)
- Sometimes (3)
- Rarely (4)
- Never (5)

Q87 Are you ever afraid to fall asleep for fear of having a nightmare?

- Always (1)
- Often (2)
- Sometimes (3)
- Rarely (4)
- Never (5)

Q88 After you awaken from a nightmare, do you have difficulty falling back asleep?

- Always (1)
- Often (2)
- Sometimes (3)
- Rarely (4)
- Never (5)

Q89 Do nightmares interfere with the quality of your sleep?

- A great deal (1)
- Definitely (2)
- Somewhat (3)
- Slightly (4)
- Not at all (5)

Q90 Do you have difficulties coping with nightmares?

- Always (1)
- Often (2)
- Sometimes (3)
- Rarely (4)
- Never (5)

Q91 Do you feel you have a problem with nightmares?

- Always (1)
- Often (2)
- Sometimes (3)
- Rarely (4)
- Never (5)

Q92 Do nightmares affect your well-being?

- A great deal (1)
- Definitely (2)
- Somewhat (3)
- Slightly (4)
- Not at all (5)

Q93 Do you ever have the feeling that something which happened in your nightmare has really occurred?

- Always (1)
- Often (2)
- Sometimes (3)
- Rarely (4)
- Never (5)

Q94 Do your nightmares foretell the future?

- Always (1)
- Often (2)
- Sometimes (3)
- Rarely (4)
- Never (5)

Q95 When you have a nightmare, does it ever seem so real that when you awaken you have difficulty convincing yourself it's "just a dream"?

- Always (1)
- Often (2)
- Sometimes (3)
- Rarely (4)
- Never (5)

Q96 In the past month have you considered seeking professional help for your nightmares?

- Always (1)
- Often (2)
- Sometimes (3)
- Rarely (4)
- Never (5)

Q97 If a therapy program were available which might help you control, or to stop having nightmares, how interested would you be in participating?

- Extremely interested (1)
- Very interested (2)
- Somewhat interested (3)
- Slightly interested (4)
- Not at all interested (5)

Q3.1 For the following questions, please answer in relation to your most recent experience of abuse, with abuse referring to the actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression by a former intimate partner (e.g., boyfriend/girlfriend, life partner, spouse). At the end of these questions, you will be asked if you had earlier relationships in which you experienced abuse.

Q3.2 How long did the relationship last in which you experienced abuse?(Please enter your answer using numbers)

Years (1)

Months (2)

Q3.3 What was the most significant level of commitment you had with this partner?

- Dating but not in a committed relationship (1)
- In a committed relationship, not living together (2)
- In a committed relationship, living together (3)
- Married (4)
- In a legally-recognized civil union, not married (5)
- Other (please specify) (6) _____

Q3.4 What forms of abuse did you experience in this relationship? (Check all that apply.)

- Physical abuse (1)
- Emotional abuse (2)
- Verbal abuse (3)
- Sexual abuse (4)
- Other (Please specify) (5) _____

Q3.7 How many years and months has it been since this relationship ended? (Please enter your answer using numbers)

Years (1)

Months (2)

Q3.9 Have you been in any relationships in which you experienced abuse other than the one described above?

- Yes (1)
- No (2)

Answer If Have you been in any abusive relationships other than the one described above? Yes Is Selected

Q96 How many relationships in which you experienced abuse, other than the one described above, have you experienced?

Q97 In the following questions, you will be asked about symptoms that often develop after abuse. Please select the one answer for each question that best describes how much you have been bothered by the symptom. In the questions below, "stressful experience" means the abuse you experienced, with abuse referring to the actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression by a former intimate partner (e.g., boyfriend/girlfriend, life partner, spouse).

Q4.1

In the past month, how much were you bothered by:

	Not at all (1)	A little bit (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
Repeated, disturbing, and unwanted memories of the stressful experience? (1)	<input type="radio"/>				
Repeated, disturbing dreams of the stressful experience? (2)	<input type="radio"/>				
Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)? (3)	<input type="radio"/>				
Feeling very upset when something reminded you of the stressful experience? (4)	<input type="radio"/>				
Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble	<input type="radio"/>				

<p>breathing, sweating)? (5)</p> <p>Avoiding memories, thoughts, or feelings related to the stressful experience? (6)</p>	○	○	○	○	○
<p>Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)? (7)</p>	○	○	○	○	○
<p>Trouble remembering important parts of the stressful experience? (8)</p>	○	○	○	○	○
<p>Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)? (9)</p>	○	○	○	○	○

Blaming yourself or someone else for the stressful experience or what happened after it? (10)	<input type="radio"/>				
Having strong negative feelings such as fear, horror, anger, guilt, or shame? (11)	<input type="radio"/>				
Loss of interest in activities that you used to enjoy? (12)	<input type="radio"/>				
Feeling distant or cut off from other people? (13)	<input type="radio"/>				
Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)? (14)	<input type="radio"/>				
Irritable behavior, angry outbursts, or acting aggressively? (15)	<input type="radio"/>				
Taking too many risks or doing things that could	<input type="radio"/>				

cause you harm? (16)					
Being “superalert” or watchful or on guard? (17)	<input type="radio"/>				
Feeling jumpy or easily startled? (18)	<input type="radio"/>				
Having difficulty concentrating? (19)	<input type="radio"/>				
Trouble falling or staying asleep? (20)	<input type="radio"/>				

Q5.1 We are now interested in learning about your sleep habits. The following questions relate to your usual sleep habits during the past month only. Your answers should indicate the most accurate reply for the majority of days and nights in the past month.

Q5.2 During the past month, what time have you usually gone to bed at night? (Please enter AM or PM with the time)
BED TIME (1)

Q5.3 During the past month, how long (in minutes) has it usually taken you to fall asleep each night?
NUMBER OF MINUTES (1)

Q5.4 During the past month, what time have you usually gotten up in the morning?(Please enter AM or PM with the time)
GETTING UP TIME (1)

Q5.5 During the past month, how many hours of actual sleep did you get at night? (This may be different than the number of hours you spent in bed.)
HOURS OF SLEEP PER NIGHT (1)

Q5.6 For each of the remaining questions, check the one best response.

Q5.7 During the past month, how often have you had trouble sleeping because you...

	Not during the past month (1)	Less than once a week (2)	Once or twice a week (3)	Three or more times a week (4)
Cannot get to sleep within 30 minutes (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wake up in the middle of the night or early morning (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have to get up to use the bathroom (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cannot breathe comfortably (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cough or snore loudly (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel too cold (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel too hot (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Had bad dreams (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have pain (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other reason(s), please describe (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q5.8 During the past month, how would you rate your sleep quality overall?

- Very good (1)
- Fairly good (2)
- Fairly bad (3)
- Very bad (4)

Q5.9 During the past month, how often have you taken medicine to help you sleep (prescribed or "over the counter")?

- Not during the past month (1)
- Less than once per week (2)
- Once or twice a week (3)
- Three or more times a week (4)

Q5.10 During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activities?

- Not during the past month (1)
- Less than once per week (2)
- Once or twice a week (3)
- Three or more times a week (4)

Q5.11 During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?

- No problem at all (1)
- Only a very slight problem (2)
- Somewhat of a problem (3)
- A very big problem (4)

Q98 In the questions that follow, you will be asked about your nightmares. For the purpose of this survey, Nightmares are all disturbing or frightening dreams. There are also two frequently reported types of nightmares that you will be asked about. 1. Nightmares that Replay the abuse - These are nightmares in which you dream about the abuse you experienced in exactly the same way it happened. 2. Repeating nightmares that do not exactly replay the abuse - These are nightmares that happen the same way over and over again but do not exactly copy the abuse. These repeating nightmares may be similar to waking life experiences or very different from anything ever experienced in waking life. The term abuse is used to refer to the actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression by a former intimate partner (e.g., boyfriend/girlfriend, life partner, spouse).

Q6.1 In the past week, about how often did you have: (Please include nightmares and dreams that happened in naps and daytime sleep in your answer.)

	2 or more times every night (1)	Once every night (2)	6 times (3)	5 times (4)	4 times (5)	3 times (6)	2 times (7)	Once (8)	Not at all (9)
Nightmares (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dreams that were not nightmares (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Answer If In the past week, about how often did you have: (Please include nightmares and dreams that happen... Nightmares - 2 or more times every night Is Selected

Q74 In the past week, about how many nightmares did you have each night? (Please enter the number below)

Q78 Is the number of nightmares you experienced in the last week typical for what you have experienced over the last month?

- Yes (1)
- No (2)

Answer If Is the number of nightmares you experienced in the last week typical for what you have experienced over the last month? No Is Selected

Q89 About how many nightmares did you have in the last month?

Number of nightmares: (1)

Q6.2 Have you ever had a nightmare that replayed the abuse you experienced? Example: In the dream I am being chased and hit by my abusive partner in the same way it happened in waking life.

- Yes (1)
- No (2)

If No Is Selected, Then Skip To Individuals who experience trauma som...

Q6.3 When was the last time you experienced a nightmare that was a replay of the abuse you experienced? Please enter your answer in the space or spaces that best describes when your most recent nightmare that copied the abuse happened.

- Days ago (1)
- Months ago (2)
- Years ago (3)

Q6.4 Have you ever had a repeating nightmare that was not an exact copy of the abuse you experienced? These repeating nightmares may be similar to waking life experiences or very different from anything ever experienced in waking life. Example: I dream I am being chased by a lion every night even though I have never been chased by a lion.

- Yes (1)
- No (2)

If No Is Selected, Then Skip To In the last week, how many nightmares...

Q80 When was the last time you had a repeating nightmare that was not an exact copy of the abuse you experienced? Please enter your answer in the space or spaces that best describes when your most recent repeating nightmare happened.

- Days ago (1)
- Months ago (2)
- Years ago (3)

Answer If Individuals who experience abuse sometimes report having nightmares that copy the abuse. (example... Yes Is Selected

Q6.6 In the past week, about how often did you have nightmares that:

	2 or more times every night (1)	Once every night (2)	6 times (3)	5 times (4)	4 times (5)	3 times (6)	2 times (7)	Once (8)	Not at all (9)
Replayed the abuse: (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Answer If In the past week, about how often did you have nightmares that: - 2 or more times every night Is Selected

Q76 In the past week, about how many nightmares that replayed the abuse did you have each night? (Please enter the number below)

Answer If In the past week, about how often did you have nightmares that: - 2 or more times every night Is Selected Or In the past week, about how often did you have nightmares that: - Once every night Is Selected Or In the past week, about how often did you have nightmares that: - 6 times Is Selected Or In the past week, about how often did you have nightmares that: - 5 times Is Selected Or In the past week, about how often did you have nightmares that: - 4 times Is Selected Or In the past week, about how often did you have nightmares that: - 3 times Is Selected Or In the past week, about how often did you have nightmares that: - 2 times Is Selected Or In the past week, about how often did you have nightmares that: - Once Is Selected Or In the past week, about how often did you have nightmares that: - Not at all Is Selected

Q92 Is the number of nightmares that replayed the abuse in the last week typical for what you have experienced over the last month?

- Yes (1)
- No (2)

Answer If Is the number of nightmares that replayed the actual or attempted abuse, violence, or aggression... No Is Selected

Q93 About how many nightmares that replayed the abuse did you have in the last month?
 Number of nightmares replaying the abuse: (1)

Answer If Individuals who experience trauma sometimes report repeating nightmares that are not copies of th... Yes Is Selected

Q87 In the past week, about how often did you have:

	2 or more times every night (1)	Once every night (2)	6 times (3)	5 times (4)	4 times (5)	3 times (6)	2 times (7)	Once (8)	Not at all (9)
Repeating nightmares that were not an exact copy of the abuse you experienced (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Answer If In the past week, about how often did you have nightmares that: - 2 or more times every night Is Selected

Q79 In the past week, about how many repeating nightmares that were not an exact copy of the abuse did you experience?(Please enter the number below)

Answer If In the past week, about how often did you have nightmares that: - 2 or more times every night Is Selected Or In the past week, about how often did you have nightmares that: - Once every night Is Selected Or In the past week, about how often did you have nightmares that: - 6 times Is Selected Or In the past week, about how often did you have nightmares that: - 5 times Is Selected Or In the past week, about how often did you have nightmares that: - 4 times Is Selected Or In the past week, about how often did you have nightmares that: - 3 times Is Selected Or In the past week, about how often did you have nightmares that: - 2 times Is Selected Or In the past week, about how often did you have nightmares that: - Once Is Selected Or In the past week, about how often did you have nightmares that: - Not at all Is Selected

Q94 Is the weekly number of repeating nightmares that were not an exact copy of the abuse you experienced typical for what you have experienced over the last month?

- Yes (1)
- No (2)

Answer If Is the number of nightmares that repeated but were not an exact replay of the actual or attempted... No Is Selected

Q95 How many repeating nightmares that were not an exact copy of the abuse you experienced did you have in the last month?

Number of repeating nightmares: (1)

Q8.1 The survey is now complete. Thank you very much for your time and effort in completing this survey. If you would like to participate in the drawing for a \$20 gift certificate to Amazon, please click the link below. After clicking the link, you will be taken to a separate site where you will be asked to provide an email address to which the gift certificate can be sent if you win. The reason for the separate site is to keep your survey results separate and unconnected to any identifying information including email addresses. The email will be kept confidential and stored separately from your survey results. All emails will be deleted after the gift certificates are sent to the winners. Link to the drawing: [Amazon gift certificate drawing](#) Should you feel that you would like to seek additional resources related to your experiences of intimate partner violence, please contact the following organizations: The National Coalition Against Domestic Violence (<http://www.ncadv.org/>) The National Network to End Domestic Violence (<http://www.nnedv.org/>) The National Domestic Violence Hotline (<http://www.thehotline.org/>; 1-800-799-SAFE). Again, thank you for your time.

APPENDIX C

FIRST SURVEY REVISION

Dreaming after Trauma

Q1.1 Welcome to the survey web-site for our study, "Dreaming After Trauma: The Utility of the Contemporary Theory of Dreaming for Understanding Post-traumatic Nightmares among Survivors of Intimate Partner Violence." You will begin by answering four questions to determine whether you are eligible to participate in this study. Please click "NEXT" below to continue to these questions.

Q1.2 Are you at least 21 years of age?

- Yes (1)
- No (2)

Q1.3 Have you experienced actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression by a boyfriend, girlfriend, partner, or spouse?

- Yes (1)
- No (2)

Q1.4 Have you been out of any abusive relationship for at least one year?

- Yes (1)
- No (2)

Q88 Have you experienced any nightmares or disturbing dreams because of the abuse?

- Yes (1)
- No (2)

Q1.5 This survey is written in the English language. Do you feel able to complete a survey written in the English language?

- Yes (1)
- No (2)

Answer If Are you at least 21 years of age? No Is Selected Or Have you experienced physical, sexual or emotional abuse by a boyfriend or girlfriend or spouse?... No Is Selected Or Have you been out of any abusive relationship for at least one year? No Is Selected Or This survey is written in the English language. Can you read in the English language? No Is Selected Or Have you experienced any nightmares or disturbing dreams because of the abuse? No Is Selected

Q1.6 Based on the responses you provided on the previous page, you do not meet the eligibility criteria to be able to participate in this study. Thank you for your time in providing your responses. Please do not attempt to access this survey any further. Should you need any resources related to past or current experiences of intimate partner violence, we refer you to the following organizations: The National Coalition Against Domestic Violence (<http://www.ncadv.org/>) The National Network to End Domestic Violence (<http://www.nnedv.org/>) The National Domestic Violence Hotline (<http://www.thehotline.org/>; 1-800-799-SAFE). Again, thank you for your time.

If Based on the responses you ... Is Displayed, Then Skip To End of Survey

Q1.7 Informed Consent Form

Project Title: Dreaming after trauma: The utility of the Contemporary Theory of Dreaming for understanding post-traumatic nightmares among survivors of Intimate Partner Violence

Principal Investigator: Alwin Wagener

Faculty Advisor: Dr. Scott Young

What are some general things you should know about research studies? You are being asked to take part in a confidential research study. Your participation in the study is voluntary. You may choose not to join, or you may withdraw your consent to be in the study, for any reason, without penalty. Research studies are designed to obtain new knowledge. This new information may help people in the future. There may not be any direct benefit to you for being in the research study. There also may be risks to being in research studies. If you choose not to be in the study or leave the study before it is done, it will not affect your relationship with the researcher or the University of North Carolina at Greensboro. Details about this study are discussed in this consent form. It is important that you understand this information so that you can make an informed choice about being in this research study. You will be given a copy of this consent form. If you have any questions about this study at any time, you should ask the researchers named in this consent form. Their contact information is below.

What is the study about? This is a research project. Your participation is voluntary. The purpose of this study is to gather information about the posttraumatic

nightmares of survivors of intimate partner violence in order to better understand how those nightmares relate to insomnia and symptoms of posttraumatic stress disorder. These nightmares are often reported as very frightening and disturbing and often repeat the trauma. Understanding the relationship between what happens in the nightmares and insomnia and PTSD may increase understanding of nightmares and lead to more empowering ways to support survivors like you who may be struggling with the aftermath of violence, so your participation in this survey is valuable.

Why are you asking me? You have been asked to participate in this study because you report that you were in a relationship in which you were abused by a former partner (i.e. you experienced Intimate Partner Violence; IPV). By IPV, we mean that you experienced, actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression by a former intimate partner (e.g., boyfriend/girlfriend, life partner, spouse). In addition, you are being asked because you report experiencing nightmares or disturbing dreams because of the abuse. Because we do not want to contribute to current suffering, we will only invite participants who (a) have been out of any abusive relationship for at least one year and (b) report that they have had no recent experiences of physical, sexual, or emotional/psychological victimization by a current or former partners within the past year. Other criteria to be eligible to participate in this study include (a) being at least 21 years old and (b) being able to participate in a survey that is written in the English language.

What will you ask me to do if I agree to be in the study? If you agree to be in the study, you will be asked to complete a questionnaire that will take about 15 to 25 minutes. First you will be asked questions to allow the researcher to better understand who you are. Those questions will include your age, race/ethnicity, whether you are taking medications for sleep or symptoms of mental distress, and experience with counseling or therapy (how often you have counseling or therapy, whether it has been helpful, and whether you believe it has helped your nightmares). Following that, you will be asked questions about the trauma or traumas you experienced, symptoms of distress you are having now, your sleep, and your nightmares. You will be asked to write down at least one nightmare and preferably more than one nightmare. As this survey asks you to reflect upon the trauma you experienced and nightmares you are experiencing, there is potential for you to feel emotional and psychological discomfort. Therefore, if at any time you feel you need to stop the survey, you may with either the option of returning to it in the future or completely stopping. There is no penalty for stopping. To assure that you have support for any emotional or psychological discomfort, contact information for support is provided in the next section of this consent form. If at any time you have any questions about the study, please contact the Principal Investigator, Alwin Wagener, at 828-215-8872 or aewagene@uncg.edu.

Is there any audio/video recording? There is no audio/video recording associated with this study.

What are the risks to me? The Institutional Review Board at the University of North Carolina at Greensboro has determined that participation in this study poses minimal risks to participants. There is risk that participants will experience some emotional distress as a result of reporting recent nightmares and reflecting on past experiences of abuse. Please note that you do not need to answer any question you do not feel comfortable answering. In the event that emotional distress occurs the following referrals are provided:

The National Coalition Against Domestic Violence (<http://www.ncadv.org/>)

The National Network to End Domestic Violence (<http://www.nnedv.org/>)

The National Domestic Violence Hotline (<http://www.thehotline.org/>; 1-800-799-SAFE).

If you have questions, want more information or have suggestions, please contact the principal investigator, Alwin Wagener at 828-215-8872 or aewagene@uncg.edu or the Faculty Advisor for the study, Dr. Scott Young, at 336-334-3464 or jyoung3@uncg.edu. If you have any concerns about your rights, how you are being treated, concerns or complaints about this project or benefits or risks associated with being in this study please contact the Office of Research Integrity at UNCG toll-free at (855)-251-2351.

Confidentiality: All information obtained in this study is strictly confidential unless disclosure is required by law. If disclosure is required by court order, survey information would be provided but in that information will be no names or identifiers of participants because that information is not being requested or recorded with the survey. All data obtained from participants will be kept confidential and will only be reported in an aggregate format (by reporting only combined results and never reporting individual ones). All questionnaires will be concealed, and no one other than the primary investigator will have access to them. The data collected will be stored in the HIPPA-compliant, Qualtrics-secure database until it has been deleted by the primary investigator.

Confidentiality with Internet Research: Absolute confidentiality of data provided through the Internet cannot be guaranteed due to the limited protections of Internet access. Please be sure to close your browser when finished so no one will be able to see what you have been doing. **Compensation:** Participants who complete the survey questionnaire, and who wish to participate in the drawing, will be placed in a drawing for five \$20 gift certificates to Amazon. The chance of winning will depend on the number of participants, but it is expected that about 100 participants will complete the survey.

What if I want to leave the study? You have the right to refuse to participate or to withdraw at any time, without penalty. If you do withdraw, it will not affect you in any way. If you choose to withdraw, you may request that any of your data which has been collected be destroyed unless it is in a de-identifiable state. The investigators also have the right to stop your participation at any time. This could be because you have had an unexpected reaction, or have failed to follow instructions, or because the entire study has been stopped.

What about new information/changes in the study? If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you.

Voluntary Consent by Participant: By signing this consent form/completing this survey/activity (used for an IRB-approved waiver of signature) you are agreeing that you read, or it has been read to you, and you fully understand the contents of this document and are openly willing consent to take part in this study. All of your questions concerning this study have been answered. By signing this form, you are agreeing that you are 18 years of age or older and are agreeing to participate, or have the individual specified above as a participant participate, in this study described to you by Alwin Wagener.

Q1.8 I have read, understood, and printed a copy of, the above consent form and desire of my own free will to participate in this study.

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Survey

Q2.1 What is your age?

Age: (1)

Q2.2 What is your race/ethnicity? (Please check all that apply)

- White/Caucasian (1)
- African American (2)
- Hispanic (3)
- Asian (4)
- Native American (5)
- Pacific Islander (6)
- Other (7)

Q2.3 What is your gender?

- Male (1)
- Female (2)
- Other (3)

Q2.4 Have you attended sessions with a counselor because of the most recent abuse you experienced?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To Are you using any medication to help ...

Q2.5 How helpful has counseling been in recovery from that abuse you experienced?

- Not helpful (1)
- A little helpful (2)
- Helpful (3)
- Very helpful (4)

Q2.6 You indicated earlier that you have experienced nightmares because of your experience with abuse. Has counseling helped to make your nightmares less frequent or disturbing?

- Not helpful (1)
- A little helpful (2)
- Helpful (3)
- Very helpful (4)

Q2.7 Are you taking any medication to treat nightmares?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Block

Q2.8 List the medication(s) you are taking that were prescribed to treat nightmares. (accurate spelling is not necessary)

Q2.9 Have your nightmares changed since you began taking the medication or medications?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Block

Q2.10 How have your nightmares changed since you began taking the medication or medications? (select all that apply)

- More frequent (1)
- More disturbing or frightening (2)
- Less frequent (3)
- Less disturbing or frightening (4)
- They completely stopped (5)

Q3.1 For the following 5 questions, please answer in relation to your most recent relationship that included any form of abuse. At the end of these questions, you will be asked if you had earlier relationships in which you experienced abuse.

Q3.2 How long did the relationship last in which you experienced abuse?

- Years (1)
- Months (2)

Q3.3 What was the most significant level of commitment you had with this partner?

- Dating but not in a committed relationship (1)
- In a committed relationship, not living together (2)
- In a committed relationship, living together (3)
- Married (4)
- In a legally-recognized civil union, not married (5)
- Other (please specify) (6) _____

Q3.4 What forms of actual or attempted abuse, violence, or aggression did you experience in this relationship? (Check all that apply.)

- Physical abuse (1)
- Emotional abuse (2)
- Verbal abuse (3)
- Sexual abuse (4)
- Other (Please specify) (5) _____

Q3.7 How many years and months has it been since this relationship ended? (Enter your answer using numbers)

- Years (1)
- Months (2)

Q3.9 Have you been in any abusive relationships other than the one described above?

- Yes (1)
- No (2)

Answer If Have you been in any abusive relationships other than the one described above?
Yes Is Selected

Q96 How many abusive relationships, other than the one described above, have you experienced?

Number of abusive relationships other than the one described above: (1)

Q97 In the following questions, you will be asked about symptoms that often develop after abuse. Please select the one answer for each question that best describes how much you have been bothered by the symptom. In the questions below, "stressful experience" means the abuse you experienced.

Q4.1

In the past month, how much were you bothered by:

	Not at all (1)	A little bit (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
Repeated, disturbing, and unwanted memories of the stressful experience? (1)	<input type="radio"/>				
Repeated, disturbing dreams of the stressful experience? (2)	<input type="radio"/>				
Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)? (3)	<input type="radio"/>				
Feeling very upset when something reminded you of the stressful experience? (4)	<input type="radio"/>				
Having strong physical reactions when something reminded you of the stressful experience (for example,	<input type="radio"/>				

<p>heart pounding, trouble breathing, sweating)? (5)</p>					
<p>Avoiding memories, thoughts, or feelings related to the stressful experience? (6)</p>	○	○	○	○	○
<p>Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)? (7)</p>	○	○	○	○	○
<p>Trouble remembering important parts of the stressful experience? (8)</p>	○	○	○	○	○
<p>Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously</p>	○	○	○	○	○

<p>wrong with me, no one can be trusted, the world is completely dangerous)? (9)</p> <p>Blaming yourself or someone else for the stressful experience or what happened after it? (10)</p> <p>Having strong negative feelings such as fear, horror, anger, guilt, or shame? (11)</p> <p>Loss of interest in activities that you used to enjoy? (12)</p> <p>Feeling distant or cut off from other people? (13)</p> <p>Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)? (14)</p> <p>Irritable</p>	<input type="radio"/>				
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behavior, angry outbursts, or acting aggressively? (15)					
Taking too many risks or doing things that could cause you harm? (16)	<input type="radio"/>				
Being "superalert" or watchful or on guard? (17)	<input type="radio"/>				
Feeling jumpy or easily startled? (18)	<input type="radio"/>				
Having difficulty concentrating? (19)	<input type="radio"/>				
Trouble falling or staying asleep? (20)	<input type="radio"/>				

Q5.1 We are now interested in learning about your sleep habits. The following questions relate to your usual sleep habits during the past month only. Your answers should indicate the most accurate reply for the majority of days and nights in the past month.

Q5.2 During the past month, what time have you usually gone to bed at night?
BED TIME (1)

Q5.3 During the past month, how long (in minutes) has it usually taken you to fall asleep each night?
NUMBER OF MINUTES (1)

Q5.4 During the past month, what time have you usually gotten up in the morning?
GETTING UP TIME (1)

Q5.5 During the past month, how many hours of actual sleep did you get at night?
(This may be different than the number of hours you spent in bed.)

HOURS OF SLEEP PER NIGHT (1)

Q5.6 For each of the remaining questions, check the one best response.

Q5.7 During the past month, how often have you had trouble sleeping because you...

	Not during the past month (1)	Less than once a week (2)	Once or twice a week (3)	Three or more times a week (4)
Cannot get to sleep within 30 minutes (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wake up in the middle of the night or early morning (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have to get up to use the bathroom (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cannot breathe comfortably (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cough or snore loudly (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel too cold (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel too hot (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Had bad dreams (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have pain (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other reason(s), please describe (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q5.8 During the past month, how would you rate your sleep quality overall?

- Very good (1)
- Fairly good (2)
- Fairly bad (3)
- Very bad (4)

Q5.9 During the past month, how often have you taken medicine to help you sleep (prescribed or "over the counter")?

- Not during the past month (1)
- Less than once per week (2)
- Once or twice a week (3)
- Three or more times a week (4)

Q5.10 During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activities?

- Not during the past month (1)
- Less than once per week (2)
- Once or twice a week (3)
- Three or more times a week (4)

Q5.11 During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?

- No problem at all (1)
- Only a very slight problem (2)
- Somewhat of a problem (3)
- A very big problem (4)

Q98 In the questions that follow, you will be asked about your nightmares. For the purpose of this survey, Nightmares are all disturbing or frightening dreams. There are also two frequently reported types of nightmares that you will be asked about. Nightmares that replay abuse - These are nightmares in which you dream about exactly what happened to you when you experienced actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression. Nightmares that repeat but do not replay the abuse - These are nightmares that happen the same way over and over again but do not replay the actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression

Q6.1 In the past week, about how often did you have: (Please include nightmares and dreams that happened in naps and daytime sleep in your answer.)

	2 or more times every night (1)	Once every night (2)	6 times (3)	5 times (4)	4 times (5)	3 times (6)	2 times (7)	Once (8)	Not at all (9)
Nightmares (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dreams that were not nightmares (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q81 Is the number of nightmares you had in the last week typical for what you have experienced over the last month?

- Yes (1)
- No (2)

Answer If Is the number of nightmares you had in the last week typical for what you have experienced over the last month? No Is Selected

Q89 About how many nightmares did you have in the last month?

Number of nightmares: (1)

Q6.2 Have you ever had a nightmare that replayed the abuse you experienced?

Example: In the dream I am being chased and hit by my abusive partner in the same way it happened in waking life.

- Yes (1)
- No (2)

If No Is Selected, Then Skip To Individuals who experience trauma som...

Q6.3 When was the last time you experienced a nightmare that was a replay of the abuse you experienced? Please enter your answer in the space or spaces that best describes when your most recent nightmare that copied the abuse happened.

Days ago (1)

Months ago (2)

Years ago (3)

Q6.4 Have you ever had a repeating nightmare that was not a replay of the abuse?
 Example: I dream I am being chased by a lion every night even though I have never been chased by a lion.

- Yes (1)
- No (2)

If No Is Selected, Then Skip To In the last week, how many nightmares...

Q80 When was the last time you had a repeating nightmare that was not a replay of the abuse? Please enter your answer in the space or spaces that best describes when your most recent repeating nightmare happened.

- Days ago (1)
- Months ago (2)
- Years ago (3)

Answer If Individuals who experience abuse sometimes report having nightmares that copy the abuse. (example... Yes Is Selected

Q6.6 In the past week, about how often did you have nightmares that:

	2 or more times every night (1)	Once every night (2)	6 times (3)	5 times (4)	4 times (5)	3 times (6)	2 times (7)	Once (8)	Not at all (9)
Replayed the abuse: (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q92 Is the number of nightmares that replayed the abuse in the last week typical for what you have experienced over the last month?

- Yes (1)
- No (2)

Answer If Is the number of nightmares that copied the abuse in the last week typical for what you have experienced over the last month? No Is Selected

Q93 About how many nightmares that replayed the abuse did you have in the last month?

Number of nightmares replaying the abuse: (1)

Answer If Individuals who experience trauma sometimes report repeating nightmares that are not copies of th... Yes Is Selected

Q87 In the past week, about how often did you have nightmares that:

	2 or more times every night (1)	Once every night (2)	6 times (3)	5 times (4)	4 times (5)	3 times (6)	2 times (7)	Once (8)	Not at all (9)
Repeated, but were not a replay of the abuse: (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q94 Is the number of nightmares that repeated but were not a replay of the abuse in the last week typical for what you have experienced over the last month?

- Yes (1)
- No (2)

Answer If Is the number of nightmares that repeated in the last week typical for what you have experienced over the last month? No Is Selected

Q95 How many nightmares that repeated but were not a replay of the abuse did you have in the last month?

Number of repeating nightmares: (1)

Q99 In this final section, you will be asked to write down a nightmare that is typical of the kind of nightmares you have had over the last month and then answer questions about that nightmare. As in the last section, you will be asked about whether the nightmare you wrote is one of the two types of nightmares commonly experienced by survivors of abuse: Nightmares that replay the abuse - These are nightmares in which you dream about exactly what happened to you when you experienced actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression. Nightmares that repeat but do not replay the abuse - These are nightmares that happen the same way over and over again but do not replay the actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression you experienced.

Q7.1 Please write down a nightmare that occurred within the last month that is typical of the kind of nightmares you have recently experienced? (Please include as much detail as you can remember.)

Q7.2 What was the strongest emotion(s) you experienced in the nightmare?
Examples: Fear, Sadness, Guilt, Shame, Anger, etc.

Q7.3 For the emotion(s) that was strongest, how strongly did you feel the emotion(s) in the nightmare?

- No Emotion (1)
- Very Weakly (2)
- Weakly (3)
- Moderately (4)
- Strongly (5)
- Very Strongly (6)
- As strongly as the emotion(s) can be felt (7)

Q84 How much did the nightmare seem like something you have experienced in waking life?

- Not at all (1)
- Very Little (2)
- A little (3)
- Some (4)
- A lot (5)
- Mostly (6)
- Completely (7)

Q7.4 How unusual was what happened in your nightmare compared to your waking life experiences?

- Not at all (1)
- Very little (2)
- A little (3)
- Some (4)
- A lot (5)
- Mostly (6)
- Completely (7)

Q78 Did this nightmare cause you to suddenly wake up?

- Yes (1)
- No (2)

Q7.5 Please rate the restfulness of your sleep for the night of the nightmare. (A restful sleep is one that leaves you feeling that you have gotten all the sleep you need.)

- Not at all (1)
- Very little (2)
- A little (3)
- Some (4)
- A lot (5)
- Mostly (6)
- Completely (7)

Q7.7 How often do you have this nightmare?

- This is the only time (1)
- Less than Once a Month (2)
- Once a Month (3)
- 2-3 Times a Month (4)
- Once a Week (5)
- 2-3 Times a Week (6)
- Daily (7)

Q7.8 Did this nightmare replay what happened in the abuse you experienced?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To Is this a recurrent dream that does n...

Q7.9 Sometimes people report small changes happen in nightmares that replay the abuse. Please describe any small changes in the nightmare compared to the actual abuse experience. Examples may include: The faces of people in the dream changed, the abuse happened in a different room, I watched the abuse happen to me from the ceiling, Different words were said compared to the actual experience, etc.

Answer If How often do you have this nightmare? This is the only time Is Not Selected And Did this nightmare copy what happened in the abuse you experienced? Yes Is Not Selected

Q7.10 Is this a repeating nightmare that does not replay your abuse experience?

- Yes (1)
- No (2)

Answer If How often do you have this nightmare? This is the only time Is Not Selected And Did this nightmare copy what happened in the abuse you experienced? No Is Selected And Yes Is Selected

Q7.11 Please describe any small changes in the nightmare compared to the last time you dreamed it. Examples: The location changed, the faces changed, the dream ended differently, different words were spoken, etc.

Q7.12 Do you remember another nightmare from within the last month that you would be willing to share and answer questions about to help improve the understanding of nightmares among survivors of actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression? At this point you have completed all the necessary survey questions and clicking "No" will take you to final page of the survey where you may enter for a chance to win a \$20 Amazon gift certificate.

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Block

Q7.13 If you remember another nightmare from the last month, please write it down with as much detail as you can remember.

Q7.14 What was the strongest emotion(s) you felt in the nightmare? Examples: Fear, Sadness, Guilt, Shame, Anger, etc.

Q7.15 For the emotion(s) that was strongest, how strongly did you feel the emotion(s) in the nightmare?

- No Emotion (1)
- Very Weak (2)
- Weak (3)
- Moderate (4)
- Strong (5)
- Very Strong (6)
- As strongly as the emotion(s) can be felt (7)

Q85 How much did the nightmare seem like something you have experienced in waking life?

- Not at all (1)
- Very Little (2)
- A little (3)
- Some (4)
- A lot (5)
- Mostly (6)
- Completely (7)

Q7.16 How unusual was what happened in your nightmare compared to your waking life experiences?

- Not at all (1)
- Very little (2)
- A little (3)
- Some (4)
- A lot (5)
- Mostly (6)
- Completely (7)

Q79 Did this nightmare cause you to suddenly wake up?

- Yes (1)
- No (2)

Q7.17 Please rate the restfulness of your sleep for the night of the nightmare. (A restful sleep is one that leaves you feeling that you have gotten all the sleep you need.)

- Not at all (1)
- Very little (2)
- A little (3)
- Some (4)
- A lot (5)
- Mostly (6)
- Completely (7)

Q7.19 How often do you have this nightmare?

- This is the only time (1)
- Less than Once a Month (2)
- Once a Month (3)
- 2-3 Times a Month (4)
- Once a Week (5)
- 2-3 Times a Week (6)
- Daily (7)

Q7.20 Did this nightmare replay what happened in the abuse you experienced?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To Is this a recurrent dream?

Q7.21 Sometimes people report small changes happen in nightmares that replay the abuse. Please describe any small changes in the nightmare compared to the actual abuse experience. Examples may include: The faces of people in the dream changed, the abuse happened in a different room, I watched the abuse happen to me from the ceiling, Different words were said compared to the actual experience, etc.

Answer If Did this nightmare copy what happened in the abuse you experienced? No Is Selected And How often do you have this nightmare? This is the only time Is Not Selected

Q7.22 Is this a repeating nightmare that does not replay your abuse experience?

- Yes (1)
- No (2)

Answer If Is this a recurrent dream that does not copy your trauma experience? Yes Is Selected

Q7.23 Please describe any small changes in the nightmare compared to the last time you dreamed it. Examples: The location changed, the faces changed, the dream ended differently, different words were spoken, etc.

Q8.1 The survey is now complete. Thank you very much for your time and effort in completing this survey. If you would like to participate in the drawing for a \$20 gift certificate to Amazon, please provide an email address to which the gift certificate can be sent if you win. The email will be kept confidential and stored separately from your survey results, once the results are collected. All emails will be deleted after the gift certificates are sent to the winners.

I would like to participate in the drawing and my email is written below (1)

I would not like to participate in the drawing (2)

APPENDIX D

EXPERT REVIEWED SURVEY DRAFT

Dreaming after Trauma

Q1.1 Welcome to the survey web-site for our study, "Dreaming After Trauma: The Utility of the Contemporary Theory of Dreaming for Understanding Post-traumatic Nightmares among Survivors of Intimate Partner Violence." You will begin by answering four questions to determine whether you are eligible to participate in this study. Please click "NEXT" below to continue to these questions.

Q1.2 Are you at least 21 years of age?

- Yes (1)
- No (2)

Q1.3 Have you experienced physical, sexual, psychological, or emotional abuse by a boyfriend, girlfriend, partner, or spouse? In other words, have you experienced battering, domestic violence, intimate partner violence, and/or spousal abuse?

- Yes (1)
- No (2)

Q1.4 Have you been out of any abusive relationship for at least one year?

- Yes (1)
- No (2)

Q88 Have you experienced any nightmares or disturbing dreams because of the abuse?

- Yes (1)
- No (2)

Q1.5 This survey is written in the English language. Do you feel able to complete a survey written in the English language?

- Yes (1)
- No (2)

(The blue and gray highlighted areas are to indicate that the participant will be directed to a following question based an above answer. In the case of the blue

highlighted area directly below, it is stating that if “no” is selected for any of the above 5 questions, the participant will be directed to Q1.6 instead of entering the survey.)

Answer If Are you at least 21 years of age? No Is Selected Or Have you experienced physical, sexual or emotional abuse by a boyfriend or girlfriend or spouse?... No Is Selected Or Have you been out of any abusive relationship for at least one year? No Is Selected Or This survey is written in the English language. Can you read in the English language? No Is Selected Or Have you experienced any nightmares or disturbing dreams because of the abuse? No Is Selected

Q1.6 Based on the responses you provided on the previous page, you do not meet the eligibility criteria to be able to participate in this study. Thank you for your time in providing your responses. Please do not attempt to access this survey any further. Should you need any resources related to past or current experiences of intimate partner violence, we refer you to the following organizations: The National Coalition Against Domestic Violence (<http://www.ncadv.org/>) The National Network to End Domestic Violence (<http://www.nnedv.org/>) The National Domestic Violence Hotline (<http://www.thehotline.org/>; 1-800-799-SAFE). Again, thank you for your time.

If Based on the responses you ... Is Displayed, Then Skip To End of Survey

Q1.7 Informed Consent Form

Project Title: Dreaming after trauma: The utility of the Contemporary Theory of Dreaming for understanding post-traumatic nightmares among survivors of Intimate Partner Violence

Principal Investigator: Alwin Wagener

Faculty Advisor: Dr. Scott Young

What are some general things you should know about research studies? You are being asked to take part in a research study. Your participation in the study is voluntary. You may choose not to join, or you may withdraw your consent to be in the study, for any reason, without penalty. Research studies are designed to obtain new knowledge. This new information may help people in the future. There may not be any direct benefit to you for being in the research study. There also may be risks to being in research studies. If you choose not to be in the study or leave the study before it is done, it will not affect your relationship with the researcher or the University of North Carolina at Greensboro. Details about this study are discussed in this consent form. It is important that you understand this information so that you can make an informed choice about being in this research study. You will be given a copy of this consent form. If you have any questions about this study at any time,

you should ask the researchers named in this consent form. Their contact information is below.

What is the study about? This is a research project. Your participation is voluntary. The purpose of this study is to gather information about the posttraumatic nightmares of survivors of intimate partner violence in order to better understand how those nightmares relate to insomnia and symptoms of posttraumatic stress disorder. These nightmares are often reported as very frightening and disturbing and often repeat the trauma. Understanding the relationship between what happens in the nightmares and insomnia and PTSD may increase understanding of nightmares and lead to better treatments, so your participation in this survey is valuable.

Why are you asking me? You have been asked to participate in this study because you report that you were in a relationship in which you were abused by a former partner (i.e. you experienced Intimate Partner Violence; IPV). By IPV, we mean that you experienced, physical, sexual, and/or emotional/psychological abuse by a former intimate partner (e.g., boyfriend/girlfriend, life partner, spouse). In addition, you are being asked because you report experiencing nightmares or disturbing dreams because of the abuse. Because we do not want to contribute to current suffering, we will only invite participants who (a) have been out of any abusive relationship for at least one year and (b) report that they have had no recent experiences of physical, sexual, or emotional/psychological victimization by a current or former partners within the past year. Other criteria to be eligible to participate in this study include (a) being at least 21 years old and (b) being able to participate in a survey that is written in the English language.

What will you ask me to do if I agree to be in the study? If you agree to be in the study, you will be asked to complete a questionnaire that will take about 15 to 25 minutes. First you will be asked questions to allow the researcher to better understand who you are. Those questions will include your age, race/ethnicity, whether you are taking medications for sleep or symptoms of mental distress, and experience with counseling or therapy (how often you have counseling or therapy, whether it has been helpful, and whether you believe it has helped your nightmares). Following that, you will be asked questions about the trauma or traumas you experienced, symptoms of distress you are having now, your sleep, and your nightmares. You will be asked to write down at least one nightmare and preferably more than one nightmare. As this survey asks you to reflect upon the trauma you experienced and nightmares you are experiencing, there is potential for you to feel emotional and psychological discomfort. Therefore, if at any time you feel you need to stop the survey, you may with either the option of returning to it in the future or completely stopping. There is no penalty for stopping. To assure that you have support for any emotional or psychological discomfort, contact information for support is provided in the next section of this consent form. If at any time you have any questions about the study, please contact the Principal Investigator, Alwin Wagener, at 828-215-8872 or aewagene@uncg.edu.

Is there any audio/video recording? There is no audio/video recording associated with this study.

What are the risks to me? The Institutional Review Board at the University of North Carolina at Greensboro has determined that participation in this study poses minimal risks to participants. There is risk that participants will experience some emotional distress as a result of reporting recent nightmares and reflecting on past experiences of abuse. Please note that you do not need to answer any question you do not feel comfortable answering. In the event that emotional distress occurs the following referrals are provided: The National Coalition Against Domestic Violence (<http://www.ncadv.org/>) The National Network to End Domestic Violence (<http://www.nnedv.org/>) The National Domestic Violence Hotline (<http://www.thehotline.org/>; 1-800-799-SAFE). If you have questions, want more information or have suggestions, please contact the principal investigator, Alwin Wagener at 828-215-8872 or aewagene@uncg.edu or the Faculty Advisor for the study, Dr. Scott Young, at 336-334-3464 or jsyoung3@uncg.edu. If you have any concerns about your rights, how you are being treated, concerns or complaints about this project or benefits or risks associated with being in this study please contact the Office of Research Integrity at UNCG toll-free at (855)-251-2351.

Confidentiality: All information obtained in this study is strictly confidential unless disclosure is required by law. All data obtained from participants will be kept confidential and will only be reported in an aggregate format (by reporting only combined results and never reporting individual ones). All questionnaires will be concealed, and no one other than the primary investigator will have access to them. The data collected will be stored in the HIPPA-compliant, Qualtrics-secure database until it has been deleted by the primary investigator.

Confidentiality with Internet Research: Absolute confidentiality of data provided through the Internet cannot be guaranteed due to the limited protections of Internet access. Please be sure to close your browser when finished so no one will be able to see what you have been doing.

Compensation: Participants who complete the survey questionnaire, and who wish to participate in the drawing, will be placed in a drawing for five \$25 gift certificates to Amazon. The chance of winning will depend on the number of participants, but it is expected that about 100 participants will complete the survey.

What if I want to leave the study? You have the right to refuse to participate or to withdraw at any time, without penalty. If you do withdraw, it will not affect you in any way. If you choose to withdraw, you may request that any of your data which has been collected be destroyed unless it is in a de-identifiable state. The investigators also have the right to stop your participation at any time. This could be because you have had an unexpected reaction, or have failed to follow instructions, or because the entire study has been stopped.

What about new information/changes in the study? If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you.

Voluntary Consent by Participant: By signing this consent form/completing this survey/activity (used for an IRB-approved waiver of signature) you are agreeing that you read, or it has been read to you, and you fully understand the contents of this document and are openly willing consent to take part in this study. All of your questions concerning this study have been answered. By signing this form, you are agreeing that you are 18 years of age or older and are agreeing to participate, or have the individual specified above as a participant participate, in this study described to you by Alwin Wagener.

Q1.8 I have read, understood, and printed a copy of, the above consent form and desire of my own free will to participate in this study.

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Survey

Q2.1 What is your age?

Age: (1)

Q2.2 What is your race/ethnicity? (Please check all that apply)

- White/Caucasian (1)
- African American (2)
- Hispanic (3)
- Asian (4)
- Native American (5)
- Pacific Islander (6)
- Other (7)

Q2.3 What is your gender?

- Male (1)
- Female (2)
- Other (3)

Q2.4 Have you attended sessions with a counselor or psychotherapist because of the abuse?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To Are you using any medication to help ...

Q2.5 How helpful has counseling or psychotherapy been in recovery from the trauma you experienced?

- Not helpful (1)
- A little helpful (2)
- Helpful (3)
- Very helpful (4)

Q2.6 You indicated earlier that you have experienced nightmares because of your experience with abuse. Has counseling or psychotherapy helped to make your nightmares less frequent or disturbing?

- Not helpful (1)
- A little helpful (2)
- Helpful (3)
- Very helpful (4)

Q2.7 Are you taking any medication to treat nightmares?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Block

Q2.8 List the medication(s) you are taking that were prescribed to treat nightmares.

Q2.9 Have your nightmares changed since you began taking the medication or medications?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Block

Q2.10 How have your nightmares changed since you began taking the medication or medications? (select all that apply)

- More frequent (1)
- More disturbing or frightening (2)
- Less frequent (3)
- Less disturbing or frightening (4)
- They completely stopped (5)

Q3.1 For the following 5 questions, please answer in relation to your most recent relationship that included any form of abuse. At the end of these questions, you will be asked if you had earlier relationships in which you experienced abuse.

Q3.2 How long did the relationship last in which you experienced abuse?

Years (1)

Months (2)

Q3.3 What was the most significant level of commitment you had with this partner?

Dating but not in a committed relationship (1)

In a committed relationship, not living together (2)

In a committed relationship, living together (3)

Married (4)

In a legally-recognized civil union, not married (5)

Other (please specify) (6) _____

Q3.4 What forms of abuse did you experienced in this relationship? (Check all that apply.)

Physical abuse (1)

Emotional abuse (2)

Verbal abuse (3)

Sexual abuse (4)

Other (Please specify) (5) _____

Q3.6 Do you have any current contact with this partner?

Yes (1)

No (2)

Q3.7 How many years and months has it been since this relationship ended? (Enter your answer using numbers)

Years (1)

Months (2)

Q3.9 Have you been in any abusive relationships other than the one described above?

Yes (1)

No (2)

Answer If Have you been in any abusive relationships other than the one described above?
Yes Is Selected

Q96 How many abusive relationships, other than the one described above, have you experienced?

Number of abusive relationships other than the one described above: (1)

Q97 In the following questions, you will be asked about symptoms that often develop after abuse. Please select the one answer for each question that best describes how much you have been bothered by the symptom. In the questions below, "stressful experience" means the abuse you experienced.

Q4.1 In the past month, how much were you bothered by:

	Not at all (1)	A little bit (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
Repeated, disturbing, and unwanted memories of the stressful experience? (1)	<input type="radio"/>				
Repeated, disturbing dreams of the stressful experience? (2)	<input type="radio"/>				
Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)? (3)	<input type="radio"/>				
Feeling very upset when something reminded you of the stressful experience? (4)	<input type="radio"/>				
Having strong physical reactions when	<input type="radio"/>				

<p>something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)? (5)</p>					
<p>Avoiding memories, thoughts, or feelings related to the stressful experience? (6)</p>	<input type="radio"/>				
<p>Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)? (7)</p>	<input type="radio"/>				
<p>Trouble remembering important parts of the stressful experience? (8)</p>	<input type="radio"/>				
<p>Having strong negative beliefs about yourself, other people, or the world (for example, having</p>	<input type="radio"/>				

<p>thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)? (9)</p> <p>Blaming yourself or someone else for the stressful experience or what happened after it? (10)</p>	<input type="radio"/>				
<p>Having strong negative feelings such as fear, horror, anger, guilt, or shame? (11)</p>	<input type="radio"/>				
<p>Loss of interest in activities that you used to enjoy? (12)</p>	<input type="radio"/>				
<p>Feeling distant or cut off from other people? (13)</p>	<input type="radio"/>				
<p>Trouble experiencing positive feelings (for example, being unable to feel happiness or</p>	<input type="radio"/>				

have loving feelings for people close to you)? (14)					
Irritable behavior, angry outbursts, or acting aggressively? (15)	<input type="radio"/>				
Taking too many risks or doing things that could cause you harm? (16)	<input type="radio"/>				
Being "superalert" or watchful or on guard? (17)	<input type="radio"/>				
Feeling jumpy or easily startled? (18)	<input type="radio"/>				
Having difficulty concentrating? (19)	<input type="radio"/>				
Trouble falling or staying asleep? (20)	<input type="radio"/>				

Q5.1 We are now interested in learning about your sleep habits. The following questions relate to your usual sleep habits during the past month only. Your answers should indicate the most accurate reply for the majority of days and nights in the past month.

Q5.2 During the past month, what time have you usually gone to bed at night?
BED TIME (1)

Q5.3 During the past month, how long (in minutes) has it usually taken you to fall asleep each night?

NUMBER OF MINUTES (1)

Q5.4 During the past month, what time have you usually gotten up in the morning?

GETTING UP TIME (1)

Q5.5 During the past month, how many hours of actual sleep did you get at night? (This may be different than the number of hours you spent in bed.)

HOURS OF SLEEP PER NIGHT (1)

Q5.6 For each of the remaining questions, check the one best response.

Q5.7 During the past month, how often have you had trouble sleeping because you...

	Not during the past month (1)	Less than once a week (2)	Once or twice a week (3)	Three or more times a week (4)
Cannot get to sleep within 30 minutes (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wake up in the middle of the night or early morning (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have to get up to use the bathroom (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cannot breathe comfortably (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cough or snore loudly (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel too cold (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel too hot (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Had bad dreams (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have pain (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other reason(s), please describe (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q5.8 During the past month, how would you rate your sleep quality overall?

- Very good (1)
- Fairly good (2)
- Fairly bad (3)
- Very bad (4)

Q5.9 During the past month, how often have you taken medicine to help you sleep (prescribed or "over the counter")?

- Not during the past month (1)
- Less than once per week (2)
- Once or twice a week (3)
- Three or more times a week (4)

Q5.10 During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activities?

- Not during the past month (1)
- Less than once per week (2)
- Once or twice a week (3)
- Three or more times a week (4)

Q5.11 During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?

- No problem at all (1)
- Only a very slight problem (2)
- Somewhat of a problem (3)
- A very big problem (4)

Q98 In the questions that follow, you will be asked about your nightmares.

For the purpose of this survey, **Nightmares are all disturbing or frightening dreams.**

There are also two frequently reported types of nightmares that you will be asked about.

Nightmares that replay the abuse - These are nightmares in which you dream about exactly what happened to you when you experienced abuse. **Nightmares**

that repeat but do not replay the abuse - These are nightmares that happen the same way over and over again but do not replay the abuse you experienced

Q6.1 In the past week, about how often did you have:
 (Please include nightmares and dreams that happened in naps and daytime sleep in your answer.)

	2 or more times every night (1)	Once every night (2)	6 times (3)	5 times (4)	4 times (5)	3 times (6)	2 times (7)	Once (8)	Not at all (9)
Nightmares (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dreams that were not nightmares (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q81 Is the number of nightmares you had in the last week typical for what you have experienced over the last month?

- Yes (1)
- No (2)

Answer If Is the number of nightmares you had in the last week typical for what you have experienced over the last month? No Is Selected

Q89 About how many nightmares did you have in the last month?

Number of nightmares: (1)

Q6.2 Have you ever had a nightmare that replayed the abuse you experienced?
 Example: In the dream I am being chased and hit by my abusive partner in the same way it happened in waking life.

- Yes (1)
- No (2)

If No Is Selected, Then Skip To Individuals who experience trauma som...

Q6.3 When was the last time you experienced a nightmare that was a replay of the abuse you experienced? Please enter your answer in the space or spaces that best describes when your most recent nightmare that copied the abuse happened.

Days ago (1)

Months ago (2)

Years ago (3)

Q6.4 Have you ever had a repeating nightmare that was not a replay of the abuse?
 Example: I dream I am being chased by a lion every night even though I have never been chased by a lion.

- Yes (1)
- No (2)

If No Is Selected, Then Skip To In the last week, how many nightmares...

Q80 When was the last time you had a repeating nightmare that was not a replay of the abuse? Please enter your answer in the space or spaces that best describes when your most recent repeating nightmare happened.

- Days ago (1)
- Months ago (2)
- Years ago (3)

Answer If Individuals who experience abuse sometimes report having nightmares that copy the abuse. (example... Yes Is Selected

Q6.6 In the past week, about how often did you have nightmares that:

	2 or more times every night (1)	Once every night (2)	6 times (3)	5 times (4)	4 times (5)	3 times (6)	2 times (7)	Once (8)	Not at all (9)
Replayed the abuse: (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q92 Is the number of nightmares that replayed the abuse in the last week typical for what you have experienced over the last month?

- Yes (1)
- No (2)

Answer If Is the number of nightmares that copied the abuse in the last week typical for what you have experienced over the last month? No Is Selected

Q93 About how many nightmares that replayed the abuse did you have in the last month?

Number of nightmares replaying the abuse: (1)

Answer If Individuals who experience trauma sometimes report repeating nightmares that are not copies of th... Yes Is Selected

Q87 In the past week, about how often did you have nightmares that:

	2 or more times every night (1)	Once every night (2)	6 times (3)	5 times (4)	4 times (5)	3 times (6)	2 times (7)	Once (8)	Not at all (9)
Repeated, but were not a replay of the abuse: (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q94 Is the number of nightmares that repeated but were not a replay of the abuse in the last week typical for what you have experienced over the last month?

- Yes (1)
- No (2)

Answer If Is the number of nightmares that repeated in the last week typical for what you have experienced over the last month? No Is Selected

Q95 How many nightmares that repeated but were not a replay of the abuse did you have in the last month?

Number of repeating nightmares: (1)

Q99 In this final section, you will be asked to write down a nightmare that is typical of the kind of nightmares you have had over the last month and then answer questions about that nightmare. As in the last section, you will be asked about whether the nightmare you wrote is one of the two types of nightmares commonly experienced by survivors of abuse:

Nightmares that replay the abuse - These are nightmares in which you dream about exactly what happened to you when you experienced abuse. **Nightmares that repeat but do not replay the abuse** - These are nightmares that happen the same way over and over again but do not replay the abuse you experienced

Q7.1 Please write down a nightmare that occurred within the last month that is typical of the kind of nightmares you have recently experienced? (Please include as much detail as you can remember.)

Q7.2 What was the strongest emotion(s) you experienced in the nightmare?
Examples: Fear, Sadness, Guilt, Shame, Anger, etc.

Q7.3 How strongly did you feel the emotion(s) in the nightmare?

- No Emotion (1)
- Very Weakly (2)
- Weakly (3)
- Moderately (4)
- Strongly (5)
- Very Strongly (6)
- As strongly as the emotion(s) can be felt (7)

Q84 How much did the nightmare seem like something you have experienced in waking life?

- Not at all (1)
- Very Little (2)
- A little (3)
- Some (4)
- A lot (5)
- Mostly (6)
- Completely (7)

Q7.4 How unusual was what happened in your nightmare compared to your waking life experiences?

- Not at all (1)
- Very little (2)
- A little (3)
- Some (4)
- A lot (5)
- Mostly (6)
- Completely (7)

Q78 Did this nightmare cause you to suddenly wake up?

- Yes (1)
- No (2)

Q7.5 Please rate the restfulness of your sleep for the night of the nightmare. (A restful sleep is one that leaves you feeling that you have gotten all the sleep you need.)

- Not at all (1)
- Very little (2)
- A little (3)
- Some (4)
- A lot (5)
- Mostly (6)
- Completely (7)

Q7.7 How often do you have this nightmare?

- This is the only time (1)
- Less than Once a Month (2)
- Once a Month (3)
- 2-3 Times a Month (4)
- Once a Week (5)
- 2-3 Times a Week (6)
- Daily (7)

Q7.8 Did this nightmare replay what happened in the abuse you experienced?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To Is this a recurrent dream that does n...

Q7.9 Sometimes people report small changes happen in nightmares that replay the abuse. Please describe any small changes in the nightmare compared to the actual abuse experience. Examples may include: The faces of people in the dream changed, the abuse happened in a different room, I watched the abuse happen to me from the ceiling, Different words were said compared to the actual experience, etc.

Answer If How often do you have this nightmare? This is the only time Is Not Selected And Did this nightmare copy what happened in the abuse you experienced? Yes Is Not Selected

Q7.10 Is this a repeating nightmare that does not replay your trauma experience?

- Yes (1)
- No (2)

Answer If How often do you have this nightmare? This is the only time Is Not Selected And Did this nightmare copy what happened in the abuse you experienced? No Is Selected And Yes Is Selected

Q7.11 Please describe any small changes in the nightmare compared to the last time you dreamed it. Examples: The location changed, the faces changed, the dream ended differently, different words were spoken, etc.

Q7.12 Do you remember another nightmare from within the last month that you would be willing to share and answer questions about to help improve the understanding of nightmares among survivors of abuse? At this point you have completed all the necessary survey questions and clicking "No" will take you to final page of the survey where you may enter for a chance to win a \$25 Amazon gift certificate.

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Block

Q7.13 If you remember another nightmare from the last month, please write it down with as much detail as you can remember.

Q7.14 What was the strongest emotion(s) you felt in the nightmare? Examples: Fear, Sadness, Guilt, Shame, Anger, etc.

Q7.15 How strongly did you feel the emotion(s) in the nightmare?

- No Emotion (1)
- Very Weak (2)
- Weak (3)
- Moderate (4)
- Strong (5)
- Very Strong (6)
- As strongly as the emotion(s) can be felt (7)

Q85 How much did the nightmare seem like something you have experienced in waking life?

- Not at all (1)
- Very Little (2)
- A little (3)
- Some (4)
- A lot (5)
- Mostly (6)
- Completely (7)

Q7.16 How unusual was what happened in your nightmare compared to your waking life experiences?

- Not at all (1)
- Very little (2)
- A little (3)
- Some (4)
- A lot (5)
- Mostly (6)
- Completely (7)

Q79 Did this nightmare cause you to suddenly wake up?

- Yes (1)
- No (2)

Q7.17 Please rate the restfulness of your sleep for the night of the nightmare. (A restful sleep is one that leaves you feeling that you have gotten all the sleep you need.)

- Not at all (1)
- Very little (2)
- A little (3)
- Some (4)
- A lot (5)
- Mostly (6)
- Completely (7)

Q7.19 How often do you have this nightmare?

- This is the only time (1)
- Less than Once a Month (2)
- Once a Month (3)
- 2-3 Times a Month (4)
- Once a Week (5)
- 2-3 Times a Week (6)
- Daily (7)

Q7.20 Did this nightmare replay what happened in the abuse you experienced?

- Yes (1)
- No (2)

If No Is Selected, Then Skip To Is this a recurrent dream?

Q7.21 Sometimes people report small changes happen in nightmares that replay the abuse. Please describe any small changes in the nightmare compared to the actual abuse experience. Examples may include: The faces of people in the dream changed, the abuse happened in a different room, I watched the abuse happen to me from the ceiling, Different words were said compared to the actual experience, etc.

Answer If Did this nightmare copy what happened in the abuse you experienced? No Is Selected And How often do you have this nightmare? This is the only time Is Not Selected

Q7.22 Is this a repeating nightmare that does not replay your trauma experience?

- Yes (1)
- No (2)

Answer If Is this a recurrent dream that does not copy your trauma experience? Yes Is Selected

Q7.23 Please describe any small changes in the nightmare compared to the last time you dreamed it. Examples: The location changed, the faces changed, the dream ended differently, different words were spoken, etc.

Q8.1 The survey is now complete. Thank you very much for your time and effort in completing this survey. If you would like to participate in the drawing for a \$25 gift certificate to Amazon, please provide an email address to which the gift certificate can be sent if you win. The email will be kept confidential and stored separately from your survey results, once the results are collected. All emails will be deleted after the gift certificates are sent to the winners.

I would like to participate in the drawing and my email is written below (1)

I would not like to participate in the drawing (2)

APPENDIX E
RECRUITMENT EMAIL

Dear Potential Participant,

My name is Alwin Wagener, and I am a doctoral student in the Counselor Education Department at The University of North Carolina at Greensboro. This email is being sent to invite you to participate in an IRB approved research study that will help us learn more about the posttraumatic nightmares of survivors of intimate partner violence.

To be eligible to take part in this study you must be at least 21 years of age, have experienced an abusive relationship, have been out of any abusive relationship for at least one year, and be experiencing posttraumatic nightmares. If you meet the inclusion criteria and choose to participate in this study, your participation in this study is completely voluntary.

This study consists of a survey that includes a demographic questionnaire and 4 assessments, one of which will ask you to write a nightmare you recently experienced and answer questions about that nightmare. The survey is estimated to take 20-30 minutes to complete. Participants who fully complete the survey (i.e., answering every question) will have the opportunity to sign up for a gift card drawing for 1 of 5 \$20 Amazon gift cards.

If you are interested in participating in this study, please **copy and past** the survey link below into your web browser.

(The survey link will be pasted in this space)

If you have any questions about the research study or survey, please email Alwin Wagener at aewagene@uncg.edu.

Thank you in advance for your time and consideration!

APPENDIX F

RECRUITMENT ANNOUNCEMENT

This is an invitation to participate in a research study about posttraumatic nightmares.

My name is Alwin Wagener, and I am a doctoral student in the Counselor Education Department at The University of North Carolina at Greensboro. This email is being sent to invite you to participate in an IRB approved research study that will help us learn more about the posttraumatic nightmares of survivors of intimate partner violence.

Nightmares following trauma are often very distressing and are not well understood. Because of the importance of being able to treat posttraumatic nightmares of survivors of abusive relationships this study is using a research survey to collect information about experiences of abusive relationships, sleep, symptoms of emotional and psychological stress, and nightmares. The information you share will be used to increase understanding of posttraumatic nightmares and will hopefully contribute to improving nightmare treatments.

To be eligible to take part in this study you must be at least 21 years of age, have experienced an abusive relationship, have been out of any abusive relationship for at least one year, and be experiencing posttraumatic nightmares. If you meet the inclusion criteria and choose to participate in this study, your participation in this study is completely voluntary.

This study consists of a survey that includes a demographic questionnaire and 4 assessments, one of which will ask you to write a nightmare you recently experienced and answer questions about that nightmare. The survey is estimated to take 20-30 minutes to complete. Participants who fully complete the survey (i.e., answering every question) will have the opportunity to sign up for a gift card drawing for 1 of 5 \$20 Amazon gift cards.

If you are interested in participating in this study, please **copy and past** the survey link below into your web browser.

(The survey link will be pasted in this space)

If you have any questions about the research study or survey, please email Alwin Wagener at aewagene@uncg.edu.

Thank you in advance for your time and consideration!

APPENDIX G

SOCIAL MEDIA RECRUITMENT ANNOUNCEMENT

**Are you a survivor of an abusive relationship and are you experiencing nightmares?
Would you be willing to help with research to better understand the nightmares that
occur after abuse?**

Your participation would be greatly appreciated and would help to create a better understanding of nightmares following abuse. It is hoped that with a better understanding of those nightmares, new approaches to treating them may be found. To participate in the study, you must be at least 21 years of age, be out of any abusive relationship, and be willing to take a survey written in English. This survey will take about 15 minutes to complete.

Participants who complete the survey will have the opportunity to sign up for a gift card drawing for 1 of 5 \$20 Amazon gift cards.

To learn more about this study please visit the following website:
https://uncg.qualtrics.com/SE/?SID=SV_5pX86WV12uVvJ77

APPENDIX H

INFORMED CONSENT

Informed Consent Form

The University of North Carolina at Greensboro

Project Title: Dreaming after trauma: Exploring the relationship of replicative and recurrent posttraumatic nightmares to insomnia, nightmare distress, and posttraumatic stress disorder among survivors of intimate partner violence

Principal Investigator: Alwin Wagener

Faculty Advisor: Dr. Scott Young

What are some general things you should know about research studies? You are being asked to take part in a confidential, anonymous research study. Your participation in the study is voluntary. You may choose not to join, or you may withdraw your consent to be in the study, for any reason, without penalty. Research studies are designed to obtain new knowledge. This new information may help people in the future. There may not be any direct benefit to you for being in the research study. There also may be risks to being in research studies. If you choose not to be in the study or leave the study before it is done, it will not affect your relationship with the researcher or the University of North Carolina at Greensboro. Details about this study are discussed in this consent form. It is important that you understand this information so that you can make an informed choice about being in this research study. You will be asked to print a copy of this consent form. If you have any questions about this study at any time, you should ask the researchers named in this consent form. Their contact information is below.

What is the study about? This is a research project. Your participation is voluntary. The purpose of this study is to gather information about the posttraumatic nightmares of survivors of intimate partner violence in order to better understand how those nightmares relate to insomnia and symptoms of posttraumatic stress disorder and how much those nightmares contribute to the waking distress of survivors. These nightmares are often reported as very frightening and disturbing and often repeat the actual or attempted abuse, violence, or aggression experienced by IPV survivors. Understanding the relationship between types of nightmares and insomnia, nightmare distress, and PTSD may increase understanding of nightmares and lead to better understanding of the needs of survivors and more empowering ways to support survivors like you who may be struggling with the aftermath of abuse, violence, and aggression, so your participation in this survey is valuable.

Why are you asking me? You have been asked to participate in this study because you report that you were in a relationship in which you were abused by a former partner (i.e. you experienced Intimate Partner Violence; IPV). By IPV, we mean that you experienced, actual or attempted physical, sexual, psychological, or emotional abuse, violence, or aggression by a former intimate partner (e.g., boyfriend/girlfriend, life partner, spouse). In addition, you are being asked because you report experiencing

nightmares. Because we do not want to contribute to current suffering, we will only invite participants who are out of any abusive relationship. Other criteria to be eligible to participate in this study include (a) being at least 21 years old and (b) being able to participate in a survey that is written in the English language.

What will you ask me to do if I agree to be in the study? If you agree to be in the study, you will be asked to complete a questionnaire that will take about 15 minutes. First you will be asked questions to allow the researcher to better understand who you are. Those questions will include your age, race/ethnicity, education, relationship status, whether you have children and their ages, income, whether you are taking medications for nightmares, and experience with counseling in relation to recovery from the actual or attempted abuse, violence, or aggression you experienced. Following that, you will be asked questions about the actual or attempted abuse, violence, or aggression you experienced, symptoms of distress you are having now, your sleep, distress from nightmares, and how often you experience nightmares. As this survey asks you to reflect upon the trauma you experienced and nightmares you are experiencing, there is potential for you to feel emotional and psychological discomfort. Therefore, if at any time you feel you need to stop the survey, you may stop with either the option of returning to it in the future or completely stopping. There is no penalty for stopping. To assure that you have support for any emotional or psychological discomfort, contact information for support is provided in the next section of this consent form. If at any time you have any questions about the study, please contact the Principal Investigator, Alwin Wagener, at 828-215-8872 or aewagene@uncg.edu.

Is there any audio/video recording? There is no audio/video recording associated with this study.

What are the risks to me? The Institutional Review Board at the University of North Carolina at Greensboro has determined that participation in this study poses minimal risks to participants. There is risk that participants will experience some emotional distress as a result of reporting recent nightmares and reflecting on past experiences of abuse. Please note that you do not need to answer any question you do not feel comfortable answering. In the event that emotional distress occurs the following referrals are provided:

The National Coalition Against Domestic Violence (<http://www.ncadv.org/>)

The National Network to End Domestic Violence (<http://www.nnedv.org/>)

The National Domestic Violence Hotline (<http://www.thehotline.org/>; 1-800-799-SAFE).

If you have questions, want more information or have suggestions, please contact the principal investigator, Alwin Wagener at 828-215-8872 or aewagene@uncg.edu or the Faculty Advisor for the study, Dr. Scott Young, at 336-334-3464 or jyoung3@uncg.edu. If you have any concerns about your rights, how you are being treated, concerns or complaints about this project or benefits or risks associated with being in this study please contact the Office of Research Integrity at UNCG toll-free at (855)-251-2351.

Confidentiality: All information obtained in this study is strictly confidential and anonymous. No identifying information will be collected, and all data obtained from participants will be kept confidential and will only be reported in an aggregate format (by reporting only combined results and never reporting individual ones). All questionnaires will be concealed, and no one other than the primary investigator will have access to them. The data collected will be stored in the HIPPA-compliant, Qualtrics-secure database until it has been deleted by the primary investigator.

Confidentiality with Internet Research: Absolute confidentiality of data provided through the Internet cannot be guaranteed due to the limited protections of Internet access. Please be sure to close your browser when finished so no one will be able to see what you have been doing.

Are There Any Benefits to Society as a Result of Taking Part in This Research? It is hoped that this study will generate valuable information that will increase understanding of posttraumatic nightmares and will allow for the development of improved treatments for posttraumatic nightmares.

Are There Any Benefits to Me as a Result of Taking Part in This Research? There are no direct benefits to participants in this study.

Will it Cost Me Anything? There are no costs to you or payments made for participating in this study.

Compensation: Participants who complete the survey questionnaire and who wish to participate in the drawing will be placed in a drawing for five \$20 gift certificates to Amazon. Those who withdraw will not have the option to participate in the drawing. The chance of winning will depend on the number of participants, but it is expected that about 100 participants will complete the survey.

What if I want to leave the study? You have the right to refuse to participate or to withdraw at any time, without penalty. If you do withdraw, it will not affect you in any way. If you choose to withdraw, you may request that any of your data that has been collected be destroyed unless it is in a de-identifiable state. The investigators also have the right to stop your participation at any time. This could be because you have had an unexpected reaction, or have failed to follow instructions, or because the entire study has been stopped.

What about new information/changes in the study? If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you.

Voluntary Consent by Participant: By participating in the survey you are agreeing that you read, or it has been read to you, and you fully understand the contents of this document and are openly willing and consent to take part in this study. You are also agreeing that all of your questions concerning this study have been answered. By participating in the survey, you are agreeing that you are 18 years of age or older and are agreeing to participate, or have the individual specified above as a participant participate, in this study described to you by Alwin Wagener.

I have read, understood, and printed a copy of the above consent form and desire of my own free will to participate in this study.

- Yes (1)
- No (2)