

**Posttraumatic Stress Disorder Symptoms Might be Destroying your Intimacy:
A Test of Mediational Models in a Community Sample of Couples**

by

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Abstract

The present research focused on the pathways through which the symptoms of posttraumatic stress disorder (PTSD) may negatively impact intimacy. Previous research has confirmed a link between self-reported PTSD symptoms and intimacy; however, a thorough examination of mediating paths, partner effects, and secondary traumatization has not yet been realized. With a sample of 297 heterosexual couples, intraindividual and dyadic models were developed to explain the relationships between PTSD symptoms and intimacy in the context of interdependence theory, attachment theory, and models of self-preservation (e.g., fight-or-flight). The current study replicated the findings of others and has supported a process in which affective (alexithymia, negative affect, positive affect) and communication (demand-withdraw behaviour, self-concealment, and constructive communication) pathways mediate the intraindividual and dyadic relationships between PTSD symptoms and intimacy. Moreover, it also found that the PTSD symptoms of each partner were significantly related; however, this was only the case for those dyads in which the partners had disclosed most everything about their traumatic experiences. As such, secondary traumatization was supported. Finally, although the overall pattern of results suggest a total negative effect of PTSD symptoms on intimacy, a sex difference was evident such that the direct effect of the woman's PTSD symptoms were positively associated with both her and her partner's intimacy. It is possible that the Tend-and-Befriend model of threat response, wherein women are said to foster social bonds in the face of distress, may account for this sex difference. Overall, however, it is clear that PTSD symptoms were negatively associated with relationship quality and attention to this impact in the development of diagnostic criteria and treatment protocols is necessary.

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Chapter 1-Introduction

Posttraumatic Stress Disorder Symptoms Might be Destroying your Intimacy:

A Test of Mediational Models in a Community Sample of Couples

The present research concerns itself with the pathways through which the symptoms of posttraumatic stress disorder (PTSD) may negatively impact intimacy. Most people are exposed to traumatic events in their lifetime and it is well documented that these experiences are often associated with psychological maladjustment (Amir, Kaplan, & Kotler, 1996; Beitchman et al., 1992). Such maladjustment may include PTSD (Rosen & Lilienfeld, 2008), major depressive disorder (O'Donnell, Creamer, & Pattison, 2004), generalized anxiety disorder (Grant, Beck, Marques, Palyo, & Clapp, 2008), substance abuse disorder (Farley, Golding, Young, Mulligan, & Minkoff, 2004), and sexual dysfunction (De Silva, 1999). Posttraumatic symptoms deteriorate well-being and hold negative consequences for close relationships. As noted by Sherman, Blevins, Kirchner, Ridener, and Jackson (2008), "It is clear that living with PTSD has ripple effects on many domains of a person's life, oftentimes with major consequences for the person's relationships" (p. 444). As some consider romantic relationships to be the most unstable form of all family relationships (Bowen, 1978), it is to be expected that posttraumatic symptoms would be associated with relationship impairment and dissolution (Riggs, Byrne, Weathers, & Litz, 1998).

Yet, the association between posttraumatic functioning and the quality of romantic relationships is not well understood. For individuals who have experienced traumatic events, intimate relationships can be seen as a safe haven in which to escape and recover from the associated traumatic distress (Charuvastra & Cloitre, 2008; Shapiro & Levendosky, 1999). Clearly, social support, particularly from a romantic partner, is

important for alleviating distress. However, this panacea-like picture of a relationship is overly simplistic and ignores the impact of PTSD symptoms on the individual and his/her partner. This impact has been demonstrated to include impaired communication (Cook, Thompson, Riggs, & Coyne, 2004), heightened negative affect (Shapinsky, Rapport, Henderson, & Axelrod, 2005), substantially diminished relationship quality (Cook et al., 2004), and the transference of PTSD symptoms to the non-traumatized partner (Nelson, 1999). Still, research on the impact of trauma and PTSD symptoms on couples is very limited and mostly takes the form of clinical observations (e.g., Mills & Turnbull, 2004; Wilson & Kurtz, 2000), or is restricted to small samples of combat veterans (e.g., Riggs et al., 1998) or survivors of childhood sexual abuse (e.g., Liang, Williams, & Siegel, 2006). Moreover, the available literature has generally neglected to adequately assess both PTSD symptoms and relationship quality; to examine possible explanatory mechanisms; to include both members of the dyad; or to employ proper data analytic techniques.

The current research moves beyond the speculation, opinion, and narrow scope that exist in the extant literature and offers empirical evidence of, and explanation for, an association between PTSD symptoms and intimacy that will advance research and clinical interventions. First, an intraindividual mediational model is presented that includes both affective (negative affect, positive affect, and alexithymia) and communication (self-concealment, demand-withdraw behavior, and constructive communication) pathways. A dyadic model is also presented and tested using the Actor-Partner Interdependence Model (APIM, see Figure 1; Cook & Kenny, 2005; Kenny, Kashy, & Cook, 2006). The APIM method of analysis (described further below) is the

most suitable approach as it accounts for both between and within dyad variance that exists for mixed¹ independent variables such as PTSD symptoms. Moreover, with each partner affecting the other (i.e., mutual influence), the APIM permits a simultaneous analysis of both actor and partner

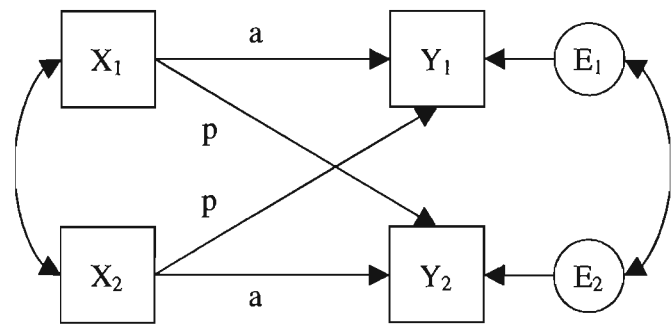


Figure 1. The Actor-Partner Interdependence Model (APIM) where a is the actor effect and p is the partner effect. X_1 and X_2 denote the Independent Variable for men and women, respectively. Y_1 and Y_2 represent the Dependent Variable for men and women, respectively.

effects². Further, within the intraindividual and dyadic models, novel approaches are taken with the measurement and analysis of both relationship quality and PTSD symptoms. With respect to relationship quality, intimacy is the primary outcome used in this study; however, the factor structure of a composite measure of relationship quality is also tested, incorporating intimacy, relationship satisfaction, passion, and commitment. The factor structure of a measure of PTSD symptoms is also tested. Further, PTSD symptoms are assessed as a continuous variable, across DSM-IV (APA, 1994) congruent and non-congruent traumas. In the end, a clearer picture of the intimate relationships of traumatized individuals emerges, both from an intraindividual perspective and from a dyadic perspective.

¹ Indicating that the variable varies both across and within dyads

² The terms actor and partner effects are used prominently in this study and dyadic research in general. These terms do not imply causality as most dyadic designs, including the proposed research, are cross-sectional. Further, although the language used in the current study refers to an impact on intimacy or an impact on partners, note that this may be inferred to indicate an impact on perceptions of intimacy and perceptions of the relationship by both individuals.

Chapter 2-Trauma and PTSD

Trauma and PTSD

The diagnosis of PTSD was first defined in the *Diagnostic and Statistical Manual of Mental Disorders 3rd Edition* (DSM-III; APA, 1980). This short history partially accounts for the paucity of research on the associations between trauma, PTSD, and intimacy. An ever-changing landscape for the measurement and diagnosis of PTSD, especially with respect to qualifying traumatic experiences and the arbitrariness of various diagnostics, has also limited research in this area. To fully understand the link between the posttraumatic response and intimacy, it is first necessary to explore how the diagnosis has changed and continues to change and how these changes and anticipated directions have led to the approaches that are taken in the current research.

As noted, most people experience and are affected by negative life events at some point in their lives. As discussed below, whether or not such events are considered traumatic for diagnostic purposes varies depending on the criteria being used. In contrast, as discussed below, the current research considers most negative life events as being potentially traumatic depending on various situational and individual differences and vulnerabilities.

Based on DSM diagnostic criteria, the lifetime prevalence of traumatic event exposure has been estimated at about 90% of the general population (Breslau, Kessler, Chilcoat, Schultz, Davis, & Andreski, 1998). Subsequent to traumatic event exposure, a diagnosis of PTSD has been estimated to occur in about 10.4% of women and 5% of men (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). However, Kessler et al. (1995) also noted that others have reported higher numbers, such as 20% of women and 8% of men. Other posttraumatic responses (e.g., depression) are also common: comorbidity is,

in fact, more common than a single diagnosis (Momartin, Silove, Manicavasagar, & Steel, 2004; O'Donnell et al., 2004). By some accounts, individuals diagnosed with PTSD have been reported to meet the criteria for other psychiatric disorders approximately 79-88% of the time (e.g., Breslau, Davis, Peterson, & Schultz, 2000; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Still, issues of prevalence and comorbidity are overshadowed by problems of definition and operationalization that relate to the brief history of the diagnosis.

Although PTSD was first introduced in the DSM-III (APA, 1980), researchers and clinicians were certainly cognizant of trauma and related stress reactions prior to this classification. For example, 'traumatic neurosis' was elaborated on by Freud (1917), and Kardiner (1947) discussed combat stress reaction, which included emotional and physical numbness. Further, the original DSM (APA, 1952) considered a 'gross stress reaction' and the DSM-II (APA, 1968) included the category 'adjustment reaction to adult life'. However, PTSD did not receive attention and validation until DSM-III (APA, 1980).

The DSM-III included a diagnosis of PTSD that closely resembles that being used today (Solomon & Horesh, 2007). It included a stressor criterion (A, necessitating the presence of "a recognizable stressor that would evoke significant symptoms in almost everyone") and three symptom clusters (B, re-experiencing the trauma; C, numbing and detachment responses; and D, other symptoms that were not present before the trauma, such as hyper-alertness). The DSM-III-R (APA, 1987) redefined these clusters as re-experiencing the traumatic event, avoidance and numbing, and increased physiological arousal. Re-experiencing (Criterion B) includes intrusive symptoms such as nightmares,

flashbacks, unintentional thoughts, and being triggered³ by environmental stimuli.

Criterion C (avoidance and numbing) includes such reactions as losing interest in things that were formerly enjoyed, avoiding people and places that trigger memories of the traumatic event, and feeling detached from other people. Hyperarousal (Criterion D) includes symptoms such as having difficulties concentrating or sleeping and being jumpy or easily startled and angered. These three symptom clusters are collectively defined by 17 symptoms and to qualify for a diagnosis, the individual would have to experience at least one re-experiencing, at least three avoidance, and at least two hyperarousal symptoms. DSM-III-R also included a time frame such that an individual would have to have been experiencing symptoms for at least one month (criterion E). Further, the stressor definition was changed to focus on events that are “outside the range of normal human experience” and that are distressing to almost everyone.

The DSM-IV (APA, 1994) further refined the diagnostic criteria for PTSD, especially in terms of the definition of a stressor. A qualifying stressor was redefined as “an event that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others” (p. 460) (criterion A1) and as an event that evoked an emotional response of intense fear, helplessness, or horror (criterion A2). The symptom clusters remained similar; however, a sixth criterion (F) was added, stating that “the disturbance must cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.” (p.460). Acknowledging the social impairment caused by PTSD symptoms represents an important step in understanding both PTSD symptoms and their impact on romantic relationships.

³ Reminding an individual of the traumatic event and causing distress

The most recent edition of the DSM, the DSM-IV-TR (APA, 2000), further refined the definition of trauma with a focus on two essential features: 1) “an event that involves actual or threatened death or serious injury, or other threat to one’s personal integrity” and includes “*learning* about the unexpected or violent death, serious harm, or threat of death or injury experienced by a family member or other close associate,” (p.463). This expanded definition recognizes the impact that trauma and PTSD symptoms have on the non-traumatized partner via secondary traumatization (discussed below). Solomon and Horesh (2007) suggested that “these revisions are part of an attempt to de-emphasize the objective⁴ features of trauma, and instead to rely more strongly on the subjective experience of each individual.” (p.182). It is this subjective experience of both the traumatized individual and the partner and the associated PTSD symptoms that affect a relationship, not the specific objective event.

Moving beyond the specific type of trauma to an understanding and appreciation of the personal relevance and meaning attached to the event is necessary to fully understand the posttraumatic response and its impact on relationships. Others have also suggested that the current DSM approach is far too limited a definition of trauma (e.g., Brewin, Carlson, Creamer, & Shalev, 2005). Even shortly after the appearance of the diagnosis of PTSD the validity of linking “a distinct symptomatic configuration with a distinct class of stressors” was questioned (Breslau & Davis, 1987; p.255). Further, some researchers have demonstrated that the symptoms of PTSD are evident, and sometimes more intense, in non-clinical populations who have experienced non-qualifying traumas

⁴ Objective refers to aspects of the event that would be consistent no matter who was experiencing the event; for example, aspects of a car accident which make it life threatening. That is, a severe car accident would be life threatening for all individuals; however, the distress and meaning attached to the event would differ across individuals.

(e.g., parental divorce, arrest; Gold, Marx, Soler-Baillo, & Sloan, 2005; Mol et al., 2005). Rosen and Lilienfeld (2008) reviewed this literature and noted that some people meet PTSD symptom criteria for non-Criterion A events such as childbirth (Ayers & Pickering, 2001), breaking up with a best friend (Solomon & Canino, 1990), and extramarital affairs (Dattilio, 2004). Rosen and Lilienfeld (2008) concluded that available research indicates that “the full clinical syndrome of PTSD can arise frequently among psychiatrically distressed subjects without any occurrence of a Criterion A event” (p. 840). Aligned with this reasoning, Shalev (2005) noted that an event should be considered traumatic when it is cognitively incongruent, personally and emotionally meaningful, and it affects close relationships. Overall, these findings suggest that, for posttraumatic distress, the person’s interpretation of, and experience with, an event are more important than the objective features of that event (e.g., the extent to which it is life threatening).

Other evidence also provides insights into why negative life events may lead to PTSD symptoms in some individuals but not in others. Individual differences that have been shown to be associated with an increased likelihood of PTSD symptoms include multiple previous negative life events, a negative attributional style, rumination, anxiety sensitivity, low SES, low social support, attachment insecurity, and lower intelligence, among others (Brewin, Andrews, & Valentine, 2000; Elwood, Hahn, Olatunji, & Williams, 2009; Ozer, Best, Lipsey, & Weiss, 2003). These studies support a position that a negative life event may trigger a stress reaction; however, the person’s vulnerability and resiliency factors largely dictate if the stress reaction will lead to PTSD

symptoms (see Bowman & Yehuda, 2004). Thus, any negative life event is potentially traumatic.

With a progression of the DSM toward a focus on the individual's interpretation of the event, it is likely that future, expanded definitions will focus more on the symptoms and personal relevance rather than the objective qualities of an event. Just as it seems strange that early versions of the DSM did not consider events such as rape (Solomon & Horesh, 2007), it is now thought to be incredible that events that are not associated with physical injury or threat are not considered traumatic (e.g., infidelity, divorce, personal failure, harassment). As such, the current research examines PTSD symptoms across traumatic/stressful events, rather than focusing on specific traumatic events (e.g., childhood sexual abuse) that meet DSM criteria⁵. Regardless of the type of trauma, it is the symptoms of the posttraumatic response that are hypothesized to deteriorate relational quality.

A focus on the subjective experience and associated symptoms also brings into question the utility of a diagnostic approach for research purposes. As noted, the criteria for a diagnosis of PTSD have changed frequently throughout the various editions of the DSM. These varying criteria have resulted in different PTSD diagnosis rates depending on the edition of the DSM that is employed (Peters, Slade, & Andrews, 1999; Schwarz & Kowalski, 1991; Solomon & Horesh, 2007). Solomon and Horesh (2007) suggested that a scientific method does not exist to clearly determine which diagnostic is superior. Given this uncertainty, empirical research seems better suited to examine PTSD symptom levels rather than taking the prevalent categorical approach of PTSD diagnosis versus no

⁵ Differences in symptoms between individuals reporting DSM-Congruent and DSM-Incongruent traumas were examined to support the validity of this approach.

diagnosis. A minority of researchers have adopted or utilized this continuous variable approach (e.g., Gold et al., 2007; Shalev & Freedman, 2005; Solomon & Mikulincer, 2006), as did the current study⁶.

As researchers and clinicians move toward the subjective experience of trauma as the central focus of diagnosis, it is evident that the impact of PTSD symptoms on everyday functioning (e.g., intimacy) should be considered in diagnosis and treatment. Solomon and Horesh (2007, p. 187) advocated for future DSM editions to better define dysfunction and distress, with a specific focus on observable and interpersonal aspects in an individual's life. With respect to interpersonal relationships, they recommended that more weight be placed on close family relationships, as compared to distal relationships, and that the distress component include questions of contentment with interpersonal functioning. An examination of the association between PTSD symptoms and relational functioning is a needed step toward this end.

PTSD – Measurement Issues

It is clear that there have been, and continue to be, many problems with the diagnosis and measurement of PTSD. Of course, understanding the impact of PTSD symptoms on interpersonal functioning also necessitates clarity with respect to the diagnosis and assessment of the disorder. As noted by Spitzer, First, and Wakefield (2007): "Since its introduction into DSM-III in 1980, no other DSM diagnosis, with the exception of Dissociative Identity Disorder (a related disorder), has generated so much controversy in the field as to the boundaries of the disorder, diagnostic criteria, central assumptions, clinical utility, and prevalence in various populations." (p.233). Such

⁶ To maintain comparability with the extant literature, although not valid as a clinical diagnosis, a reported diagnostic cutoff will be used with the measure of PTSD symptoms to compare PTSD participants with non-PTSD participants on measures of relationship quality.

problems have also translated into the various methods by which PTSD symptoms are assessed.

In research and clinical practice, PTSD symptoms have been assessed with an array of clinical interviews and self-report measures that often map onto the 17 symptoms outlined in the DSM-IV (see Wilson & Keane, 2004). Although self-report measures are useful for research and monitoring purposes, for an actual diagnosis, clinical interviews are necessary. To this end, clinicians and researchers have most prominently used such validated assessment tools as the Clinician-Administered PTSD Scale (Blake et al., 1995; Blake et al., 1990), the Structured Clinical Interview for DSM-IV Axis I Disorders (First, Spitzer, Gibbon, & Williams, 1996), and the PTSD Symptom Scale – Interview (Foa, Riggs, Dancu, & Rothbaum, 1993). However, administering clinical interviews requires extensive training and cost, which diminishes the feasibility of this approach for research purposes.

More common in research with clinical and community samples, is the use of standardized and validated self-report measures. Like clinical interviews, some of these self-report measures include items that map onto the 17 criterion symptoms in the DSM-IV (APA, 1994). Examples here include the Posttraumatic Stress Diagnostic Scale (Foa, Cashman, Jaycox, & Perry, 1997), the PTSD Checklist (Weathers, Litz, Herman, Huska, & Keane, 1993), the Screen for Posttraumatic Stress Symptoms (Carlson, 2001), and the Modified PTSD Symptom Scale – Self Report (MPSS-SR; Falsetti, Resnick, Resick, & Kilpatrick, 1993). Other approaches have included assessments that are not tied to DSM guidelines (e.g., the Impact of Events Scale; Weiss & Marmar, 1997) or are derived subscales of larger symptom inventories (e.g., Symptom Checklist-90; Arata, Saunders,

& Kilpatrick, 1991; Saunders, Arata, & Kilpatrick, 1990). Given the variance in assessment methods, careful attention to selecting an appropriate instrument to address research questions is necessary (Norris & Hamblen, 2004).

Based on DSM guidelines, most of these methods are tied to the experience of a single specific trauma and ignore the possibility of experiencing multiple traumatic events or the commonalities across traumas. Norris and Hamblen (2004) noted that “the extent to which a PTSD measure must be anchored to a specific traumatic experience is among the points of most controversy in trauma assessment” (p.95). They suggest that using a specific trauma is necessary for fulfilling Criterion A and diagnosing PTSD; however, they also point out that epidemiological evidence demonstrates that the experience of multiple traumas is common and individuals may not be certain as to which symptoms are linked to which events. As the current research is focused on the relational impact of symptoms rather than diagnosis, multiple traumas are assessed.

There are also concerns with response options and the factor structure for self-report measures of PTSD symptoms. The experience of symptoms is often examined dichotomously, with participants indicating whether or not they had experienced a symptom in the past month. The current research moves beyond this approach to examine both the frequency and the severity of experienced symptoms. With respect to factor structure, although the DSM suggests three clusters of symptoms (i.e., re-experiencing, avoidance and numbing, and hyperarousal), some researchers have demonstrated a unidimensional model, wherein the three proposed clusters are not found (e.g., Carlozzi & Long, 2008). Other researchers have found a reliable four-factor model, which separates the second cluster into separate factors of avoidance and numbing (e.g.,

DuHamel et al., 2004; Foa , Riggs, & Gershuny, 1995; King, Leskin, King, & Weathers, 1998; Litz et al., 1997; Marshall, 2004; Saul, Grant, & Carter, 2008). Others have reported a four-factor dysphoria model in which the three hyperarousal symptoms (sleep disturbance, irritability, and difficulties concentrating) and the numbing symptoms represent a dysphoria factor that is distinct from the reexperiencing, avoidance, and hyperarousal factors (Boelen, van den Hout, & van den Bout, 2008; Simms, Watson, & Doebbeling, 2002; Baschnagel, O'Connor, Colder, & Hawk, 2005; Palmieri, Weathers, Difede, & King, 2007). These findings suggest it is necessary to examine the factor structure of PTSD symptoms within this study.

Based on the aforementioned issues, a validated measure of PTSD symptoms (the Modified PTSD Symptom Scale – Self Report; Falsetti et al., 1993) was selected. This measure was derived from a clinical interview (i.e., the PTSD Symptom Scale-Interview; Foa et al., 1993), maps directly onto the 17 DSM-IV symptoms/clusters, assesses frequency and severity of symptoms, and has been administered to, and validated with, a non-clinical sample of individuals who may have experienced multiple traumas. Still, with the noted problems with the factor structure of self-report PTSD symptom measures, a confirmatory factor analysis is conducted to determine if the three symptom clusters hold or if the use of a 1-factor model is better suited for this community sample. Finally, as suggested by Norris and Hamblen (2004), to fully understand the experience and outcomes of trauma, the current research includes an assessment of trauma history (Criterion A) along with an assessment of PTSD symptoms (Criteria B, C, D).

Chapter 3-Close Relationships

Theories of Close Relationships and Interdependence

Trauma and PTSD symptoms do not exist within a social vacuum and this is particularly true for individuals in romantic relationships. The interdependent nature of close relationships impacts how we interpret and attach meaning to potentially traumatic experiences and how these experiences and our reactions to them will also impact our partners. Interdependence theory (Thibaut & Kelly, 1959) is considered a method of examining the structure of social situations and “each person’s needs, cognitions, and motives in relation to one another” (Rusbult & Van Lange, 2003, p. 353). Simply put, romantic relationships exist through the formation of an interdependent dyad and each member of this dyad is affected by the others’ affects, behaviours, cognitions, motives, goals, etc. Understanding this interdependence is informed by a more thorough examination of the bond that is created between two people. This bond may be considered attachment, intimacy, or a sense of closeness. Mikulincer and Shaver (2007) have noted that “attachment theory has much in common with Thibault and Kelley’s (1959) interdependence theory, which focuses on a single interpersonal transaction as the unit of analysis and emphasizes the powerful influence of one person’s responses on a relationship partner’s thoughts, feelings, and behavior.” (p.46). As such, attachment theory moves beyond the interdependent nature of a single interaction and lends much to our understanding of the ongoing interdependent nature of romantic dyads.

The examination of adult romantic attachment grew from the seminal works of psychiatrist John Bowlby (1973, 1988) examining attachment in the infant-caregiver dyad. For Bowlby, attachment theory was “a way of conceptualizing the propensity of human beings to make strong affectional bonds to particular others” (1977, p. 201, as

cited in Perlman & Bartholomew, 1994). John Bowlby contended that early meaningful relationships lead to the formation of “internal working models,” which are cognitive/affective schemas of the self and others in interpersonal relationships (Bartholomew, 1990; Shaver, Collins, & Clark, 1996). He theorized that these models/representations are the basis for perception, expectations, emotions, and behaviour in all later meaningful relationships. Klohnen and John (1998) noted that the working models reflect answers to two fundamental questions: 1) Am I worthy and a lovable person? and 2) Are others (attachment figures) trustworthy and caring?

In adult romantic relationships, the partner is assimilated into the individuals' existing attachment system and often becomes the primary attachment figure. Bowlby considered the attachment figure as someone on whom one could rely for comfort and protection in times of distress. In the context of romantic relationships the attachment figure (or partner) has been said to serve three purposes: 1) the partner is the target for proximity seeking when the individual is distressed, 2) in times of need, the partner serves as a safe haven, and 3) the partner serves as a secure base from which the individual can explore nonattachment goals (Mikulincer & Shaver, 2007). In return, the partner's responses to an individual's bids for proximity and security may realign the attachment system and the individual's attachment orientation. Thus, it is clear that romantic partners are interdependent in fulfilling each other's attachment needs and impact each other in doing so. Thus, attachment theory lends much to the understanding of the interdependence of the romantic dyad. This interdependent attachment bond then contributes to relationship appraisals and the sense of experienced intimacy.

Intimacy and Relationship Quality

Like PTSD symptoms and diagnosis, the definition and assessment of relationship quality lacks consensus (Hassebrauk & Fehr, 2002), even though research on this construct has a much longer history (e.g., Hamilton, 1929; Terman, 1938). Moreover, although multiple methods are available for assessing relationship quality, most have been developed without attention to theory. Fletcher, Simpson, and Thomas (2000) noted that scales such as the Dyadic Adjustment Scale (Spanier, 1976) and the Marital Adjustment Test (Locke & Wallace, 1959) are examples of such an atheoretical tradition. According to Fletcher et al. (2000) these approaches “often confound ... the hypothetical causes of relationship processes (such as communication) with the proposed effects (such as relationship satisfaction)” (p. 340). Instead, Fletcher et al. (2000) recommend using measures and constructs, such as intimacy/closeness, relationship satisfaction, commitment, passion, and trust, which originate in various theoretical traditions (e.g., interdependence theory, attachment theory) and represent “subjectively held evaluations in the minds of relationship partners” (p.340). This approach involves assessing the person’s perceptions of relationship quality and closeness rather than assessing processes that may indicate or predict quality. The current research follows this guidance with a focus on intimacy (Reis, 2006).

Reis (2006) noted that research and theory on intimacy has developed through three separate streams: self-disclosure, nonverbal immediacy/engagement, and the Erikson life stage approach. Drawing on these approaches, Clark and Reis (1988) defined intimacy as “a process in which one person expresses self-relevant feelings and information to another, and as a result of the other’s response comes to feel known,

validated (i.e., obtains confirmation of his or her world view and personal worth), and cared for.” (p. 628). Moreover, according to Reis (2006), the development of intimacy is particularly affected by interactions, displays of affection, and information that are emotionally significant. Likewise, Clark and Reis (1988) commented on research alluding to the value of affection and emotional expressiveness in the conceptualization of intimacy (Helgeson et al 1987; Waring et al, 1980). Intimacy is seen as the sharing of emotions and information that is followed by positive feedback. Reis (2006) presented a model of intimacy that was developed by Reis and Shaver (1988) and later updated by Reis and Patrick (1996). Reis and colleagues conceptualize intimacy as a dynamic process that involves the disclosure of information and feelings, the response of the partner, and the individual’s reaction to the partner’s response. Although this model captures the process by which a sense of intimacy is developed and maintained (or diminished and destroyed), it does not fully speak to intimacy as an assessable construct and relies too heavily on self-disclosure as a defining feature.

Schaefer and Olson (1981) noted that “most attempts to conceptualize intimacy have not distinguished it from self-disclosure” (p.49). Similarly, Clark and Reis (1988) suggested that definitions of intimacy were too narrow in scope; however, their conceptualization does not offer much expansion given its focus on disclosure. An alternative approach is to examine intimacy as a set of interpersonal evaluations that reflect interdependence beyond just the sharing of emotionally significant information. As Schaefer and Olson (1981) discussed, self-disclosure is perhaps a characteristic of intimate relationships, but the term should not be equated with intimacy. In support of this reasoning, Schaefer and Olson (1981) noted how the pre-divorce period is often

characterized by high negative self-disclosure, and is certainly not associated with high levels of intimacy. Thus, moving beyond the narrow conceptualization offered by Reis and colleagues appears appropriate.

Although others have contributed to this debate, for the purposes of the this study, intimacy is operationalized consistent with the thinking and methods of Schaefer and Olson (1981) and Sternberg (1997). From Sternberg's perspective (Sternberg, 1986, 1997), "Intimacy refers to feelings of closeness, connectedness, and bondedness in loving relationships. It thus includes within its purview those feelings that give rise, essentially, to the experience of warmth in a loving relationship." (p.315). Similarly, Schaefer and Olson (1981) considered intimacy "a process and an experience which is the outcome of the disclosure of intimate topics and sharing of intimate experiences." (p.51). Thus, a behavioral component is important. This is demonstrated by the different facets of intimacy outlined by Schaefer and Olson and measured with the Personal Assessment of Intimacy in Relationships inventory (PAIR; Schaefer & Olson, 1981). The PAIR includes an assessment of five facets of intimacy: Emotional Intimacy (*having feelings of closeness; the ability and freedom to share openly, in a non-defensive atmosphere when there is supportiveness and genuine understanding*), Social Intimacy (*the experience of having common friends and a supportive social network*), Sexual Intimacy (*the experience of receiving and sharing affection, touching, physical closeness, and/or sexual activity*), Intellectual Intimacy (*the experience of sharing ideas, talking about events in one's life, or discussing job related issues, current affairs, etc.*), and Recreational Intimacy (*shared experience of interests in pastimes or hobbies; mutual participation in*

sporting events, mutual involvement in any general recreational or leisure activity) (Olson & Schaefer, 2000, p. 8).

The current research operationalizes intimacy using the methods of Sternberg (1997) and Schaefer and Olson (2000); however, items relating to communication are removed to prevent confounding with the hypothesized mediators (i.e., constructive communication, demand/withdraw behaviour, and self-concealment). As discussed, communication and self-disclosure are relational processes that foster intimacy, yet should not be equated with intimacy. Including these constructs as components of intimacy is a shortcoming of previous research and theory that is addressed in the current research (Fletcher et al., 2000). Moreover, for each of these methods of assessing intimacy, alternative factor structures have been demonstrated beyond those proposed by the original authors (e.g., Moore, McCabe, & Stockdale, 1998) and therefore the use of a total score or total latent variable may be more appropriate.

Related to this, although intimacy has been chosen as the primary facet of relationship quality to be examined because of its grounding in theory, other theoretically sound methods of assessing relationship quality are also employed to explore the possibility of an overarching relationship quality variable. These include relationship satisfaction (Hendrick, 1988) and the commitment and passion components of Sternberg's triangular theory of love (Sternberg, 1986, 1997). Taking this approach, other researchers have reliably demonstrated the existence of a second-order factor reflecting overall relationship quality (e.g., Fletcher et al., 2000). If such a second-order factor is found in this study, it will be employed as a relational outcome in addition to its first-

order components. Thus, the association between PTSD symptoms and relationship quality is examined more thoroughly than has been previously reported.

Chapter 4 - PTSD Symptoms and Intimacy: A Review and an Intraindividual Model.

PTSD Symptoms and Relationship Functioning within Individuals

Why is it that trauma and PTSD symptoms should have an impact on relational quality? As discussed, both interdependence theory (Thibaut & Kelly, 1959) and attachment theory (Bowlby, 1973; Mikulincer & Shaver, 2007) provide a rationale for how members of a dyad affect each other. So, it is to be expected that PTSD symptoms in one partner will affect both the individual and the partner. Attachment theory also facilitates an understanding of the impact of trauma on the individual. First, attachment theory proposes that distressing and traumatic events, or mental representations of past events (e.g., troubling thoughts, images, fantasies, or dreams), activate the attachment system and the individual engages in proximity seeking (Mikulincer & Shaver, 2007). If, however, the individual has experienced trauma that has disrupted the attachment system through unsuccessful proximity seeking, alternative or secondary strategies may be employed, which may impair intimacy. These include hyperactivation and deactivation of the attachment system. Hyperactivation involves escalated proximity seeking and demands for love and support, which may lead to relationship conflict. Deactivating strategies, in contrast, involve a shutting down of the attachment system and a suppression of signs of need and vulnerability. In this case, the individual may attempt to deal with distress alone, something that Bowlby (1969) considered a compulsive self-reliance. Someone who is compulsively self-reliant may alienate the partner and would likely not disclose all or some aspects of the trauma(s) or current distress/symptoms, thus leading to a reduction in intimacy. Therefore, a traumatized individual may experience relationship problems if the trauma is unresolved.

We might also consider the impact of trauma on relationships through the lens of

Maslow's hierarchy of needs (Maslow, 1954). The third layer of this hierarchy is concerned with social relationships and intimacy and in order to adequately focus one's motivational systems toward this layer, a person first needs to resolve issues of safety (layer 2). Individuals who have been traumatized are certainly returned to a focus on safety (e.g., Gon, 1982) and if this is not resolved, PTSD symptoms are likely maintained and the individual is not able to be fully present and engaged with his/her social relationships and his/her romantic partner. As such, the relationship suffers at the hands of the reorientation of the motivational system toward safety needs. Thus, the primary goal becomes self-preservation rather than relational preservation. This self-preservation may also be considered within the context of the *fight-or-flight* response to stress/threat (Cannon, 1932). Depending on the nature of the trauma and the level of perceived threat, the traumatized individual may experience a heightened level of arousal that is focused on threat evaluation and self-preservation. Again, this need for self-preservation may supersede what the individual is able to give to the romantic relationship. Of course, for women, the post-traumatic response may also be characterized by a *Tend-and-Befriend* response (Taylor, Klein, Lewis, Gruenewald, Gurung, & Updegraff, 2000). For women, self-preservation may be more likely achieved through nurturing their children and close others (*Tend*) and maintaining or further developing social bonds (*Befriend*). If it is the case that traumatized women are more inclined toward relational- rather than self-preservation goals, then the association between PTSD symptoms and intimacy may be simultaneously negatively (*fight-or-flight*) and positively (*tend-and-befriend*) impacted. Thus, overall, available evidence and theory support a prediction that trauma is associated with an impairment in intimacy for both sexes; however, this impairment may be less for

women if the impact of PTSD symptoms on their intimacy is buffered through the tend-and-befriend stress response.

A limited, but emerging, literature is shedding light on the scope of the impact of psychopathology and how the posttraumatic response is linked to relational quality and other facets of individual functioning (e.g., job satisfaction, life satisfaction; Keim, Malesky, & Strauser, 2003). Said literature has touched on depression (Denton, Golden, & Walsh, 2003; Mead, 2002; Sandberg & Harper, 1999), anxiety (e.g., Hickey, Carr, Dooley, Guerin, Butler, & Fitzpatrick, 2005; Whisman, Sheldon, & Goering, 2000), and PTSD (e.g., Riggs et al., 1998) as posttraumatic responses that affect how individuals interact with the world. However, the majority of investigation has centered around the diagnosis of PTSD. For the most part, research on the association between PTSD symptoms and relationship quality has been conducted within individuals, examining the extent to which an individual's posttraumatic symptoms are associated with his/her perceptions of various facets of relationship quality. As such, this study begins with the development of an intraindividual model, examining both direct and mediated/indirect associations.

Within individuals, a PTSD diagnosis has been shown to be associated with impairment in such relationship domains as relationship satisfaction, dyadic adjustment, intimacy, emotional expressiveness, communication, and sexual relations (e.g., Carroll, Rueger, Foy, & Donahue, 1985; Compton & Follette, 1998; DiLillo & Long, 1999; Gold, Taft, Keehn, King, King, & Samper, 2007; Jordan et al., 1992; Kulka et al., 1990; Monson, Gradus, La Bash, Griffin, & Resick, 2009; Riggs et al., 1998; Roberts, Penk, Gearing, Robinowitz, Dolan, & Patterson, 1982; Solomon, Mikulincer, Fried, & Wosner,

1987; Taft, Monson, Schumm, Watkins, Panuzio, & Reskick, 2009, Whisman, 1999).

Higher separation and divorce rates have also been reported for individuals with a diagnosis of PTSD (Jordan et al., 1992; Pavalko & Elder, 1990; Riggs et al., 1998). Of course, in addition to those with PTSD being more likely to experience divorce, it is also likely that both divorce and separation, as negative life events, lead to an increased likelihood of PTSD symptoms. Still, overall, available evidence indicates clearly that posttraumatic symptoms are associated with diminished quality in romantic relationships.

However, evidence is lacking with respect to associations between relationship quality and the specific PTSD symptom clusters of re-experiencing, avoidance/numbing, and hyperarousal. Johnson (2004), for example, suggested that a persistent reexperiencing of the traumatic event can have an impact on an individual's partner in that the survivor is seen as being more 'there than here' (i.e., the individual is often not emotionally or mentally available to the partner because he/she consumed within the traumatic memories). Mills and Turnbull (2004) speculated that avoidance/numbing, and its associated features are "the result of loss of intrapsychic intimacy and will inhibit recovery through interpersonal intimacy." They also noted that hyperarousal is likely to impair intimacy because of the associated irritability and anger outbursts. In examining this literature, Dekel, Enoch, and Solomon (2008) noted that "Intrusive symptoms cause the traumatized husband to be preoccupied with self; avoidance symptoms undermine his capacity for sharing and intimacy; and hyperarousal symptoms increase interpersonal conflict (Cook et al., 2004; Dent et al., 1998; Riggs et al., 1998)" (p.498). Cook et al. (2004) provided one of the first empirical tests of the role of symptom clusters. These researchers reported that it was only symptoms of emotional numbing that accounted for

unique variance in relationship quality. They speculated, however, that emotional numbing is simply a good indicator of overall severity of symptoms. Others have also demonstrated the primary importance of the avoidance/numbing symptom cluster in driving the association with relationship quality (e.g., Evans, McHugh, Hopwood, & Watt, 2003; Riggs et al., 1998; Solomon, Dekel, & Zerach, 2008). The current research permits a more thorough test of these specific relationships. However, given the uncertainty regarding the factor structure of PTSD symptoms and the lack of theoretical guidance regarding the impact of symptom clusters, predictions across symptom clusters are identical and exploratory.

Moreover, this study expands beyond the narrow scope of traumatic experiences that have been studied. Relationship impairment resulting from PTSD symptoms has generally been demonstrated with combat veterans (e.g., Carroll et al., 1985; Carroll, Foy, Cannon, & Zwler, 1991; Riggs et al., 1998; & Byrne & Riggs, 1996) and rape/sexual abuse survivors (e.g., Beitchman et al., 1992; Davis et al., 2001; DiLillo & Long, 1999). For example, Cook et al. (2004) reported that “ex-POWs with PTSD were three times more likely to score in the maritally distressed range on the Dyadic Adjustment Scale than were ex-POWs without PTSD, and they experienced significantly more problems on every measure of intimate functioning examined.” (p. 41). Evidence across a broader spectrum of traumatic experiences is necessary and is provided by the current research.

Within individuals, a direct relationship between PTSD symptoms and relationship quality has been demonstrated in the literature; however, the examination of this association has been primarily limited to those with or without a diagnosis based on a

small number of traumatic experiences. A lack of attention to the underlying symptom clusters is also evident. More important, however, is the void in discussion, theory, and evidence related to explaining the mechanism of this association.

Mechanisms/Mediators

To further explain the association between PTSD symptoms and intimacy, moving beyond direct effects and introducing mediational mechanisms is necessary. Examination of the association between PTSD symptoms and relationship functioning has, to this point, mostly neglected possible mechanisms and theory that may account for and explain this association (Cook et al., 2004; Nelson Goff & Smith, 2005). Solomon and colleagues (Dekel, Enoch, & Solomon, 2008; Solomon & Dekel, 2008; Solomon, Dekel, & Zerach, 2008) have provided some insight into potential mechanisms. Solomon and Dekel (2008) examined the role of loneliness in mediating the longitudinal relationship between PTSD symptoms in 1991 and marital adjustment in 2003 with a sample of veterans. These researchers reported that loneliness did mediate the relationship; however, they did not find a direct relationship between PTSD symptoms in 1991 and marital adjustment in 2003 or a significant relationship between loneliness as measured in 1991 and PTSD symptoms as measured in 2003. Unfortunately, as noted by the researchers, the study is limited by not including both members of the dyad and also by not collecting data on whether the veterans were in the same relationships in 2003 as they were in 1991.

Dekel et al. (2008) addressed this shortcoming by including both members of the dyad in a similar sample of veterans. These researchers found that verbal aggression, self-disclosure, and sexual satisfaction fully mediated the relationship between PTSD

symptoms and marital adjustment. This research, however, did not include an assessment of the wife's trauma history or PTSD symptoms. Further, there was considerable overlap between the mediators and the predictor and outcome variables. First, the study included an assessment of physical and verbal aggression, which are potentially traumatic events. Further, self-disclosure and sexual satisfaction were considered as aspects of intimacy that lead to marital adjustment. Marital adjustment was assessed using the Dyadic Adjustment Scale (Spanier, 1976). However, this scale includes items relating to conflict, communication, and sexual functioning. Thus, it is difficult to tease apart the mediators from the outcome variable and incorrect to conclude that mediation has been demonstrated. However, in a similar study, Solomon, Dekel, and Zerach (2008) demonstrated, with a sample of Israeli war veterans, that self-disclosure mediated the relationship between PTSD avoidance symptoms and intimacy for former prisoners of war (POW), but not for a control sample on non-POW veterans.

Together, these results provide some support for various facets of communication, particularly self-disclosure, as potentially important in understanding the relationship between PTSD symptoms and intimacy. The current study addresses the shortcomings in the previous approaches and more thoroughly examines the mechanisms by which PTSD symptoms impact intimacy. More specifically, said mechanisms include: 1) mediation via communication problems/deficiencies, and 2) mediation via affective problems/deficiencies. Beyond these pathways, a direct association between the PTSD symptoms and intimacy is also hypothesized as supported by the literature.

Communication Problems/Deficiencies.

First, it was hypothesized that PTSD symptoms would have an impact on intimacy via heightened communication problems and deficiencies in self-disclosure. Communication problems in a relationship have consistently been shown to be associated with dissatisfaction (Caughlin & Huston, 2002; Heavey et al., 1995; Noller et al., 1994; Weiss & Heyman, 1990). With respect to communication patterns, demand-withdraw behaviour (Christensen, 1987) has received prominent attention as a dysfunctional dyadic property that is associated with detrimental outcomes for couples (Caughlin & Huston, 2002). Demand-withdraw behaviour is a relational process wherein one partner criticizes, threatens, and blames, while the other withdraws or avoids (Christensen, 1987). This communication pattern has been associated with diminished relationship satisfaction (e.g., Heavey, Layne, & Christensen, 1993), poor intimacy and dyadic adjustment (Cook et al., 2004), relational violence (e.g., Sagrestano, Heavey, & Christensen, 1999), and divorce (e.g., Gottmann & Levenson, 2000). In contrast, constructive communication (characterized by emotional expression, active problem solving, negotiation, and understanding; Christensen, 1987) has been linked with enhanced relationship quality (Christensen & Shenk, 1991; Cook et al., 2004; Noller & White, 1990; Smith, Heaven, & Ciarrochi, 2008). Clearly, constructive communication and minimal demand-withdraw behaviour are important for the maintenance of healthy relationships.

Also important is self-disclosure, which, as was outlined above, is considered a central component in the development of intimacy (Clark & Reis, 1988; Reis, 2006). Reis (2006) cited a number of studies that support the importance of emotional self-disclosure to the development of intimacy (e.g., Heyman, 2001; Johnson, 2004; Laurenceau, Barrett,

& Pietromonaco, 1998; Laurenceau, Barrett, & Rovine, 2005; Lippert & Prager, 2001).

As discussed above, Solomon and colleagues have provided some recent support for self-disclosure as an important mediator in the relationship between PTSD symptoms and intimacy (Dekel, Enoch, & Solomon, 2008; Solomon, Dekel, & Zerach, 2008). Related to the construct of self-disclosure, yet more relevant to the present framework, is self-concealment, defined as “the active concealment from others of personal information that one perceives as negative or distressing” (Larson & Chastain, 1990; p. 439). Such self-concealment has been demonstrated by these researchers to also be associated with diminished relationship quality.

Having established the importance of healthy communication to enhanced or maintained intimacy, it is necessary to examine the extent to which posttraumatic symptoms deteriorate interpersonal communication. Increased self-concealment, for example, has been found to be associated with posttraumatic symptoms (Larson & Chastain, 1990) and distress (e.g., Barry & Mizrahi, 2005; Kawamura & Frost, 2004; Lopez, Mitchell, & Gormley, 2002). Available evidence also indicates that PTSD symptoms are associated with low levels of self-disclosure, particularly in relation to details of the associated traumatic events (Carroll et al., 1985; Davidson & Moss, 2008; McFarlane, 1988). Carroll et al. (1985) reported that Vietnam veterans with a PTSD diagnosis, as compared to those without a PTSD diagnosis, were lower on self-disclosure and expressiveness toward their partners. Similarly, Thelen, Sherman, and Borst (1998) noted lower levels of self-disclosure (Miller, Williams, & Bernstein, 1982; Resick, 1983) and trust (Miller et al., 1982; Nadelson, Notman, Zackson, & Gornick, 1982; Resick, 1983) among rape survivors as compared to controls. It appears that the posttraumatic

response results in efforts to avoid disclosure to the partner, likely as an effort to avoid the distress associated with thinking about the traumatic experiences.

PTSD symptoms have also been linked with a fear of intimacy (a central feature of the operationalization of which involves self-disclosure). For example, Thelen et al (1998) found that rape survivors reported a considerable fear of intimacy. Davis, Petretic-Jackson, and Ting (2001) also demonstrated an association between trauma exposure and a fear of intimacy. This association has been suggested to result from a desire to avoid distressing thoughts and often the shame associated with the trauma. Together, these findings support the contention that intimacy is impaired by posttraumatic symptoms because of a diminished propensity toward self-disclosure or an increased likelihood of self-concealment.

PTSD symptoms have also been shown to be associated with other facets of poor communication. Cook et al. (2004), for example, with a sample of POWs, reported positive correlations between all clusters of PTSD symptoms and demand-withdraw behaviour; and negative correlations between all symptom clusters of PTSD and constructive communication. Moreover, Carroll et al. (1985) reported that Vietnam combat veterans with a diagnosis of PTSD had more aggression toward their partner than did those without a diagnosis of PTSD. Byrne and Riggs (1996) also reported an association between PTSD symptoms and verbal and physical aggression. These researchers were limited by a sample of only 50 couples; however, they found significant positive associations between PTSD symptoms and the Conflict Tactics Scale subscales of physical and verbal aggression. Similarly, others have discussed the link between childhood traumatization and adult aggression and interpersonal insensitivity (e.g.,

Alessandri, 1991; Davis, Petretic-Jackson, & Ting, 2001; Bryer, Nelson, Miller, & Krol, 1987). Thus, impaired communication patterns are also well suited as mediators of the association between posttraumatic symptoms and intimacy.

Overall, the research reviewed supports a prediction that communication problems/deficiencies (operationalized as self-concealment, demand-withdraw behavior, and constructive communication) mediates the relationship between PTSD symptoms and intimacy (see Figure 2). The

existence of a more parsimonious latent communication factor that captures each of these individual pathways was also tested. This intraindividual mediational model is based on evidence supporting

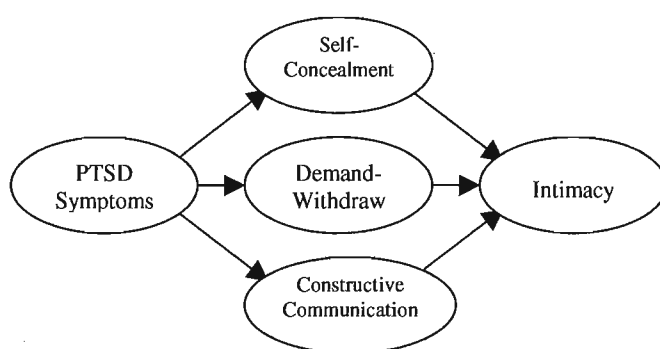


Figure 2. Intraindividual communication pathways between PTSD symptoms and intimacy.

direct associations between PTSD symptoms and patterns of interpersonal communication, as well as direct associations between patterns of interpersonal communication and intimacy; however, as noted, a direct association between PTSD symptoms and intimacy was also hypothesized.

Affective Problems/Deficiencies.

The second hypothesized mechanism involves affective pathways to attenuated intimacy. Certainly, emotional engagement is a central component of healthy relationship functioning (Greenberg & Johnson, 1988; Wile, 1993). However, emotional disengagement is a major component of the posttraumatic response; PTSD symptom cluster C (avoidance and numbing) is evidenced by a feeling of detachment or

estrangement from others or a markedly decreased ability to feel emotions, especially those associated with intimacy, tenderness, and sexuality (APA, 1994). As evidence of this, emotional detachment has been reported by traumatized ex-POWs and by their spouses (Berstein, 1998; Hall & Malone, 1976). Cook et al. (2004) posited that “emotional numbing may contribute to traumatized ex-POWs’ relationship distress by impairing their ability to resonate with spouses’ emotional experience” (p. 37; see also Riggs et al., 1998). Thus, the avoidance/numbing symptoms are likely to impact relational intimacy directly and via other affective processes. It is hypothesized that PTSD symptoms also affect a relationship through pronounced alexithymia (Montebarocci et al., 2004), heightened negative affect (NA), and diminished positive affect (PA).

The relevance of alexithymia to this framework is inherent in its definition: difficulty “recognizing, processing, and regulating emotions” (Montebarocci et al., 2004, p. 500). It has been suggested that individuals with alexithymia display a “limited capacity to experience positive emotions such as joy, happiness, and love in their interpersonal relationships.” (Montebarocci et al., 2004, p.505). Moreover, an association between PTSD symptoms and alexithymia has received considerable support (Frewen, Dozois, Neufeld, & Lanius, 2008). Yehuda et al. (1997), for example, reported that Holocaust survivors with a PTSD diagnosis had higher alexithymia scores than did survivors without a PTSD diagnosis. Further, these researchers found that alexithymia was associated with severity of PTSD symptoms, but not with severity of trauma. Söndrgaard and Theorell (2004) also reported higher levels of alexithymia in participants with a PTSD diagnosis; however, this association was limited to Factor I (difficulty

identifying feelings). An association between alexithymia and childhood abuse has also been reported (e.g., Berenbaum, 1996; Hund & Espelage, 2005; Scher & Twaite, 1999). Although a consistent link between PTSD symptoms and alexithymia is evident, this association, like that between PTSD symptoms and intimacy, is limited to a small number of traumatic events.

The directionality of the association between PTSD symptoms and alexithymia is also in question; Yehuda et al. (1997) suggested three plausible models. First, it was speculated that alexithymia may be a component of PTSD, rather than a distinct effect of trauma. Second, Yehuda et al. (1997) suggested that “alexithymia may reflect a more generalized (i.e., secondary) adaptation to chronic psychiatric illness such as PTSD.” (p. 98). In support of this contention, Yehuda et al. (1997) noted that levels of alexithymia in PTSD populations are not different from those observed in psychiatric patients. “A third explanation ... is that alexithymia in Holocaust survivors with PTSD represents a preexisting trait that facilitates the expression of PTSD in response to trauma.” (p. 98). This proposition seems justified based on the literature suggesting that alexithymia develops as a response to disrupted relationships with primary caregivers (i.e., problems of attachment). However, the current research is concerned with mediating mechanisms, and, as such, the second proposition of Yehuda et al. (1997), wherein alexithymia develops as an adaptive response to PTSD symptoms, is of most interest. Still, a test of competing models is warranted and, therefore, is performed.

The role of PA and NA in the PTSD symptoms and intimacy link follows a similar reasoning to that of alexithymia. Watson, Clark, and Tellegen (1988) outlined how high PA is characterized by high levels of energy, pleasurable engagement, and

positive feelings such as joyfulness and enthusiasm. Low PA, conversely, is characterized by sadness and lethargy. In contrast, high NA is characterized by irritability, nervousness, anger, and fear, whereas low NA is equated with serenity. Both positive and negative affect have been shown to be associated with PTSD symptoms (e.g., Kashdan, Uswatte, Steger, & Julian, 2006; Merriman, Norman, & Barton, 2007; Schwartz & Drotar, 2006). Shapinsky et al (2005) reported a negative association between positive affect and PTSD symptoms and a positive association between negative affect and PTSD symptoms. These authors were attempting to demonstrate an association between general measures of distress and measures of civilian PTSD. They allude to a possibility that “an overarching, trait personality characteristic may drive a substantial portion of outcomes observed in these PTSD measures.” (p. 227). Perhaps, then, high negative affect and low positive affect might be considered as risk factors for the development of PTSD. Alternatively, PA and NA could be mediating factors between PTSD symptoms and intimacy. Again, a test of competing models is necessary.

Although the temporal order of the association between the posttraumatic response and affective processes and states is debatable, a clear association is evident. As such, these constructs are important in understanding the link between PTSD symptoms and intimacy. Especially given that alexithymia, high NA, and low PA are detrimental to relationship well-being (Fischer & Good, 1997; Reis, 2001; Vernon, 1993). Positive affect, for example, if evident in the self or the partner, should, and does, predict higher levels of intimacy (Laurenceau, Troy, & Carver, 2005). Moreover, negative affect, in contrast, predicts lower levels of relationship quality (e.g., Tesser & Beach, 1998). Experiencing and expressing emotions are the lifeblood of intimacy and if PTSD

symptoms deteriorate these important relationship components, then PTSD symptoms effectively rob one of the ability to be a present and effective relational partner.

The available literature leads to a prediction of the existence of an affective pathway between PTSD symptoms and intimacy. This affective pathway includes

alexithymia, negative affect, and positive affect. This mediational model is presented in Figure 3. Like the communication pathway, the existence of a more parsimonious latent affective factor that captures each of these individual pathways

was also tested. Further, although an affective pathway was hypothesized, partial mediation was predicted as a model including direct effects was warranted. Together, these pathways and the proposed direct association represent a model outlining the mechanism of intraindividual experience in the association between PTSD symptoms and intimacy. This complete model is presented in Figure 4.

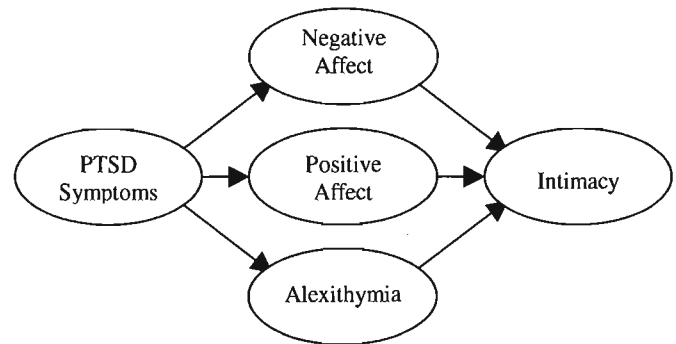


Figure 3. Intraindividual affective pathways between PTSD symptoms and intimacy.

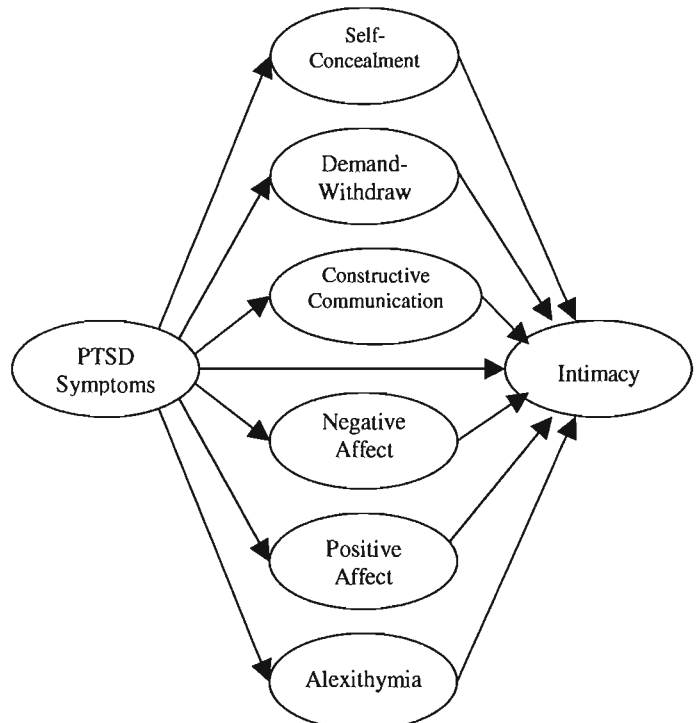


Figure 4. Complete intraindividual model mediators and direct effect.

Chapter 5 - A Dyadic Model of PTSD Symptoms and Intimacy

A Dyadic Model of PTSD Symptoms and Intimacy

As covered earlier, this dissertation is based on the premise of PTSD symptoms impacting not only the individual, but also his/her partner. As has been demonstrated, the negative association between PTSD symptoms and intimacy has received support; however, the interdependent nature of the impact has been neglected. The extant literature, although purporting an examination of PTSD symptoms and intimacy, has generally failed to include both members of the dyad (e.g., Cook et al., 2004). Moreover, endeavours that have included both partners (e.g., Byrne & Riggs, 1996) have neglected to examine the effects of PTSD symptoms on each partner's perception of relationship functioning. If PTSD symptoms in an interpersonal context are to be fully understood, then appropriate dyadic methods must be employed as "the dyad is arguably the fundamental unit of interpersonal interaction and interpersonal relations" (Kenny et al., 2006, p. 1).

Some evidence of dyadic effects are found in the works of Solomon and colleagues (Arzi, Solomon, & Dekel, 2000; Dekel, Goldblatt, Keidar, Solomon, & Polliak, 2005; Mikulincer, Florian, & Solomon, 1995; Solomon, 1988; Solomon, Waysman, Avitzur, & Enoch, 1991; Solomon, Waysman, Belkin, Levy, Mikulincer, & Enoch, 1992; Solomon, Waysman, Levy, Fried, Mikulincer, Benbenishty, et al., 1992), who have examined the impact of combat trauma on the partners of veterans. This research has demonstrated that symptoms of PTSD and combat stress are related to "greater somatization, depressions, anxiety, loneliness, hostility, and impaired marital, family, and social relations in wives" (Nelson-Goff et al., 2006, p.451). This research,

while documenting an impact on the spouses of combat veterans, is still limited by not assessing PTSD symptoms and intimacy in both members of the dyad.

Riggs et al. (1998), however, found significantly higher levels of relationship distress and problems with intimacy in veterans with a PTSD diagnosis and their partners as compared to non-PTSD diagnosed couples. Riggs et al. (1998) examined the quality of the intimate relationships of Vietnam veterans in 48 couples (26 in which the veteran had a diagnosis of PTSD). Of particular relevance to a discussion of dyadic effects, these researchers reported that the partners of veterans with a PTSD diagnosis reported a greater fear of intimacy and more relationship distress than the partners of veterans without a PTSD diagnosis; thus alluding to the impact of PTSD symptoms on the interpersonal functioning of the non-distressed partner. Still, this analysis does not speak directly to dyadic effects. Riggs et al. did, however, regress the partners' perception of relationship quality on the veterans' PTSD symptoms. Although the majority of zero-order correlations were significant, it was reported that the beta weights for the regression analysis did not reach significance. Thus, dyadic effects were not evident, possibly because of a lack of power.

Work by Nelson-Goff and colleagues (e.g., Hamilton, Nelson Goff, Crow, & Reisbig, 2009; Nelson, 1999; Nelson-Goff et al., 2006; Nelson & Wampler, 2000; Nelson & Wright, 1996) has also demonstrated dyadic effects of trauma, albeit, in mostly a qualitative vein. Nelson and Wampler (2000), for example, reported that couples who had experienced trauma were more likely to report lower marital satisfaction than non-traumatized couples. Nelson (1999), however, reported no impairment in relational quality in the partners of traumatized individuals. In a more recent study, Hamilton et al.

(2009) demonstrated a negative association between the PTSD symptoms of the female partner and dyadic adjustment for both partners. More specifically, these researchers found that the woman's hyperarousal symptoms predicted the man's dyadic adjustment, whereas the woman's re-experiencing symptoms predicted her own dyadic adjustments. Unfortunately, however, these researchers did not include PTSD symptom data for the male partner, all of whom were Iraq war veterans. These researchers even note that previous "research has failed to explore previous trauma experiences and symptoms of spouses/partners of soldiers" (p.337), and yet neglect inclusion of the symptoms of the male partner in attempting to address this gap in the literature (see also Gold et al., 2007; Monson et al., 2009). As has been discussed here, it is impossible to accurately discern partner effects if data from both partners are not included in the study. Clearly, evidence for partner effects is lacking and what does exist is somewhat mixed and, for the most part, inappropriately assessed.

Together, these results suggest clear and consistent actor effects and the possibility of partner effects, thus emphasizing the need to examine both actor and partner effects in the same model. Unfortunately, with few exceptions, the available research has not approached this problem using appropriate methods and analytical techniques. Thus, to examine the interdependence of PTSD symptoms within a relationship, this study employs appropriate methodology (i.e., collecting PTSD symptom and intimacy data from both partners) and appropriate analyses, including structural equation modeling (SEM) and the APIM (Kenny et al., 2006; see Figure 5). As noted, taking this approach permits a modeling of mutual influence and a simultaneous analysis of both actor and partner effects. As such, this research provides a dyadic examination of

the association between PTSD symptoms and intimacy that is informative beyond any presently available research.

Secondary Traumatic Stress

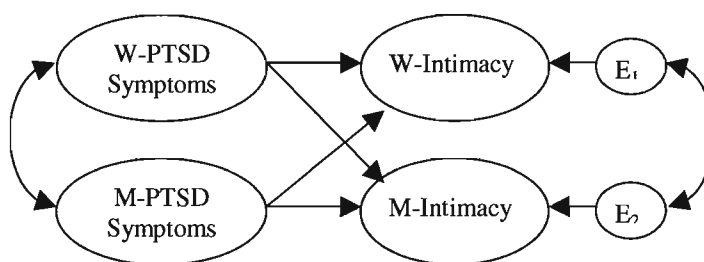


Figure 5. APIM for PTSD Symptoms and Intimacy; W = Woman, M = Man

Beyond partner effects on intimacy, it is also important to consider partner effects specific to the transference of PTSD symptoms. The model presented in Figure 5 assumes, or accounts for, a correlation between the PTSD symptoms experienced by one partner and those experienced by the other partner. Yet, available theory and evidence suggest that caring for an individual who has been traumatized can result in similar PTSD symptoms in the partner/caregiver. Nelson Goff and Smith (2005) proposed the *Couple Adaptation to Traumatic Stress Model* that describes possible mechanisms through which trauma may impact a dyad and family, particularly through secondary trauma symptoms. The transference of PTSD symptoms has been discussed by many researchers and has been demonstrated to occur in spouses (e.g., Waysman, Mikulincer, Solomon, & Weisenberg, 1993), children (e.g., Steinberg, 1998) and therapists (e.g., Adams & Riggs, 2008). Such a phenomenon has been termed *secondary traumatization* (Figley, 1983), *vicarious traumatization* (McCann & Pearlman, 1990; Pearlman & Saakvitne, 1995), and *compassion fatigue* (Figly, 1995). Nelson-Goff et al (2006) noted that “The theory of secondary traumatic stress contends that being in close contact with and emotionally connected to a traumatized person becomes a chronic stressor, and family members often experience symptoms of traumatization (Arzi, Solomon, & Dekel, 2000; Figley, 1983, 1995; McCann & Pearlman, 1990; Solomon Waysman, Levy, et al., 1992).” (p. 18).

Wilson and Lindy (1994) suggested that such an experience with secondary traumatization will result in similar symptoms of PTSD in the caregiver as in the individual with direct exposure to the trauma. In fact, Nelson Goff and Smith (2005) note that secondary trauma theory suggests that these “symptoms are communicable” and that “those who are close to the trauma survivor can be ‘infected’ with the trauma symptoms (Catherall, 1992; Figley, 1995)” (p.146). Further, it is likely that such secondary traumatization may, in turn, exacerbate PTSD symptoms in the traumatized partner (Nelson Goff & Smith, 2005). That is, trauma and PTSD symptoms as experienced by an individual may result in PTSD symptoms in the partner which, in turn, elevate PTSD symptoms in the individual. This process is further amplified in cases wherein both partners have been traumatized (Nelson et al., 2002). Thus, the interdependent nature of the relationship is a breeding ground for posttraumatic distress.

Researchers studying PTSD symptoms in dyads have demonstrated such transference of symptoms, indicating that PTSD symptoms in an individual cause a similar posttraumatic response in the partner. Lev-Wiesel and Amir (2001), for example, reported on the existence of secondary traumatic stress symptoms in the partners of Holocaust survivors. Nelson (1999) also reported a dyadic effect in the form of secondary traumatic stress symptoms in the partners of traumatized individuals. Other researchers have also demonstrated that the presence of PTSD symptoms in one partner are associated with and may produce PTSD symptoms in the other partner (e.g., Gallagher, Riggs, Byrne, & Weathers, 1998). Bramsen, van der Ploeg, and Twisk (2002) reported, with a community sample of 444 couples who experienced World War II, that the current level of PTSD symptoms of an individual was one of the biggest predictors of PTSD.

symptoms of his/her partner. Together, these findings, and the larger literature on secondary/vicarious traumatization in therapists (e.g., Adams & Riggs, 2008), demonstrate a causal link in the transference of PTSD symptoms. Still, this does not preclude the natural pairing of traumatized individuals or the simultaneous development of PTSD symptoms based on a shared trauma (e.g., a car accident).

As such, the transference of PTSD symptoms and its impact on intimacy is examined in the current research. It is speculated that such transference will be highly dependent on self-disclosure. It is expected that secondary traumatization necessitates the disclosure of traumatic events by the partner. For someone to be traumatized by something that has happened to their partner, they must first be aware that something has happened. It is possible that this knowledge alone may lead to secondary traumatization for some; however, it is likely that seeing the impact of the trauma in the form of PTSD symptoms would more likely result in secondary traumatization. Alternatively, if PTSD symptoms are evident in one partner and information about the traumatic experiences are not disclosed to the other partner, then secondary traumatization is unlikely. That is, without disclosure regarding the traumatic events, the partner does not have a context through which to interpret the PTSD symptoms and their impact on the traumatized individual. Instead, the PTSD symptoms may receive general behavioural or personality attributions rather than being appropriately linked with trauma. In such a situation, the lack of self-disclosure itself may result in intimacy impairment. Thus, a situation is created wherein disclosure can both increase and decrease intimacy. As such, it was hypothesized that low levels of self-disclosure will render the PTSD-PTSD pathway nonsignificant; however, this may exacerbate the PTSD → intimacy pathway (see Figure

6). To minimize alternative explanations such as assortative mating or shared traumas, this model will first be tested with couples in which only one member of the dyad reported directly experiencing a traumatic event. As such, a cross-sectional test of secondary traumatization is possible.

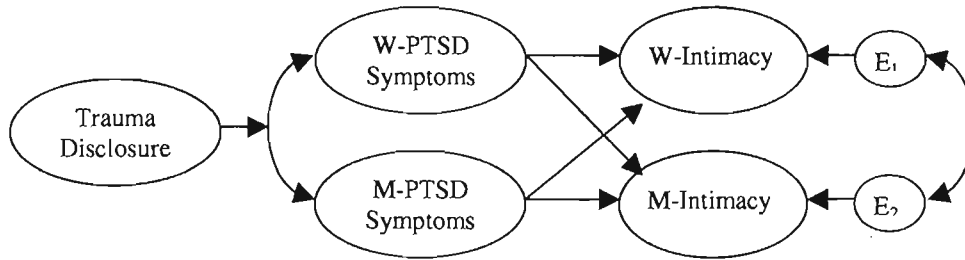


Figure 6. Secondary Traumatization such that the transference of PTSD symptoms between partners is moderated by the level of disclosure regarding the traumatic event(s).

Chapter 6 - Summary of Current Study

Current Research

The current research contributes greatly to addressing shortcomings in the extant literature and furthering knowledge on PTSD symptoms in a dyadic context. Researchers who have examined the association between PTSD symptoms and intimacy have done so with limited scope (i.e., focusing on single traumas, such as being a prisoner of war; e.g., Cook et al., 2004), with small sample sizes (e.g., Riggs et al., 1998), focusing on only one member of the dyad (e.g., Cohen, Dekel, Solomon, & Lavie, 2003; Solomon & Dekel, 2008), using accounts of intimacy from prior relationships (e.g., Davis, Petretic-Jackson, & Ting, 2001), treating PTSD symptoms as a categorical rather than continuous variable (e.g., Carrol, Rueger, Foy, & Donahoe, 1985), examining only very long-term relationships (e.g., Cook et al., 2004), and ignoring the mechanism that explains the association between PTSD symptoms and relationship impairment. Each of these methodological and theoretical limitations is addressed by the current research.

Foremost among the strengths of this research, intraindividual and dyadic models are tested with a community sample of 297 heterosexual couples, comprised of partners who have experienced an array of traumatic events. Moreover, this research operationalizes PTSD symptoms as a continuous variable and moves beyond the prominent diagnostic approach. Further, a more thorough approach to the assessment and operationalization of relationship quality is employed, which is both theoretically and methodologically sound. The research also improves on previous research by examining mechanisms responsible for the association between PTSD symptoms and relationship functioning. These mechanisms (i.e., affective and communication pathways) are hypothesized to partially mediate this association, thus a direct link is also considered.

Finally, Structural Equation Modeling (SEM) and state-of-the-art dyadic data analytic techniques (e.g., APIM; Cook & Kenny, 2005) were used to examine actor effects, partner effects, and secondary traumatization. The proposed intraindividual and dyadic models and associated mediational mechanisms are driven by research and theory on PTSD symptoms and romantic relationships and represent a sizable contribution to each of these fields.

Hypotheses

- 1) There will be a direct link between PTSD symptoms and intimacy
- 2) The overall intraindividual model (see Figure 4) for this study contains six mediators (represented as communication and affective pathways) and a direct path via which PTSD symptoms are associated with intimacy. These are organized as follows:
 - a. Communication Pathway: PTSD symptoms affect intimacy via increased demand-withdraw behaviour, increased self-concealment, and diminished constructive communication.
 - b. Affective Pathway: PTSD symptoms affect intimacy via pronounced alexithymia, increased negative affect, and diminished positive affect.
 - c. Direct Pathway: PTSD symptoms directly affect intimacy beyond the proposed mediators (i.e., partial mediation is postulated).

An examination of sex differences in the hypothesized relationships is exploratory as the extant literature does not suggest differential paths or inform a priori hypotheses. However, as noted, some theory (i.e., the tend-and-befriend model) does support a prediction that the intimacy of women will be buffered against the negative impacts of PTSD symptoms (Taylor et al., 2000). Sex differences in the association

between PTSD symptoms and intimacy have yet to be examined and this research sheds light on a potentially important moderator.

Alternative intraindividual models (see Figure 7 and Figure 8) were also tested, with a prediction that the aforementioned mediational model (Figure 4) would fit the data best. The alternative models include configurations wherein PTSD symptoms were considered as the outcome of intimacy (Figure 7) and the proposed mediators precede PTSD symptoms (Figure 8). These models are justified based on reviewed evidence suggesting that quality relationships lessen the impact of trauma (e.g., Charuvastra & Cloitre, 2008; Shapiro & Levendosky, 1999) and mediators such as alexithymia may precede the posttraumatic response (e.g., Yehdua et al., 1997).

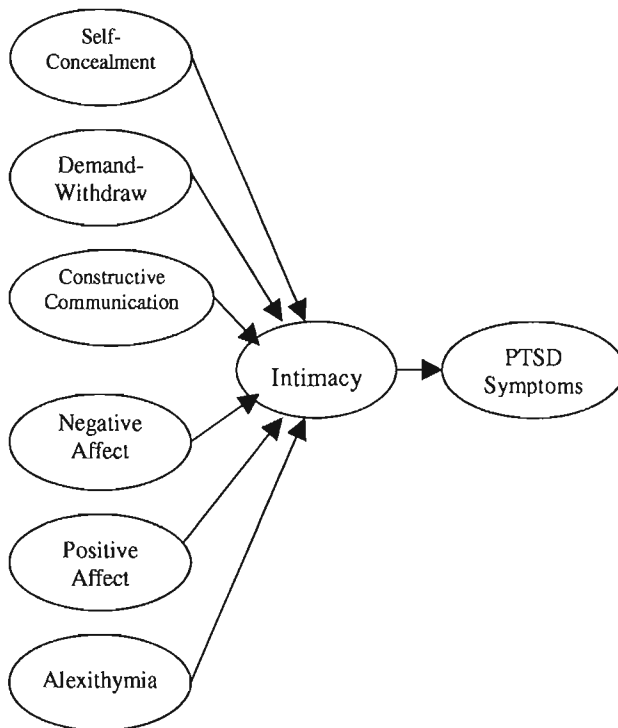


Figure 7. Alternative Model 1: Intimacy as a mediator of the relationship between communication and affective processes and PTSD symptoms.

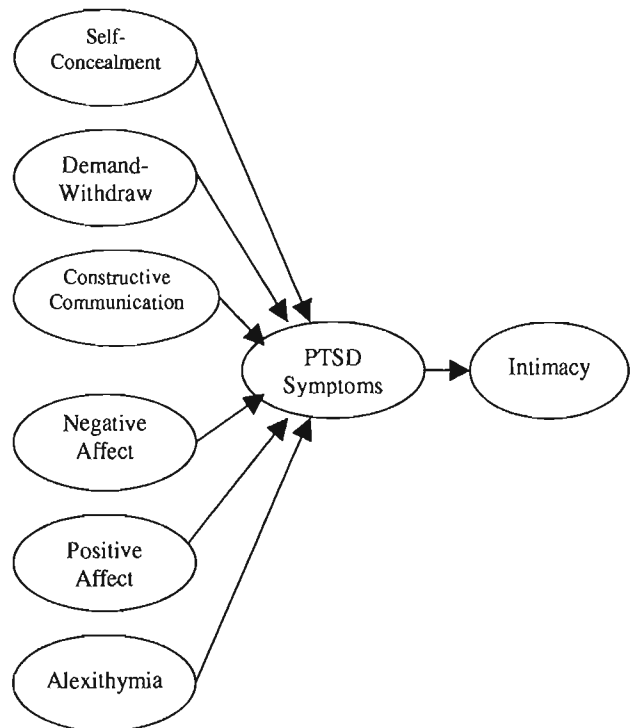


Figure 8. Alternative Model 2: Affective and Communication variables as predictors of PTSD symptoms, which, in turn, affects intimacy.

- 3) In a dyadic model of mutual influence, the PTSD symptoms of each member of the dyad were hypothesized to be associated with the perceived intimacy of both the individual and the partner. This model was tested using the APIM method (described further in the analyses plan), wherein actor and partner effects were examined simultaneously. The direct effects and mediational pathways discussed for the intraindividual model was also included in this dyadic model.
- 4) Secondary traumatization was hypothesized to exist in that individuals who have not been directly traumatized will experience PTSD symptoms because of the caregiver strain associated with being the partner of a traumatized individual. This association will be moderated by the disclosure of the details of the traumatic event by the traumatized partner.

Chapter 7 - Methods

Participants

A sample of 297 heterosexual couples was recruited from the community; both members of the dyad participated in the study.

Materials⁷

Demographics. Of relevance to the research, participants reported their age, sex, length of relationship, and marital status. The mean age for male participants was 31.4 years ($SD = 11.7$; ranging from 18 to 75 years); the mean age for female participants was 29.4 years ($SD = 10.5$; ranging from 18 to 66 years). Mean length of relationship was 6.8 years ($SD = 8.5$ years; ranging from 6 months to 44 years). With respect to relationship status, 31.3% ($n = 186$) of participants were married, 30.5% ($n = 181$) were ‘in a serious relationship’, 22.1% ($n = 131$) were cohabitating, 7.6% ($n = 45$) were engaged, 6.1% ($n = 36$) were dating, 0.8% ($n = 5$) were separated, 0.2% ($n = 1$) were widowed, 0.2% ($n = 1$) were divorced, and 0.2% ($n = 1$) selected unattached. For 47 couples (16%), the man and woman did not select the same relationship status (in the majority of these cases, one partner selected ‘in a serious relationship’ while the other partner selected ‘dating’). All couples, regardless of reported relationship status, were included in the analyses.

With respect to other demographic variables, 90% ($n = 535$) of participants were Canadian, 2.9% ($n = 17$) were Asian, 2.2% ($n = 13$) were American, 2.0% ($n = 12$) were European, and 0.5% ($n = 3$) were African. Other nationalities identified by individual participants were Cuban, Columbian, New Zealander, Indian, Mexican, and Filipino. For religious affiliation, 29.6% ($n = 176$) were Protestant, 29% ($n = 172$) were Catholic, 28.5% ($n = 169$) selected ‘no religious affiliation’, 2.4% ($n = 14$) were Muslim, 1.7% ($n =$

⁷ Note that all measures are included in Appendix 1, along with a description of which items comprise each of the study variables.

10) were Jewish, 1.3% (n = 8) were Eastern Orthodox, 1.2% (n = 7) were Hindu, 1% (n = 6) were Buddhist, and 0.4% (n = 2) were Sikh. Further, 5.1% (n = 30) of participants did not select a religious affiliation. The most frequent level of education completed was a Bachelor's degree (24.1%, n = 143), followed by some university (22.7%, n = 135), grade 12 (13.1%, n = 78), completed technical/community college (12.8%, n = 76), some technical/community college (10.1%, n = 60), and a Master's degree (8.8%, n = 52). Finally, 45.1% (n = 268) of participants were employed full time and 21% (n = 124) were employed part time. The mean household income was \$40,000 to \$49,000.

Trauma. The Life Events Checklist (LEC; Blake et al., 2000) consists of 16 items inquiring about the experiences of 16 different potentially traumatic events (PTEs), known to result in a diagnosis of PTSD or other posttraumatic difficulties. It also includes an item inquiring about any other inordinately stressful experiences not captured by the other 16 items. In addition to these DSM-Congruent traumas, other non-DSM-IV incongruent traumas were added and assessed (e.g., infidelity). The additional PTEs were taken from a study by Perrier, Boucher, Etchegary, Sadava, and Molnar (2010). For each PTE, respondents were asked indicate if the event happened to them, happened to someone close to them, or did not apply to them. Participants also indicated the years since the event occurred. This measure was included to permit a description of PTEs experienced by participants and to cue PTEs prior to filling out the MPSS-SR.

PTSD Symptoms. The Modified PTSD Symptom Scale – Self Report (MPSS-SR; Falsetti, Resnick, Resick, & Kilpatrick, 1993; Resick, Falsetti, Resnick, & Kilpatrick, 1991) was selected to assess posttraumatic distress. Participants are instructed to rate the frequency and severity of 17 symptoms that correspond to the PTSD diagnostic criteria of

reexperiencing (4 items; e.g., ‘Having bad dreams or nightmares about the traumatic event’), avoidance/emotional numbing (7 items; e.g., ‘Trying not to think about, talk about, or have feelings about the traumatic event’), and hyperarousal (6 items; e.g., ‘Feeling irritable or having fits of anger’) listed in the DSM-IV (APA, 1994). Frequency is rated on a scale from 0 = not at all to 3 = 5 or more times a week. Severity is rated on a scale from A = not at all distressing to E = extremely distressing. Alpha coefficients for the frequency and severity subscales have been reported at .95 and .94, respectively (Coffey, Dansky, Falsetti, Saladin, & Brady, 1998). Moreover, Falsetti et al. (1993) reported good internal consistency with both treatment and community samples, 0.97 and 0.96, respectively. Further, The MPSS-SR produces three scores, a frequency score, a severity score, and a summary/total score that combines frequency and severity; these have reported cut-off scores of 15, 32, and 46 for community samples, respectively (Nayak, Resnick, & Holmes, 1999). The MPSS-SR was chosen because it permits an examination of multiple traumas rather than focusing on PTSD symptoms resultant from a single traumatic experience. Participants were also asked to report the traumatic event(s) they were thinking about when filling out this measure.

Intimacy. The Personal Assessment of Intimacy in Relationships (PAIR: Schaefer & Olson, 1981) is a 36-item measure (e.g., ‘I sometimes feel lonely when we are together’) with five subscales (emotional intimacy, social intimacy, sexual intimacy, intellectual intimacy, and recreational intimacy). Coefficient alphas have been reported above .70 for all subscales. However, the factor structure of the PAIR has received some disconfirmation (Moore, McCabe, & Stockdale, 1998). Moore et al. reported a 3-factor solution: engagement, communication, and shared friendships. Given this discrepancy, a

factor analysis of this measure was conducted to permit an analysis by potential intimacy subtypes; however, all predictions and a priori hypothesis focus on the total intimacy score. Coefficient alpha for the total score has been reported at above .80.

Love: Intimacy, Passion, & Commitment. The Sternberg Triangular Love Scale (Sternberg, 1997) is a 45-item questionnaire that measures the degree of intimacy (e.g., “I have a warm and comfortable relationship with _____”), passion (e.g., “I cannot imagine my life without _____”), and decision/commitment (e.g., “I view my relationship with _____ as permanent”) an individual experiences toward a relationship partner. Respondents rate their love-related thoughts, feelings, behaviors, and preferences toward their partner on a scale ranging from 1 “not at all” to 9 “extremely”. Cronbach’s alpha for each of the subscales has been reported at above .90.

Relationship Satisfaction. The Relationship Assessment Scale (RAS; Hendrick, 1988) was developed to assess relationship satisfaction. This measure has seven items (e.g., ‘How well does your partner meet your needs?’), which are rated on a 5-point Likert scale. It has been correlated 0.80 with the Dyadic Adjustment Scale (Spanier, 1976), and test–retest reliability has been reported at 0.85 (Hendrick, Dicke, & Hendrick, 1998).

Affect. The Positive and Negative Affect Schedule (PANAS; Watson et al., 1989) was used to assess affect. The scale is composed of 10 positive adjectives (interested, strong, enthusiastic, proud, alert, inspired, determined, attentive, active, and excited) and 10 negative adjectives (distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, and afraid). Participants rate how they feel on average on a 5-point scale ranging from 1 (*not at all*) to 5 (*extremely*). Watson et al. reported internal reliabilities

ranging from $\alpha = .84$ to $.87$ for the negative affect subscale and from $\alpha = .86$ to $.90$ for the positive affect subscale.

Alexithymia. The Toronto Alexithymia Scale (TAS-20; Bagby, Parker, & Taylor, 1994) is a measure of tendencies toward: 1) difficulty identifying feelings, 2) difficulty describing feelings, and 3) externally oriented thinking. Twenty items (e.g., ‘I am often confused about what emotion I am feeling’) are rated on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). The current research utilizes the total score, which has a reported coefficient alpha of $.84$.

Communication Patterns. The Communication Patterns Questionnaire (CPQ; Christensen, 1987, 1988) is a 35-item questionnaire that assesses perception of problem-solving interactions (e.g., ‘both members try to discuss the problem’). This self-report measure assesses partner perceptions of communication during three phases of conflict: 1) “When some problem in the relationship arises,” 2) “During a discussion of a relationship problem,” and 3) “After a discussion of a relationship problem.” Items are rated on a scale of 1 = very unlikely to 9 = very likely. Six subscales are produced; however, this study uses the *mutual constructive communication* and *total demand-withdraw communication* subscales. Reliabilities for these subscales have been reported at above $.70$.

Self-Concealment. The Self-Concealment Scale (SCS; Larson & Chastain, 1990) is a 10-item scale that assesses the predisposition to consciously conceal personal information that is highly intimate and negative (e.g., ‘When something bad happens to me, I tend to keep it to myself’). Items are rated on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Larson and Chastain reported a Cronbach’s

coefficient alpha of .83 for SCS. A factor analysis by Larson and Chastain indicated that the SCS essentially measures a unidimensional construct. The SCS was modified for use with couples such that participants were instructed to fill out the questionnaire with reference to their partner.

Self-Disclosure. Participants were also asked to rate, on a scale ranging from 1-10, the extent to which they had revealed details of their traumatic experience to their partner. This one-item rating is used as the moderator in the analysis of secondary traumatization.

Procedure

Participants completed a closed-access web-based survey. Participants were recruited through advertisements in newspapers, postings on list serves, advertisements on websites, and posters at counseling centers. Ads stated “we are looking for couples to participate in a study of health, trauma, and intimacy.” Selection criteria were also advertised (i.e., at least 18 years of age, in a relationship for at least 6 months, and computer literate with an email address). Couples were asked to contact a research assistant who obtained contact information (mailing address, phone number, and an email address) for each member of the dyad. The participants were emailed a link to the study website and each was provided with an Identification Number, which was necessary to access the questionnaire. Identification numbers were generated for each couple such that the first four digits were the same for each couple and the second four digits were unique to the individual (e.g., Jane Smith = 89452345, John Smith = 89456132). This permitted the matching of partners and lessened the likelihood that participants would accidentally or intentionally fill out a questionnaire for their partner or another individual. To reduce

nonindependence in the data (Kenny et al., 2006), participants were instructed to complete the questionnaire in one sitting by themselves, without their partner in the room. Participants were also instructed to not discuss their participation with their partner until both had completed the questionnaire. Participants were instructed that their identification numbers would be matched to their name to facilitate payment; however, once payment had been distributed, their name would no longer be associated with the ID and, as such, their data would not be identifiable. Once both members of the dyad had completed the questionnaire, payment of \$50 was provided. Separate payments of \$25 were provided, if requested.

Data Analysis

The data analytic techniques that were used in this research are consistent with currently recommended and agreed upon best methods (Kenny et al., 2006). Kenny et al. noted that many research studies currently published have not taken appropriate steps in the analysis of dyadic data and as such have violated the independence assumption. “The independence assumption requires that, after controlling for variation due to the independent variable, the data from each individual in a study must be unrelated to the data from every other individual in the study” (Kenny et al., 2006; p. 3). Kenny et al. (2006) and Kenny (1996) outline various sources of such nonindependence. The first is a compositional effect, in which members of the dyad are similar when they first meet, something to be expected for romantic relationships. Such an effect has also been termed assortative mating, referring to nonrandom pairings. Nonindependence also occurs through partner effects, such as the impact of PTSD symptoms in one partner on the perceived intimacy of the other partner. Finally, common fate is a source of nonindependence.

resulting from both members of the dyad being exposed to the same causal factor, such as a shared trauma (e.g., a car accident). The current research was primarily interested in partner effects; however, a method (i.e., the APIM) was utilized to effectively account/control for the other sources of nonindependence by including all variables for each partner in the same analysis.

Dyadic data analysis also necessitates a consideration of distinguishability, variable types, and design (Kenny et al., 2006), as different analytic approaches are necessary for each. First, different analytical techniques are required for distinguishable dyads (e.g., heterosexual couples) as compared to indistinguishable couples (e.g., best friends). In this study, data analytical techniques are used for distinguishable dyads (i.e., male and female members of heterosexual couples). Moreover, all variables (aside from sex) used in the current research constitute mixed variables (as compared to between-dyad variables and within-dyad variables), defined by Kenny et al. (2006) as a variable “in which variation exists both within the dyads and between dyads” (p.9). For example, participants vary from their partners on PTSD symptom levels and PTSD symptoms vary across dyads. With respect to the dyadic design, this research employs the two-sided standard design, wherein data are collected from both members of the dyad and each individual is a member of only one dyad. Kenny et al. (2006) described other such designs (e.g., Social Relations Model), which require alternate analytical techniques. Finally, it is important to note that analyses are conducted based on a dataset that is organized in the dyad structure, where there is a single unit for each dyad, and representative scores for each dyad member (see Kenny et al., 2006).

As noted, it was hypothesized that the association between PTSD symptoms and intimacy would be mediated by self-concealment, demand-withdraw behavior, constructive communication, positive affect, negative affect, and alexithymia. The analysis was organized in four stages.

Stage 1:

This involved preparing the data for analyses and included a) data screening, b) assessing nonindependence, c) performing confirmatory factor analyses, and d) examining the utility of trauma types and PTSD diagnostics.

Step 1a: As a first step, the data were screened for missing values and univariate and multivariate outliers. Missing values were imputed using the expectation-maximization procedure in SPSS. Methodological research has shown that this approach is preferable to more common methods including listwise deletion, pairwise deletion, and mean substitution (Schafer & Graham, 2002). Analyses of normality and outliers were conducted during the development and testing of measurement models and were addressed through item parceling. Parceling entails averaging two or more items that measure the same construct so as to create a new composite item that may be more normally distributed (Hau & Marsh, 2004; Little, Cunningham, & Shahar, 2002). Unless otherwise stated, parcels were created through a random selection of items.

Step 1b: Kenny et al. (2006) indicated that assessing nonindependence is the first step that all researchers should take when working with dyadic data. Again, there are many approaches available for assessing nonindependence, depending on the nature of the dyad and variables. With the design of this study, Kenney et al. recommend using canonical correlation.

Step 1c: Confirmatory factor analysis (CFA) was conducted for measures of PTSD symptoms and intimacy in an attempt to replicate the factor structure reported by previous research. With respect to PTSD symptoms, it was hypothesized that the predominant 3-factor model including re-experiencing, avoidance/numbing, and hyperarousal would prevail.

With respect to intimacy, the available literature has not been consistent in finding a reliable factor structure for either the PAIR or Sternberg's measure. First, CFA was used to test the factor structure as proposed by the original authors. Subsequent to this, a composite intimacy variable was tested. Finally, the existence of a second-order relationship quality variable was tested.

Step 1d: With respect to trauma type, DSM-Congruent and DSM-Incongruent groups were compared on measures of PTSD symptoms and intimacy. This involved coding of the qualitative data that were collected in reference to the trauma(s) that were considered by participants when filling out the MPSS-SR. Independent coders were utilized to code these traumas based on the trauma types presented in the LEC. Inter-rater reliability was computed following these ratings. Disagreements were settled through discussion. These traumas were dichotomized into DSM-Congruent and DSM-Incongruent groups and these groups were compared to determine if significant differences existed with respect to PTSD symptoms. This step was taken to support the method of collapsing across traumas for analysis. In addition to categorizing trauma type, participants were categorized according to the PTSD diagnostic cutoff for the MPSS-SR and compared on all measures.

Stage 2:

This involved testing measurement models and latent variables

Step 2a: Measurement models for each variable were tested using structural equation modeling in AMOS 16.0. As necessary, theory, parceling, and modification indices guided model changes to achieve adequate fit. Maximum Likelihood Estimation was used to estimate parameters. Model fit was examined using the model chi-square, the Goodness of Fit Index (GFI), the Tucker-Lewis Index (TLI), the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). If the model chi-square statistic is significant, then the model is not a good fit. With respect to the GFI, TLI, and CFI, a good fit is indicated by a value close to .95 (Schumacker & Lomax, 2004). As for the RMSEA, a good fit is indicated by a value less than or equal to .05 and an adequate fit is indicated by a value less than or equal to .08 (Schumacker & Lomax, 2004). Still, others have suggested that a value less than or equal to .06 represents a good fit (Hu & Bentler, 1999). For the SRMR, a value less than .05 is widely considered good fit and below .08 indicates an adequate fit.

Step 2b: Latent affective and communication constructs were tested in an effort to increase model parsimony.

Stage 3:

This involved testing the intra-individual models

Step 3a: The intraindividual model was tested separately for men and women. Sex differences were examined during the dyadic analyses described below.

Step 3b: A model wherein PTSD symptoms were considered as the outcome of intimacy (Figure 7) was tested and compared to the hypothesized model (Figure 4). A comparison of models was conducted with a chi square difference test to determine which model best represented the data.

Step 3c: A model wherein the proposed mediators preceded PTSD symptoms (Figure 8) was tested and compared to the hypothesized model.

Stage 4:

This involved dyadic analyses

Step 4a: Dyadic analyses were conducted using the Actor Partner Interdependence Model (Kenny, 1996; Kenny & Cook, 1999; Kenny et al., 2006). This approach is best suited to the design and goals of this research and is superior to other methods of dyadic data analysis (e.g., difference scores) because it accounts for nonindependence. Moreover, the APIM method of analysis accounts for both between and within dyad variance that exists for mixed independent variables such as PTSD symptoms. Further, with each partner affecting the other (i.e., mutual influence), the APIM permits a simultaneous analysis of both actor and partner effects. The APIM was used to examine actor and partner effects in the association between PTSD symptoms and intimacy. This analysis entailed: a) imposing constraints on actor effects, and b) imposing constraints on partner effects. If it is found that imposing actor or partner constraints results in a significant decrement in model fit, then one is to assume a significant difference in this effect across partners (Cook & Kenny, 2005; Kenny et al., 2006).

Step 4b: The proposed communication pathway was tested by expanding the APIM to include self-concealment, demand-withdraw behaviour, and constructive communication.

Step 4c: The proposed affective pathway was tested by expanding the APIM to include negative affect, positive affect, and alexithymia.

Step 4d: The entire mediating model (i.e., the inclusion of both affective and communication pathways) was tested.

Step 4e: Secondary traumatization was examined with disclosure moderating the relationship between the Actor's PTSD symptoms and the Partner's PTSD symptoms.

Chapter 8 - Results – Data Preparation and Replicating Previous Research

Results

The data were examined for missing values, normality, and outliers. Missing values were found to be minimal for most variables; percentage missing ranged from 0% to 2% across items. As these were less than 5% of cases, missing data were not considered problematic (Tabachnick & Fidell, 2001). For the severity of PTSD symptoms, however, missing values were rather high, ranging from 12.1 % to 25.6%. Partway through data collection, this problem was identified and considered to be a result of the web-based presentation of the survey that caused the severity ratings to be hidden unless participants scrolled to the right of the page. However, upon closer inspection of the data, it was evident that the severity scale was primarily not being completed by individuals who had indicated not experiencing any PTSD symptoms using the frequency scale. As such, missing severity ratings were replaced with a value of “1 = *not at all distressing*” for individuals who had rated the frequency of symptoms as “0 = *not at all*”. This imputation resulted in a considerable decrease in missing values for the PTSD severity items, now ranging from 0% to 1%. Expectation Maximization was used for overall missing value imputation. Issues of normality and outliers were not addressed during the data preparation phase. Instead, these problems were examined during the construction of measurement models and dealt with through parceling as discussed below.

Means, standard deviations, and measures of internal consistency (Cronbach’s alpha) are presented in Table 1. Correlations between the variables by sex are presented in Table 2. Correlations across sex are presented in Table 3. As is evident in these tables, correlations between study variables were generally significant. As predicted, PTSD

Table 1. *Means, Standard Deviations, and Internal Consistency (alpha)*

Variable	Mean		Standard Deviation		Cronbach's alpha	
	M	F	M	F	M	F
PTSD Frequency	5.14	7.67	6.67	8.59	.89	.91
PTSD Severity	24.60	28.27	10.54	12.82	.92	.93
PTSD Total	48.45	55.50	18.90	23.56	.92	.93
PAIR Intimacy	2.72	2.80	0.57	0.58	.92	.92
PAIR Engagement	2.72	2.84	0.68	0.69	.85	.84
Sternberg Intimacy	7.96	7.99	0.97	1.03	.94	.95
Sternberg Commitment	8.20	8.07	1.01	1.19	.96	.96
Sternberg Passion	7.42	7.19	1.30	1.50	.95	.96
Sternberg Total	7.85	7.74	1.01	1.16	.98	.98
Relationship Satisfaction	4.28	4.24	0.69	0.77	.88	.91
Constructive Communication	18.64	21.40	35.07	37.52	.77	.80
Demand-Withdraw	23.46	22.28	10.08	10.09	.76	.71
Self-Concealment	2.14	2.00	1.00	0.89	.92	.89
Negative Affect	2.05	2.24	0.68	0.73	.89	.88
Positive Affect	3.67	3.70	0.66	0.64	.88	.89
Alexithymia	2.27	2.17	0.64	0.63	.86	.87

symptoms were negatively associated with intimacy. With respect to the correlations across partners (Table 3), it is clear that nonindependence is evident given that these correlations were significant for all variables except alexithymia. These values ranged from $r = .082$, $p = ns$ for alexithymia to $r = .679$, $p < .001$ for relationship satisfaction. Although this method of assessing nonindependence is useful for individual variables, Kenny et al. (2006) recommend using canonical correlation (Tabachnick & Fidell, 2001) to examine nonindependence when multiple measures are used, as was the case with the current study. The canonical correlation indicated that the set of study variables for one partner accounted for 58.3% of the variance in the set of study variables for the other partner ($R_c^2 = .5825$, $p < .001$); thus, nonindependence was further demonstrated.

Table 2. *Correlations within sex*

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	PTSD Frequency	--	.88*	.97*	.91*	-.19*	-.20*	-.16*	-.20*	-.13*	-.17*	-.19*	-.24*	.29*	.26*	.51*	-.16*	.30*
2	PTSD Severity	.89*	--	.97*	.90*	-.17*	-.20*	-.16*	-.21*	-.12*	-.17*	-.19*	-.19*	.27*	.28*	.51*	-.15*	.33*
3	PTSD Total	.97*	.98*	--	.93*	-.19*	-.21*	-.16*	-.21*	-.13*	-.17*	-.19*	-.22*	.29*	.28*	.53*	-.16*	.33*
4	Dysphoria	.92*	.90*	.94*	--	-.23*	-.24*	-.20*	-.19*	-.17*	-.19*	-.21*	-.22*	.28*	.26*	.53*	-.21*	.36*
5	PAIR Intimacy	-.17*	-.18*	-.18*	-.22*	--	.92*	.70*	.50*	.67*	.69*	.75*	.66*	-.47*	-.39*	-.36*	.44*	-.35*
6	Engagement	-.19*	-.20*	-.20*	-.24*		--	.57*	.43*	.53*	.60*	.68*	.63*	-.50*	-.41*	-.38*	.37*	-.37*
7	Sternberg Intimacy	-.11	-.10	-.11	-.17*	.64*	.53*	--	.73*	.81*	.92*	.79*	.61*	-.37*	-.33*	-.29*	.35*	-.28*
8	Sternberg Commit.	-.11	-.08	-.10	-.13*	.52*	.42*	.75*	--	.68*	.85*	.69*	.51*	-.26*	-.34*	-.26*	.25*	-.26*
9	Sternberg Passion	-.09	-.06	-.08	-.12*	.58*	.47*	.73*	.73*	--	.93*	.77*	.52*	-.30*	-.26*	-.21*	.38*	-.18*
10	Sternberg Total	-.11	-.08	-.10	-.15*	.63*	.51*	.90*	.89*	.91*	--	.83*	.59*	-.33*	-.34*	-.27*	.36*	-.25*
11	Relationship Satisfaction	-.20*	-.20*	-.21*	-.26*	.71*	.64*	.73*	.64*	.65*	.74*	--	.68*	-.40*	-.43*	-.35*	.34*	-.31*
12	Constructive Communication	-.16*	-.15*	-.16*	-.18*	.61*	.57*	.55*	.46*	.40*	.51*	.64*	--	-.68*	-.33*	-.38*	.24*	-.30*
13	Demand-Withdraw	.17*	.17*	.17*	.20*	-.50*	-.48*	-.39*	-.33*	-.31*	-.36*	-.46*	-.64*	--	.22*	.32*	-.11*	.27*
14	Self-Concealment	.31	.31*	.32*	.33*	-.53*	-.51*	-.51*	-.45*	-.44*	-.51*	-.53*	-.45*	.41*	--	.36*	-.16*	.42*
15	Negative Affect	.38*	.39*	.40*	.43*	-.40*	-.40*	-.35*	-.28*	-.22*	-.29*	-.37*	-.40*	.38*	.50*	--	-.31*	.51*
16	Positive Affect	-.06	-.04	-.05	-.11	.34*	.26*	.43*	.39*	.34*	.43*	.37*	.29*	-.26*	-.32*	-.35*	--	-.40*
17	Alexithymia	.28*	.27*	.28*	.33*	-.50*	-.49*	-.49*	-.39*	-.35*	-.44*	-.49*	-.39*	.38*	.56*	.51*	.47*	--

Note: * $p < .05$; Correlations for men below the diagonalTable 3. *Correlations across sex*

		Women	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Men																			
1	PTSD Frequency		.22*	.21*	.22*	.17*	-.17*	-.17*	-.16*	-.23*	-.16*	-.19*	-.23*	-.13*	.11	.08	.10	-.10	.09
2	PTSD Severity		.18*	.22*	.21*	.16*	-.18*	-.18*	-.16*	-.23*	-.16*	-.19*	-.20*	-.14*	.11	.10	.14*	-.14*	.09
3	PTSD Total		.21*	.22*	.22*	.16*	-.18*	-.18*	-.16*	-.23*	-.16*	-.19*	-.22*	-.14*	.12*	.09	.12*	-.12*	.09
4	Dysphoria		.20*	.23*	.22*	.18*	-.21*	-.20*	-.20*	-.25*	-.19*	-.23*	-.25*	-.16*	-.15*	.09	.11	-.13*	.11
5	PAIR Intimacy		-.12*	-.13*	-.13*	-.16*	.57*	.49*	.53*	.40*	.51*	.53*	.53*	.43*	-.31*	-.25*	-.29*	.31*	-.20*
6	Engagement		-.13*	-.16*	-.15*	-.17*	.52*	.48*	.50*	.39*	.46*	.50*	.51*	.43*	-.31*	-.29*	-.32*	.27*	-.19*
7	Sternberg Intimacy		-.04	-.12*	-.08	-.07	.44*	.38*	.59*	.57*	.54*	.61*	.58*	.41*	-.26*	-.22*	-.21*	.16*	-.14*
8	Sternberg Commit.		-.05	-.14*	-.10	-.06	.31*	.24*	.47*	.49*	.39*	.49*	.44*	.33*	-.17*	-.19*	-.19*	.19*	-.12*
9	Sternberg Passion		-.00	-.05	-.03	-.04	.38*	.31*	.48*	.43*	.54*	.55*	.49*	.31*	-.19*	-.17*	-.17*	.20*	-.07
10	Sternberg Total		-.02	-.10	-.07	-.06	.42*	.35*	.57*	.54*	.55*	.61*	.55*	.37*	-.22*	-.22*	-.20*	.21*	-.12*
11	Relationship Satisfaction		-.09	-.13*	-.11	-.10	.51*	.45*	.65*	.54*	.57*	.65*	.68*	.51*	-.31*	-.24*	-.27*	.21*	-.15*
12	Constructive Communication		-.16*	-.17*	-.17*	-.15*	.45*	.43*	.50*	.41*	.41*	.47*	.52*	.65*	-.45*	-.25*	-.23*	.18*	-.16*
13	Demand-Withdraw		.13*	.15*	.14*	.12*	-.35*	-.37*	-.30*	-.24*	-.26*	-.29*	-.32*	-.46*	.50*	.17*	.18*	-.12*	.07
14	Self-Concealment		.15*	.18*	.17*	.15*	-.28*	-.26*	-.35*	-.35*	-.29*	-.36*	-.37*	-.24*	.21*	.25*	.21*	-.14*	.18*
15	Negative Affect		.21*	.23*	.23*	.16*	-.23*	-.21*	-.26*	-.28*	-.25*	-.29*	-.27*	-.30*	.29*	.14*	.24*	-.17*	.11
16	Positive Affect		-.12*	-.11	-.12*	-.13*	.20*	.14*	.22*	.23*	.22*	.25*	.22*	.16*	-.04	-.11*	-.09	.22*	.01
17	Alexithymia		.13*	.15*	.15*	.11*	-.34*	-.28*	-.41*	-.41*	-.36*	-.43*	-.40*	-.31*	.20*	.28*	.20*	-.15*	.08

Note: * $p < .05$

Trauma Frequencies

The frequencies of reported traumatic events are shown in Table 4. As shown, participants had experienced a broad range of traumatic events with considerable

Table 4. *Frequency of reported traumatic events by Sex*

Event	'Happened to Me'		'Happened to Close Other'	
	Woman	Man	Woman	Man
1. Natural disaster	42	42	30	40
2. Fire or explosion	25	30	39	38
3. Transportation accident	123	138	108	111
4. Serious Accident at work, home, or during recreational activity	24	46	56	49
5. Exposure to toxic substance	8	19	11	11
6. Physical assault	79	91	72	65
7. Assault with a weapon	17	32	24	32
8. Sexual assault	66	7	28	51
9. Other unwanted or uncomfortable sexual experience	113	27	24	32
10. Combat or exposure to a war-zone	4	6	24	29
11. Captivity	2	0	5	3
12. Life-threatening illness or injury	32	30	124	109
13. Severe human suffering	14	8	26	25
14. Sudden, violent death happened to someone close to me	--	--	51	50
15. Sudden, unexpected death of someone close to me	77	80	87	76
16. Serious injury, harm, or death you caused to someone else	3	9	5	5
17. Infidelity	79	52	57	53
18. Distressing relationship breakup	131	106	63	59
19. Expected death of someone close to you	118	95	61	65
20. Personal or professional failure	69	84	26	22
21. Troubles with the law	18	54	50	42
22. Non-life threatening illness	84	80	72	65
23. Abortion	40	12	41	50
24. Miscarriage	38	6	49	59
25. Bullying	81	69	34	31
26. Death of a pet	149	131	62	55
27. Addiction	41	52	69	53
28. Non-physical conflict	110	78	46	40
29. Any other stressful event or experience	151	107	55	49

frequency⁸, thus confirming that this sample, although drawn largely from the community, was well suited to a study of trauma and PTSD symptoms. Means, Standard Deviations, Range, Sex Differences, and Correlations with PTSD symptoms and intimacy are presented in Table 5. As shown, and as would be expected, the total number of traumatic events that happened to the participant was significantly associated with

Table 5. *Means, SD, and Correlations for Total number of Traumatic Events*

	Number of Reported Traumatic Events					
	Women			Men		
	Self	Other	Total	Self	Other	Total
Woman's Frequency of PTSD Symptoms	.44**	.17*	.36**	.18*	.15*	.19*
Man's Frequency of PTSD Symptoms	.13*	.06	.11	.30**	.15*	.26**
Woman's Intimacy	-.01	.15*	.10	-.08	.03	-.03
Man's Intimacy	-.05	.15*	.07	-.03	.08	.04
Mean	5.85 _a **	4.71	10.56 _b **	5.02 _a	4.61	9.63 _b
SD	3.71	4.35	6.54	3.79	4.80	7.28
Range	0-20	0-26	0-42	0-18	0-26	0-43

Note: * $p < .05$, ** $p < .001$; a and b indicate significant differences across sex

his/her frequency of PTSD symptoms as well as with the PTSD symptoms of his/her partner. In contrast, the total number of traumatic events was generally not associated with reported levels of intimacy. The exception to this is that the number of traumatic events experienced by a close other of the female participant was significantly associated with both her and her partner's intimacy. Sex differences also emerged with respect to the number of traumatic events that happened directly to the participant and the total number of traumatic events (i.e., including self and other). In both cases, it was the women who reported more traumatic events.

⁸ A limitation to consider here is that participants were only indicating if an event had happened and not the number of times they had experienced each type of trauma. As such, the actual number of discrete traumatic events is likely much higher.

Examining DSM-Congruent Vs DSM-Incongruent Traumas

As noted, the number of traumatic event types that were reported by each partner was quite high (see Table 4). This was also true within the open-ended responses regarding the traumatic events that the individuals were considering when completing the MPSS-SR. However, a large number of individuals (47 women and 94 men) did not describe their traumatic experiences. As such, because of the high frequency with which multiple traumas and no traumas were described, the coding of these traumatic experiences proved problematic and did not result in usable data for comparing DSM-Congruent and DSM-Incongruent traumas.

Instead, to address the issue of DSM-Congruent vs. DSM-Incongruent traumas, data from the LEC were used. Items 1 through 16 are considered DSM-Congruent whereas items 17 through 28 may be considered DSM-Incongruent. Item 29 (*Any other stressful event or experience*) could be considered either and was excluded from this analysis. Hierarchical Regression analyses were used to determine the extent to which the total number of each type of traumatic event contributed to total PTSD symptoms. Four types of traumatic events were entered into the regression analysis: 1) number of DSM-Congruent Traumas that happened to the participant, 2) number of DSM-Congruent Traumas that happened to a *Close Other* of the participant, 3) number of DSM-Incongruent Traumas that happened to the participant, and 4) number of DSM-Incongruent Traumas that happened to a *Close Other* of the participant. First, DSM-Congruent events were entered on Step 1 of the Regression, followed by DSM-Incongruent events on Step 2. This method was then reversed to determine unique variance accounted for by DSM-Congruent vs. DSM-Incongruent traumas. This analysis

was completed separately for men and women (See Table 6). In both cases, it was found

Table 6. *The number DSM-Congruent vs DSM-Incongruent traumas as Predictors of Total PTSD Symptoms*

Sex	Step	Variables	β	sr^2	ΔR^2	R^2
1. Women	1	DSM-Congruent Self	.376*	.137	--	--
		DSM-Congruent Other	.113*	.013	.168*	.168*
	2	DSM-Incongruent Self	.163*	.019	--	--
		DSM-Incongruent Other	-.058	.003	.020*	.189*
2. Women	1	DSM-Incongruent Self	.324*	.099	--	--
		DSM-Incongruent Other	.033	.001	.112*	.112*
	2	DSM-Congruent Self	.304*	.069	--	--
		DSM-Congruent-Other	.120	.008	.077*	.189*
1. Men	1	DSM-Congruent Self	.217*	.043	--	--
		DSM-Congruent-Other	.109	.011	.072*	.072*
	2	DSM-Incongruent Self	.160*	.017	--	--
		DSM-Incongruent Other	-.179*	.015	.026*	.098*
2. Men	1	DSM-Incongruent Self	.250*	.052	--	--
		DSM-Incongruent Other	-.037	.001	.057*	.057*
	2	DSM-Congruent Self	.156*	.018	--	--
		DSM-Congruent-Other	.197*	.018	.042*	.098*

Note: * $p < .01$; to determine unique variance accounted for, steps were reversed; *Self* refers to events for which the participant indicated 'happened to me'; *Other* refers to events for which the participant indicated 'happened to a close other'.

that the number of DSM-Congruent and DSM-Incongruent traumas that were reported by the participants as happening directly to them were significantly associated with PTSD symptoms. However, it was found that both DSM-Congruent and DSM-Incongruent events that happened to a close other were inconsistently related to PTSD symptoms for both women and men. These findings, though not as informative as the method that was originally outlined, supported the expansion of the definition of trauma to include events that may not meet DSM criteria and also supported the approach of focusing on PTSD symptoms rather than the type of traumatic event.

PTSD Diagnostic Cut-Off

Next, PTSD diagnostic criteria were examined. Cut-off criteria of 15 and 32 have been suggested for the frequency and severity scores of the MPSS-SR, respectively

(Falsetti et al., 1993; Nayak, Resnick, & Holmes, 1999). Taking the approach of diagnosis based on either severity or frequency yielded 56 men and 92 women who met criteria for a diagnosis of PTSD. With respect to dyads, this translated into 176 couples where neither individual met the diagnostic cutoff, 94 couples where one partner met the diagnostic cutoff (29 male partner; 65 female partner), and 24 couples where both partners met the diagnostic cutoff. As such, the sample included 118 couples in which at least one partner met MPSS-SR diagnostic criteria for a PTSD diagnosis.

In order to replicate other research in this area (e.g., Carroll et al., 1985), a comparison was made on all study variables between those individuals who met PTSD diagnostic criteria and those who did not. Men who met PTSD diagnostic criteria, as compared to men who did not meet these criteria, reported less relationship satisfaction ($t(295) = 2.80, p < .05$), less PAIR intimacy ($t(295) = 2.74, p < .05$), more self-concealment ($t(295) = -4.26, p < .001$), more demand-withdraw behaviour ($t(295) = -2.38, p < .05$), and more negative affect ($t(295) = -5.44, p < .001$). However, significant differences were not found for Sternberg total love ($t(295) = .99, p = .326$), constructive communication ($t(295) = 1.94, p = .054$), positive affect ($t(295) = .07, p = .945$), Sternberg intimacy ($t(295) = 1.27, p = .206$), Sternberg passion ($t(295) = .86, p = .392$), or Sternberg commitment ($t(295) = .87, p = .38$). A similar pattern of results was found for men who had a partner who met PTSD diagnostic criteria as compared to men who did not have a partner who met this criterion. Those men with a partner with diagnosable levels of PTSD symptoms reported less relationship satisfaction ($t(295) = 2.63, p < .01$), less constructive communication ($t(295) = 2.85, p < .01$), less PAIR intimacy ($t(295) = 3.64, p < .001$), less Sternberg commitment ($t(295) = 2.24, p < .05$), more self-

concealment ($t(295) = -3.01, p < .01$), more demand-withdraw behaviour ($t(295) = -2.58, p < .05$), and more negative affect ($t(295) = -3.58, p < .001$). Significant differences were not found for Sternberg total love ($t(295) = 1.66, p = .098$), positive affect ($t(295) = 1.37, p = .171$), alexithymia ($t(295) = -1.89, p = .060$), Sternberg intimacy ($t(295) = 1.63, p = 1.63, p = .103$), or Sternberg passion ($t(295) = 1.13, p = .259$).

In contrast, aside from Sternberg passion ($t(295) = 1.85, p = .066$), women who met PTSD diagnostic criteria differed significantly from women who did not on all study variables. Those women with diagnosable levels of PTSD symptoms reported less relationship satisfaction ($t(295) = 2.71, p < .01$), less PAIR intimacy ($t(295) = 2.85, p < .01$), less Sternberg total love ($t(295) = 2.43, p < .05$), less Sternberg intimacy ($t(295) = 2.37, p < .05$), less Sternberg commitment ($t(295) = 2.67, p < .01$), less constructive communication ($t(295) = 2.48, p < .05$), less positive affect ($t(295) = 2.80, p < .01$), more self-concealment ($t(295) = -4.06, p < .001$), more demand-withdraw behaviour ($t(295) = -3.83, p < .001$), more alexithymia ($t(295) = -4.95, p < .001$), and more negative affect ($t(295) = -7.76, p < .001$). Women who had a partner with diagnosable levels of PTSD symptoms were then compared to women whose partner did not meet PTSD diagnostic criteria. With this comparison, significant differences were only found in terms of the women with a partner with diagnosable levels of PTSD symptoms reporting less relationship satisfaction ($t(295) = 2.29, p < .05$), less Sternberg total love ($t(295) = 2.12, p < .05$), less PAIR intimacy ($t(295) = 1.95, p < .05$), and less Sternberg commitment ($t(295) = 2.58, p = .01$). A significant difference was not found for constructive communication ($t(295) = 1.84, p = .067$), negative affect ($t(295) = -1.42, p = .157$), positive affect ($t(295) = 1.11, p = .270$), self-concealment ($t(295) = -.26, p = .793$),

alexithymia ($t(295) = -.31, p = .754$), demand-withdraw behaviour ($t(295) = -1.23, p = .219$), Sternberg intimacy ($t(295) = 1.57, p = .117$), or Sternberg passion ($t(295) = 1.88, p = 0.61$).

Together these findings replicate previous studies that have demonstrated that individuals with a PTSD diagnosis report poorer relationship quality and communication than individuals who do not have a PTSD diagnosis. Further, this also replicates research that has demonstrated that the partners of individuals with a PTSD diagnosis also report attenuated relationship quality. Of course, as has been outlined, the purpose of the current study was to build on these findings and more thoroughly and accurately examine the link between PTSD symptoms and intimacy within a dyadic framework. As such, the remainder of the analyses focused on testing these relationships using a continuous representation of PTSD symptoms within intra-individual and dyadic models. The first step in this process entailed confirming the factor structure of study variables.

Chapter 9 - Results-Constructing Variables and Testing Measurement Models

Measurement Models

Testing the Factor Structure of PTSD as assessed by the MPSS-SR

With respect to the factor structure of PTSD symptoms, although the DSM suggests three clusters of symptoms (i.e., re-experiencing, avoidance and numbing, and hyperarousal), some researchers have demonstrated a one-factor model (e.g., Carlozzi & Long, 2008), while others have demonstrated different four-factor models (e.g., King et al., 1998; Simms et al., 2002). As noted, 4 competing models for PTSD were examined: 1) a single factor solution, 2) the 3-factor DSM model, 3) the 4-factor emotional numbing model (Simms et al., 2002), and 4) the 4-factor dysphoria model (King et al., 1998). Further, each of these models was tested separately for: 1) Frequency of PTSD symptoms, 2) Severity of PTSD symptoms, and 3) total PTSD symptoms (i.e., Frequency and Severity items parcels⁹) (See Tables 7 and 8).

Unidimensional PTSD

First, an exploratory factor analysis was conducted for PTSD symptoms (with both frequency and severity included, totaling 34 items), which suggested that all items loaded onto a single factor. The eigenvalue for Factor 1 was large both for women (14.2) and for men (13.15) and dropped off significantly thereafter (e.g., 2.25 for women for Factor 2 and 2.56 for men for Factor 2). Testing this unidimensional model with a CFA¹⁰, however, did not result in an adequate fit for women (SRMR = .097) or men (SRMR = .105). Next, unidimensional models of frequency, severity, and total symptoms were

⁹ Note that others have reported that severity and frequency items may be relatively indistinguishable in terms of variance overlap and predictive utility and as such combining these items is justified (e.g., Elhai et al., 2006).

¹⁰ For ease of reading, fit indices for the measurement models for all study variables were presented in tables, with the exception of the SRMR.

Table 7. *Comparison of PTSD models for Men*

Model	χ^2	df	GFI	TLI	CFI	RMSEA
Model 1 - Unidimensional						
1.1 Freq & Sev (34 items)	5424.93*	527	.51	.40	.44	.18 (CI: .17-.18)
1.2 Frequency	510.11*	119	.83	.75	.78	.11 (CI: .10-.12)
1.3 Severity	697.19*	119	.76	.74	.77	.13 (CI: .12-.14)
1.4 Total (17 items)	669.73*	119	.77	.74	.77	.13 (CI: .12-.13)
Model 2 – 3-factor DSM						
2.1 Frequency	429.91*	116	.86	.79	.82	.10 (CI: .09-.11)
2.2 Severity	544.50*	116	.82	.80	.83	.11 (CI: .10-.12)
2.3 Total	535.19*	116	.82	.80	.83	.11 (CI: .10-.12)
Model 3 - Emotional Numbing						
3.1a Frequency 1 st Order	367.52*	113	.89	.83	.86	.09 (CI: .08-.10)
3.1b 2 nd Order	400.23*	115	.87	.81	.84	.09 (CI: .08-.10)
3.2a Severity 1 st Order	436.38*	113	.85	.85	.87	.10 (CI: .09-.11)
3.2b 2 nd Order	500.86*	115	.83	.82	.85	.11 (CI: .10-.12)
3.3a Total 1 st Order	440.58*	113	.86	.84	.87	.10 (CI: .09-.11)
3.3b 2 nd Order	501.28*	115	.84	.81	.84	.11 (CI: .10-.12)
Model 4 - Dysphoria						
4.1a Frequency 1 st Order	369.78*	113	.88	.83	.86	.09 (CI: .08-.10)
4.1b 2 nd Order	400.43*	115	.87	.81	.84	.09 (CI: .08-.10)
4.2a Severity 1 st Order	419.67*	113	.86	.85	.88	.10 (CI: .09-.11)
4.2b 2 nd Order	471.09*	115	.85	.83	.86	.10 (CI: .09-.11)
4.3a Total 1 st Order	429.94*	113	.86	.84	.87	.10 (CI: .09-.11)
4.3b 2 nd Order	475.01*	115	.85	.82	.85	.10 (CI: .09-.11)
4.4 – Dysphoria Factor alone	103.19*	20	.92	.86	.90	.12 (CI: .10-.14)
Model 5 Final Models						
5.1 Dysphoria – 1 modification	73.87	19	.94	.90	.93	.10 (CI: .08-.12)
5.2 Total PTSD with 6 parcels	23.78**	9	.97	.98	.99	.07 (CI: .04-.11)

Note: * $p < .001$, ** $p < .01$; Modification to dysphoria factor involved permitted the error terms for items 13 and 14 to covary.

examined separately. With respect to frequency, a less than ideal fit was found for both women (SRMR = .071) and men (SRMR = .069). Similarly, a less than adequate fit was found for PTSD severity for both women (SRMR = .077) and men (SRMR = .071). This was also the case for total symptoms for both women (SRMR = .075) and men (SRMR = .068). Given that a unidimensional model is supported through EFA, but not entirely through CFA, it may be reasonable to conclude that a second order factor structure is likely. That is, the supported unidimensional model suggests an overarching PTSD construct, yet CFA does suggest separate factors, which may be indicative of a second order factor structure.

3-Factor DSM Model

To examine the possibility of a second order factor, a CFA was conducted for PTSD symptoms wherein three first order latent factors (reexperiencing, avoidance and numbing, and hyperarousal) loaded on the second order factor of PTSD frequency.

Table 8. *Comparison of PTSD models for Women*

Model	χ^2	df	GFI	TLI	CFI	RMSEA
Model 1 - Unidimensional						
1.1 Freq & Sev (34 items)	5224.64*	527	.53	.44	.47	.17 (CI: .17-.18)
1.2 Frequency	546.45*	119	.81	.78	.80	.11 (CI: .11-.10)
1.3 Severity	611.45*	119	.79	.78	.81	.12 (CI: .11-.13)
1.4 Total (17 items)	590.05*	119	.80	.79	.82	.12 (CI: .11-.13)
Model 2 – 3 factor DSM						
2.1 Frequency	403.06*	116	.86	.85	.87	.09 (CI: .08-.10)
2.2 Severity	442.05*	116	.85	.85	.87	.10 (CI: .09-.11)
2.3 Total	432.65*	116	.85	.86	.88	.10 (CI: .09-.11)
Model 3 - Emotional Numbing						
3.1a Frequency 1 st Order	336.27*	113	.88	.88	.90	.08 (CI: .07-.09)
3.1b 2 nd Order	349.83*	115	.88	.87	.89	.08 (CI: .07-.09)
3.2a Severity 1 st Order	377.00*	113	.87	.88	.90	.09 (CI: .08-.10)
3.2b 2 nd Order	409.60*	115	.86	.86	.88	.09 (CI: .08-.10)
3.3a Total 1 st Order	363.79*	113	.87	.88	.90	.09 (CI: .08-.10)
3.3b 2 nd Order	388.48*	115	.87	.88	.90	.09 (CI: .08-.10)
Model 4 - Dysphoria						
4.1a Frequency 1 st Order	319.99*	113	.89	.89	.91	.08 (CI: .07-.09)
4.1b 2 nd Order	328.82*	115	.88	.88	.90	.08 (CI: .07-.09)
4.2a Severity 1 st Order	334.15*	113	.88	.90	.91	.08 (CI: .07-.09)
4.2b 2 nd Order	355.58*	115	.88	.89	.91	.08 (CI: .07-.09)
4.3a Total 1 st Order	327.50*	113	.88	.90	.92	.08 (CI: .07-.09)
4.3b 2 nd Order	342.84*	115	.88	.90	.91	.08 (CI: .07-.09)
4.4 Dysphoria Factor alone	103.81*	20	.91	.89	.92	.12 (CI: .10-.14)
Model 5 Final Model						
5.1 Dysphoria – 1 modification	76.72*	19	.94	.92	.94	.10 (CI: .08-.13)
5.2 Total PTSD with 6 parcels	23.78**	9	.97	.96	.98	.10 (CI: .06-.13)

Note: * $p < .001$; Modification to dysphoria factor involved permitted the error terms for items 12 and 14 to covary.

These models fit the data better than the unidimensional models: for frequency for both women (SRMR = .059) and men (SRMR = .064); for severity for both women (SRMR = .058) and men (SRMR = .067); and for total symptoms for both women (SRMR = .057) and men (SRMR = .067). Of course, the fit of these models is still considerably less than ideal.

4-Factor Emotional Numbing Model

Next, the 4-factor emotional numbing model was tested wherein the avoidance and numbing factor was split into separate avoidance and numbing latent variables. This model fit the data better than the noted 3-factor DSM models: for frequency for both women (SRMR = .056) and men (SRMR = .060); for severity for both both women (SRMR = .052) and men (SRMR = .059); and for total symptoms for both women (SRMR = .052) and men (SRMR = .061). Next, higher order models were tested wherein each of the 4 factors loaded onto a second order PTSD factor (See Tables 7 and 8). In each case, and as has been found by other researchers, the first order models fit the data better than the 2nd order models as confirmed through chi square difference tests. Again, however, the fit of these models is still considerably less than adequate.

4-Factor Dysphoria Model

Finally, the 4-factor dysphoria model was tested. As noted, in this model the numbing symptoms and three hyperarousal symptoms (sleep disturbance, irritability, and difficulties concentrating) represent a dysphoria factor along with separate reexperiencing, avoidance, and hyperarousal factors. This model fit the data better than both the 3-factor DSM model and the 4-factor emotional numbing model¹¹: for frequency for both women (SRMR = .056) and men (SRMR = .060); for severity for both both women (SRMR = .052) and men (SRMR = .059); and for total symptoms for both women (SRMR = .052) and men (SRMR = .061). As with the emotional numbing model, higher order models were tested for the dysphoria model. In each case, and as has been found by other researchers, the first order models fit the data better than the second order

¹¹ The exception being for the Frequency of PTSD symptoms for Men where there was no difference found between the Emotional Numbing and Dysphoria Models.

models as confirmed through chi square difference tests. Again, however, the fit of these models is still not ideal.

PTSD Summary

Together, these results lend support to adopting the first order 4-factor dysphoria model as the best representation of the structure of PTSD symptoms. However, given that the purpose of this research was to replicate and extend the findings of others regarding the link between PTSD symptoms and intimacy, the decision was made to proceed with all analyses using total PTSD symptoms, collapsing across factors. In the end, a unidimensional model of PTSD symptoms that included 6 parcels was selected as the best fitting and most parsimonious. These parcels were created by combining items with low and high skew so as to improve normality. These changes resulted in the models fitting the data well for both men (SRMR = .020) and women (SRMR = .025) (see Tables 7 and 8). Using total PTSD symptoms was preferable to examining: 1) the long-standing 3-factor structure that has been developed theoretically, but does not appear to have strong empirical support or 2) a relatively new factor structure for PTSD symptoms that does not have considerable theoretical backing. Still, direct effect models were tested with the 3-factor DSM model and the 4-factor dysphoria model. As demonstrated below, only the Dysphoria factor proved to be significantly associated with intimacy and the other relationship appraisals used in this study. Therefore, all dyadic and mediational models were also tested using the Dysphoria factor.

Relationship Quality

Intimacy-PAIR

For the PAIR, three competing models were examined: 1) a unidimensional model, 2) a 5-factor model as proposed by original authors, and 3) a 3-factor model as

Table 9. *Testing PAIR Measurement Models for Men and Women*

Sex	Model	χ^2	df	GFI	TLI	CFI	RMSEA
Women	PAIR – Unidimensional	1469.61*	405	.71	.62	.65	.09 (CI: .09-.10)
	PAIR – 5-factor	1176.74*	395	.76	.72	.74	.08 (CI: .08-.09)
	PAIR – 3 factor	871.84*	321	.82	.77	.79	.08 (CI: .07-.08)
	PAIR – 3 factor - item 8 -> friendship	833.63*	321	.83	.79	.81	.07 (CI: .07-.08)
	PAIR – 3 factor – with parcels	161.18*	62	.92	.91	.93	.07 (CI: .06-.09)
	PAIR – 3 factor – 3 modifications	114.23*	59	.94	.95	.96	.06 (CI: .04-.07)
	PAIR – Engagement	7.05	5	.99	.99	1.00	.04 (CI: .00-.10)
Men	PAIR – Unidimensional	1388.11*	405	.71	.63	.65	.09 (CI: .09-.10)
	PAIR – 5-factor	1074.96*	395	.75	.73	.76	.08 (CI: .07-.08)
	PAIR – 3 factor	913.23*	321	.81	.74	.76	.08 (CI: .07-.09)
	PAIR – 3 factor – item 8 -> friendship	880.89*	321	.81	.76	.78	.08 (CI: .07-.08)
	PAIR – 3 factor – with parcels	175.42*	62	.92	.90	.92	.08 (CI: .07-.09)
	PAIR – 3 factor – 3 modifications	115.45*	59	.95	.95	.96	.06 (CI: .04-.07)
	PAIR - Engagement	3.06	5	1.00	1.00	1.00	.00 (CI: .00-.06)

Note: * $p < .001$; all noted modifications included permitting sets of errors to covary; all modifications resulted in a significantly improved fit based on the chi square difference test.

proposed by Moore et al. (1998). Fit indices for each of these models for both men and women are presented in Table 9. As shown, a the 3-factor model proved to fit the data best for both men and women. The chi-square difference test confirmed that the 3-factor model fit the data better than the 5-factor model for both men ($\chi^2_{\Delta}(74) = 161.73, p < .001$) and women ($\chi^2_{\Delta}(74) = 304.90, p < .001$). However, an examination of factor loadings revealed that item 8 (*As a couple, we usually keep to ourselves*) should load on the shared friendships factor rather than the engagement factor. This improved the fit of the model (see Table 9). To further improve fit, parcels were formed for the engagement and communication latent variables. In the original model, engagement had 15 indicators; these were reduced to 5, 3-item parcels. Similarly, the communication variable had 8

items; this was reduced to four, 2-item parcels. Parcels were not created for the Shared Friendships variable, which had four indicators. These changes improved the fit of the overall model considerably. However, this 3-factor model, which includes a communication factor, was considered inappropriate for use in the overall intraindividual and dyadic analyses; based on an overlap with the communication mediators, the lack of theoretical relevance of the 'shared friendships' factor, and parsimony. As such, only the engagement factor was used for subsequent analyses. The engagement factor alone fit the data well for both men (SRMR = .015) and women (SRMR = .018) (see Table 9). As reported in Table 1, Cronbach's alpha for engagement was .85 for women and .84 for men.

Relationship Satisfaction

Originally, the latent variable for relationship satisfaction had seven indicators. Using these seven indicators resulted in fit indices (see Table 10) that were generally good for both men (SRMR = .043) and women (SRMR = .037). Item 6 was particularly negatively skewed for both men (-3.08) and women (-2.86). To address this, item 6 was parceled with the item with the lowest level of skewness, which was item 7 for both men and women. This modification resulted in some improvement in fit for men (SRMR = .038), but less so for women (SRMR = .034). Still, given that the models were fitting relatively well on most fit indices and normality had been improved, these models were accepted as the best fitting models for relationship satisfaction.

Table 10. *Testing Relationship Satisfaction Measurement Models for Men and Women*

Sex	Model	χ^2	df	GFI	TLI	CFI	RMSEA
Women	Relationship Satisfaction	63.98*	14	.94	.95	.96	.11 (CI: .08-.14)
	Relationship Satisfaction - 1 parcel	53.83*	9	.94	.95	.97	.13 (CI: .10-.16)
Men	Relationship Satisfaction	51.42*	14	.96	.95	.96	.10 (CI: .07-.12)
	Relationship Satisfaction - 1 parcel	40.27*	9	.97	.95	.97	.11 (CI: .08-.14)

* $p < .001$; for both men and women, items 6 and 7 were parceled

Love

For Sternberg's Triangular model of love, the existence of a 3-factor model was examined. The fit indices for this model for men (SRMR = .063) and women (SRMR = .072) are presented in Table 11 and suggest a less than ideal fit. To further improve the fit of the 3-factor model, each factor was modified to be indicated by 5, 3-item parcels rather than 15 separate items. This approach improved the model fit considerably for both men (SRMR = .035) and women (SRMR = .043). As each of these factors were examined as separate components of relationship quality within the intra-individual and dyadic analyses, the fit indices for each factor are also shown in Table 11. As shown, each factor fit the data well; however, the RMSEA for each factor was far less than adequate. Still, given that all other fit indices suggested a good fit, further modifications were not made.

Table 11. *Testing Sternberg Measurement Models for Men and Women*

Sex	Model	χ^2	df	GFI	TLI	CFI	RMSEA
Women	3 factor	3819.38*	942	.60	.78	.79	.10 (CI: .10-.11)
	3 factor – with parcels	400.54*	87	.85	.93	.94	.11 (CI: .10-.12)
	Intimacy – with parcels	36.40*	5	.96	.96	.98	.15 (CI: .10-.19)
	Passion – with parcels	45.41*	5	.95	.94	.97	.17 (CI: .12-.21)
	Commitment – with parcels	73.95*	5	.91	.92	.96	.26 (CI: .17-.26)
Men	3 factor	3305.40*	942	.64	.80	.81	.09 (CI: .09-.10)
	3 factor – with parcels	291.17*	87	.88	.95	.96	.09 (CI: .08-.10)
	Intimacy – with parcels	45.96*	5	.94	.94	.97	.17 (CI: .12-.21)
	Passion – with parcels	31.07*	5	.96	.96	.98	.13 (CI: .09-.18)
	Commitment – with parcels	31.46*	5	.96	.97	.98	.13 (CI: .09-.18)

* = $p < .001$

Relationship Quality - Overarching

With measurement models for the various facets of relationship quality indicating a good fit, the next step involved examining an overarching relationship quality variable, which included facets of engagement, intimacy, commitment, passion, and relationship satisfaction. Measured variables for each of the relationship quality facets were used to create a relationship quality latent variable. Fit indices for this latent variable were

generally acceptable for both men (SRMR = .046) and women (SRMR = .036) (see Table 12). An examination of modification indices for this model suggested permitting one set of errors to covary for both women and men; this being between engagement and relationship satisfaction. This change resulted in a considerably improved fit for both men (SRMR = .019) and women (SRMR = .013).

As such, the analyses proceeded with relationship outcomes including 1) engagement as assessed by the PAIR, 2) relationship satisfaction, 3) Sternberg intimacy, 4) passion, 5) commitment, and 6) overall relationship quality.

Table 12. *Testing Relationship Quality Measurement Models for Men and Women*

Sex	Model	χ^2	df	GFI	TLI	CFI	RMSEA
Women	Relationship Quality	45.29*	5	.94	.93	.96	.17 (CI: .12-.21)
	Relationship Quality - 1 modification	6.45	4	.99	.99	1.00	.05 (CI: .00-.11)
Men	Relationship Quality	48.99*	5	.94	.90	.95	.17 (CI: .13-.22)
	Relationship Quality - 1 modification	10.21*	5	.99	.98	.99	.07 (CI: .02-.13)

* = $p < .001$; modification involved permitted error terms for engagement and relationship satisfaction to covary.

Measurement Models for Mediators

Next, the measurement models for each of the proposed mediators were examined.

Communication Mediators

Constructive Communication

The latent variable for constructive communication had seven indicators. Using these seven indicators resulted in fit indices that were less than adequate for both men (SRMR = .088) and women (SRMR = .137) (See Table 13). Model misspecification was examined and it was determined that item B2 (*Both members express their feelings to each other*) had the lowest loading on the latent construct for both men (.32) and women (.29); and had standardized residual covariances with at least two items that were above

⁴¹². Moreover, item B2 was the only item in the set that included sharing ‘feelings’ rather than a focus on communication or problem solving. As such, item B2 was removed and

Table 13. *Testing Constructive Communication Measurement Models for Men and Women*

Sex	Model	χ^2	df	GFI	TLI	CFI	RMSEA
Women	Constructive Communication (CC)	226.38*	14	.81	.57	.71	.23 (CI: .20-.25)
	CC without item B2	96.98*	9	.91	.75	.85	.18 (CI: .15-.22)
	CC – with one modification	15.61*	8	.98	.98	.99	.06 (CI: .01-.10)
Men	Constructive Communication (CC)	99.57*	14	.91	.75	.83	.14 (CI: .12-.17)
	CC without item B2	37.31*	9	.96	.89	.94	.10 (CI: .07-.14)
	CC – with one modification	25.98*	8	.97	.92	.96	.09 (CI: .05-.13)

* = $p < .001$; modification involved permitting errors for B4 and A2 to covary

model fit improved considerably for both men (SRMR = .053) and women (SRMR = .092). Still, fit indices did not suggest a good fit and a further modification was made that entailed permitting errors for items B4 (*Both members threaten each other with negative consequences*) and A2 (*Both members try to discuss the problem*) to covary. This is justified given that these items were the only two indicators of constructive communication that were not reverse keyed. As shown in Table 13, this modification resulted in a considerable improvement in fit for both men (SRMR = .039) and women (SRMR = .027). These final models were accepted as the best fit for constructive communication.

Demand-Withdraw Behaviour

The latent variable for demand-withdraw behaviour had six indicators. Using these six indicators resulted in fit indices that were less than adequate for both men (SRMR = .093) and women (SRMR = .114) (See Table 14). To improve model fit, two parcels were created: 1) items A3a (*Man tries to start a discussion while Woman tried to avoid a discussion*) and A3b (*Woman tries to start a discussion while Man tries to avoid a discussion*), and 2) items B5a (*Man nags and demands while Woman withdraws*,

¹² general rule of value greater than 2 being unacceptable (Raykov & Marcoulides, 2006)

becomes silent, or refuses to discuss the matter further) and B5b (*Woman nags and demands while Man withdraws, becomes silent, or refuses to discuss the matter further*).

This resulted in the latent variable now having 4 indicators (two items, two parcels). As shown in Table 14, this modification resulted in a considerable improvement in fit for both men (SRMR = .031) and women (SRMR = .040). Although the RMSEA was still less than adequate for both men and women, these final models were accepted as the best fit for demand-withdraw behaviour given good fit was indicated by other fit indices.

Table 14. *Testing Demand-Withdraw Behaviour Measurement Models for Men and Women*

Sex	Model	χ^2	df	GFI	TLI	CFI	RMSEA
Women	Demand-Withdraw (DW)	125.75*	9	.86	.56	.73	.21 (CI: .18-.24)
	DW with two parcels	16.13*	2	.97	.88	.96	.15 (CI: .09-.23)
Men	Demand-Withdraw (DW)	109.26*	9	.89	.64	.79	.19 (CI: .16-.23)
	DW with two parcels	11.66**	2	.98	.92	.97	.13 (CI: .06-.20)

* $p < .001$; ** $p < .01$

alment

The latent variable for self-concealment had ten indicators. Using these ten indicators resulted in fit indices that were less than adequate for both men (SRMR = .058) and women (SRMR = .061) (see Table 15). As the indicators appeared normally distributed and the standardized residual covariances were within acceptable ranges, parcels were used to improve model fit. This entailed created 5, 2-item parcels for both men and women. This modification improved model fit to good levels for both men (SRMR = .026) and women (SRMR = .029). These models, although not ideal based on the RMSEA, were accepted as the best fitting.

Table 15. *Testing Self-Concealment Measurement Models for Men and Women*

Sex	Model	χ^2	df	GFI	TLI	CFI	RMSEA
Women	Self-Concealment (SC)	177.11*	35	.88	.86	.89	.12 (CI: .10-.14)
	SC with 5, 2-item parcels	24.57*	5	.97	.95	.97	.12 (CI: .07-.16)
Men	Self-Concealment (SC)	207.47*	35	.85	.87	.90	.13 (CI: .11-.15)
	SC with 5, 2-item parcels	29.44*	5	.96	.95	.98	.13 (CI: .09-.18)

* = $p < .001$ *Overall Communication Latent Variable*

In an effort to reduce the number of analyses, the existence of an overall communication latent variable was tested. First, the measurement models for constructive communication, demand-withdraw behaviour, and self-concealment were included in a first order 3-factor model (see Table 16). This model fit the data reasonably well for women (SRMR = .060) and men (SRMR = .068); however, this model only indicates that these are three correlated factors. Revising the model such that the indicators of each factor loaded on a single communication latent variable produced a poor fit (see Table 16). As such, the factors were treated as correlated, yet not comprising a higher order latent communication factor.

Table 16. *Testing the Overarching Communication Latent Variable*

Sex	Model	χ^2	df	GFI	TLI	CFI	RMSEA
Women	3-factor	205.37*	86	.91	.93	.94	.07 (CI: .06-.08)
	1-factor	880.40*	89	.64	.53	.60	.17 (CI: .16-.18)
Men	3-factor	256.85*	86	.90	.90	.92	.08 (CI: .07-.09)
	1-factor	862.65*	89	.61	.57	.64	.17 (CI: .16-.18)

* $p < .001$ *Affective Mediators**Positive Affect*

The latent variable for positive affect originally had ten indicators. Using these ten indicators resulted in fit indices that were somewhat adequate for both men (SRMR =

.048) and women (SRMR = .054) (see Table 17). As the indicators appeared normally distributed and the standardized residual covariances were within acceptable ranges, parcels were used to improve model fit. This entailed creating 5, 2-item parcels for both men and women. This modification further improved model fit for both men (SRMR = .034) and women (SRMR = .031). These models, although not ideal based on the RMSEA, were accepted as the best fitting.

Table 17. *Testing Positive Affect Measurement Models for Men and Women*

Sex	Model	χ^2	df	GFI	TLI	CFI	RMSEA
Women	Positive Affect (NA)	138.78*	35	.91	.88	.91	.10 (CI: .08-.12)
	PA with 5, 2-item parcels	23.10*	5	.97	.95	.97	.11 (CI: .07-.16)
Men	Positive Affect (NA)	119.59*	35	.92	.91	.93	.09 (CI: .07-.11)
	PA with 5, 2-item parcels	30.03*	5	.96	.93	.97	.13 (CI: .09-.18)

* $p < .001$; ** $p < .05$

Negative Affect

The latent variable for negative affect originally had ten indicators. Using these ten indicators resulted in fit indices that were marginally adequate for both men (SRMR = .072) and women (SRMR = .072) (See Table 18). As the indicators appeared normally distributed and the standardized residual covariances were within acceptable ranges, parcels were used to improve model fit. This entailed created 5, 2-item parcels for both men and women. This modification improved model fit for both men (SRMR = .050) and women (SRMR = .046). To further improve model fit, errors for two parcels were permitted to covary; these parcels included the items *afraid*, *jittery*, *nervous*, and *hostile*. This change improved model fit to good levels for both men (SRMR = .022) and women (SRMR = .026). These models, although not ideal based on the RMSEA, were accepted as the best fitting.

Table 18. *Testing Negative Affect Measurement Models for Men and Women*

Sex	Model	χ^2	df	GFI	TLI	CFI	RMSEA
Women	Negative Affect (NA)	266.01*	35	.84	.79	.84	.15 (CI: .13-.17)
	NA with 5 parcels	44.99*	5	.95	.89	.95	.16 (CI: .12-.21)
	NA with 5 parcels & 1 mod.	18.84*	4	.98	.95	.98	.11 (CI: .06-.17)
Men	Negative Affect (NA)	248.89*	35	.85	.79	.84	.14 (CI: .13-.16)
	NA with 5	41.34*	5	.95	.90	.95	.16 (CI: .11-.20)
	NA with 5 parcels & 1 mod.	12.38**	4	.98	.97	.99	.08 (CI: .03-.14)

* $p < .001$; ** $p < .05$; modification involved permitting one set of error terms to covary

Alexithymia

The latent variable for alexithymia originally had 20 indicators, representing a 3-factor higher order model; these being *Difficulty Describing Feelings* (DDF), *Difficulty Identifying Feelings* (DIF), and *Externally Oriented Thinking* (EOS). This 3-factor model did not fit the data adequately for men (SRMR = .093) or women (SRMR = .067) (see Table 19). Parceling within each factor improved model fit considerably for both men (SRMR = .051) and women (SRMR = .047). However, for reasons of parsimony, only the total latent variable for alexithymia was included in the analyses and, with five parcels representing this total alexithymia latent variable, an adequate fit was found for both men (SRMR = .016) and women (SRMR = .036) (see Table 19).

Table 19. *Testing Alexithymia Measurement Models for Men and Women*

Sex	Model	χ^2	df	GFI	TLI	CFI	RMSEA
Women	Alexithymia – 3-factor model	520.62*	167	.85	.81	.83	.09 (CI: .08-.09)
	Alexithymia – 3 factor, with parcels	120.35*	51	.93	.94	.95	.07 (CI: .05-.08)
	Alexithymia – 1 factor, 5 parcels	22.21*	5	.97	.95	.97	.11 (CI: .07-.16)
Men	Alexithymia – 3-factor model	587.59*	167	.83	.78	.81	.09 (CI: .08-.10)
	Alexithymia – 3-factor, with parcels	138.94*	51	.93	.92	.94	.08 (CI: .06-.09)
	Alexithymia – 1 factor, 5 parcels	4.91	5	.99	1.00	1.00	.00 (CI: .00-.08)

* $p < .001$

Affect Latent Variable

First, the measurement models for alexithymia, negative affect, and positive affect were included in a first order 3-factor model (see Table 20). This model fit the data

reasonably well for women (SRMR = .056) and men (SRMR = .050); again, however, this model only indicates that these are three correlated factors. Revising the model such that the indicators of each factor loaded on a single affect latent variable produced a poor fit (see Table 20). As such, the affective components of the model were considered correlated but not constituting an affective latent variable. That is, positive affect, negative affect, and alexithymia were related, but these variables do not, together, represent an overarching affective construct.

Table 20. Testing the Overarching Latent Affect Variable for Men and Women

Sex	Model	χ^2	df	GFI	TLI	CFI	RMSEA
Women	3-factor	196.04*	86	.92	.94	.95	.07 (CI: .05-.08)
	1-factor	978.19*	89	.62	.53	.60	.18 (CI: .17-.19)
Men	3-factor	179.52*	86	.93	.95	.96	.06 (CI: .05-.07)
	1-factor	899.94*	89	.63	.57	.64	.18 (CI: .17-.19)

* = $p < .001$

Chapter 10 - Testing the Intra-Individual Models

Examining Intraindividual links between PTSD Symptoms and Relationship Quality

Although the examination of the factor structure of PTSD symptoms indicated that the dysphoria model best fit the data, an exploratory analysis of the associations between both the 3-Factor DSM model and the 4-Factor Dysphoria model with engagement¹³ was conducted.

DSM Symptom Clusters

When examined as a 3-factor model, neither of the symptom clusters (i.e., Reexperiencing, Avoidance and Numbing, or Hyperarousal) was significantly associated with engagement for women (see Figure 9). However, for men, Reexperiencing had a significant positive association with engagement, and Avoidance and Numbing had a significant negative association with engagement. Further, although nonsignificant, the

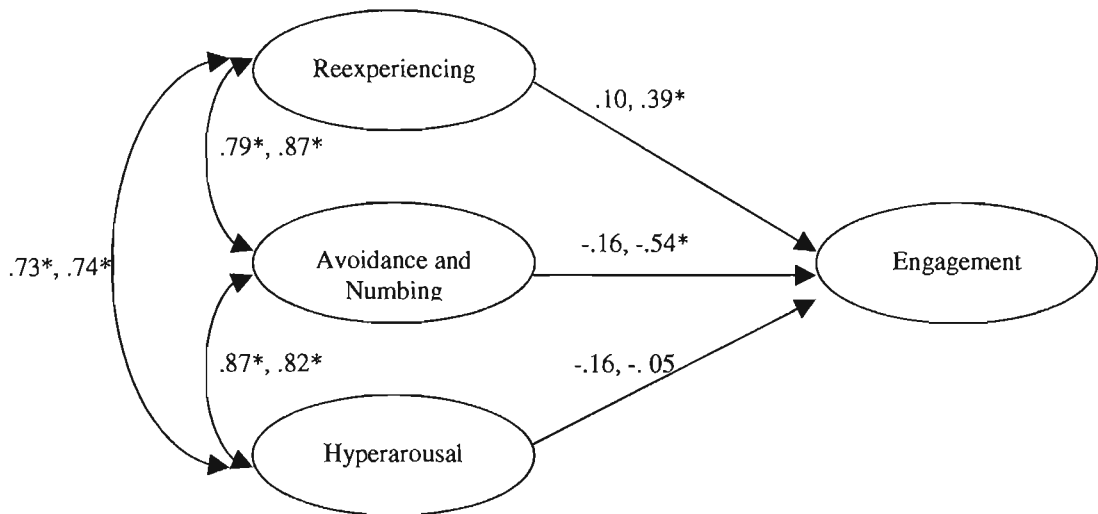


Figure 9. DSM Clusters and Engagement for Women and Men. Standardized regression weights are shown for Women, followed by those for Men.

pattern of results was the same for women as for men. Still, fit indices for this model suggest a somewhat less than adequate fit for both women ($\chi^2(202) = 494.19, p < .001$; GFI = .866; TLI = .894; CFI = .907; RMSEA = .069, CI = .062-.075; SRMR = .055) and

¹³ Note that analyses were also conducted for Relationship Satisfaction and a similar pattern of results were found.

men ($\chi^2(202) = 574.99, p < .001$; GFI = .848; TLI = .853; CFI = .872; RMSEA = .079, CI = .071-.087; SRMR = .061).

Dysphoria Symptom Clusters

When examined as a 4-factor dysphoria model, only the Dysphoria factor was significantly associated with engagement for both women and men (see Figure 10). Fit indices for this model suggest a somewhat better fit than that which was found for the DSM model for both women ($\chi^2(198) = 431.19, p < .001$; GFI = .886; TLI = .914; CFI = .926; RMSEA = .063, CI = .055-.071; SRMR = .051; $\chi^2_{\Delta}(4) = 63.00, p < .001$) and men ($\chi^2(198) = 496.11, p < .001$; GFI = .871; TLI = .880; CFI = .897; RMSEA = .071, CI = .064-.079; SRMR = .060; $\chi^2_{\Delta}(4) = 78.88, p < .001$). As such, the Dysphoria factor will be examined in separate intra-individual and dyadic models in an exploratory manner.

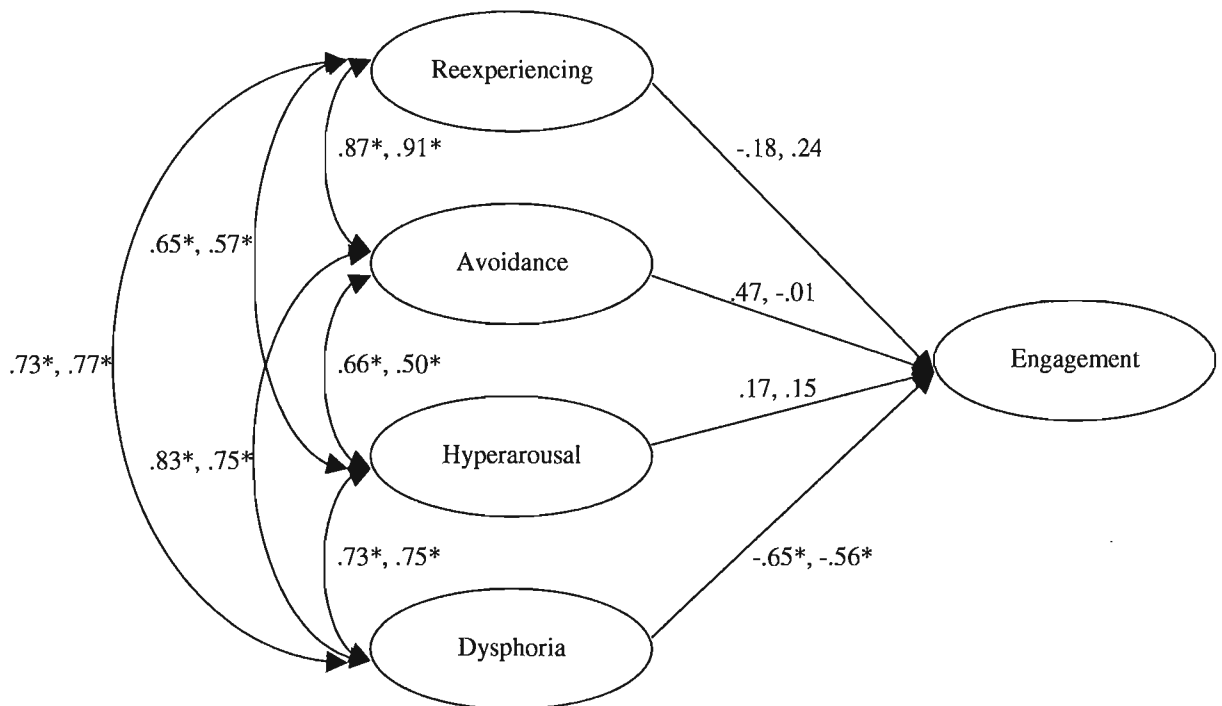


Figure 10. Dysphoria Clusters and Engagement for Women and Men. Standardized regression weights are shown for Women, followed by those for Men.

Total PTSD Symptoms and Relationship Quality

Prior to examining the proposed structural paths, structural models that included paths between PTSD symptoms and all relationship quality variables were tested to determine which facets of relationship quality were significantly linked with total PTSD symptoms and dysphoria. Within these models, residual errors for each facet of relationship quality were permitted to covary in order to account for expected relationships between these constructs. Note that bivariate correlations (See Table 2) indicated that, for men, PTSD symptoms were not significantly associated with any of the three love factors (i.e., intimacy, passion, commitment), but were associated with engagement and relationship satisfaction. For women, however, significant associations were found for all variables. Results of structural modeling indicated that both total PTSD symptoms and dysphoria were significantly associated with all relationship

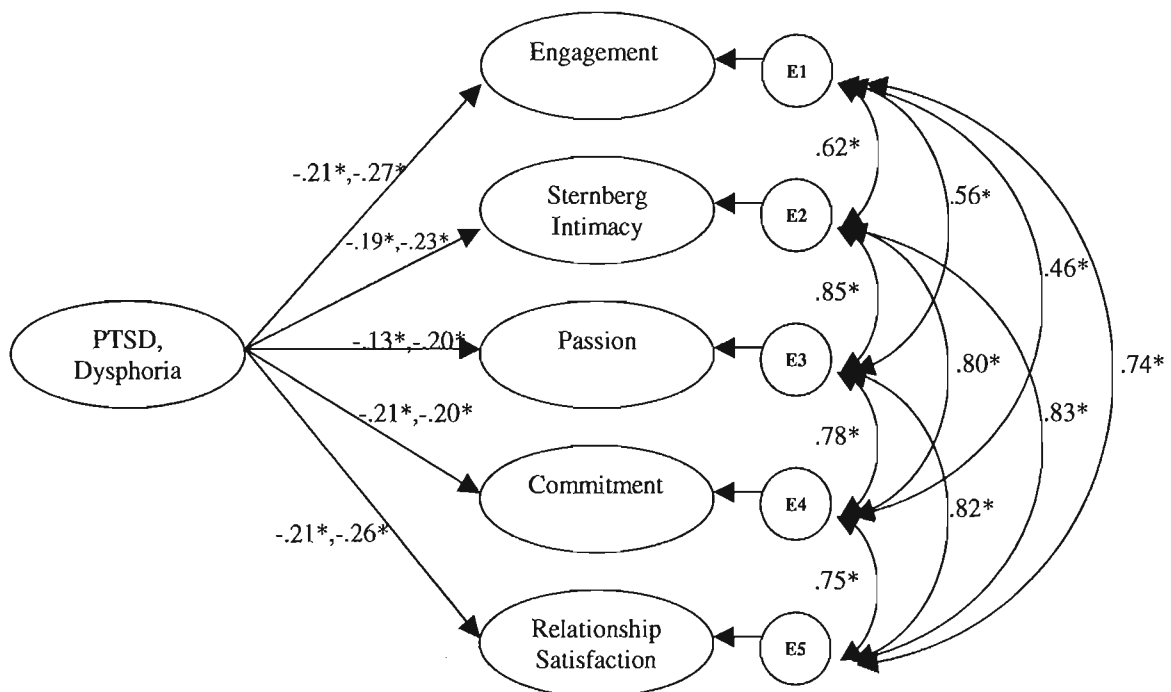


Figure 11. Direct paths between Total PTSD Symptoms, Dysphoria, and Relationship Quality for Women. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria. Paths between outcome variables were almost identical and are thus only shown for the Total PTSD Model.

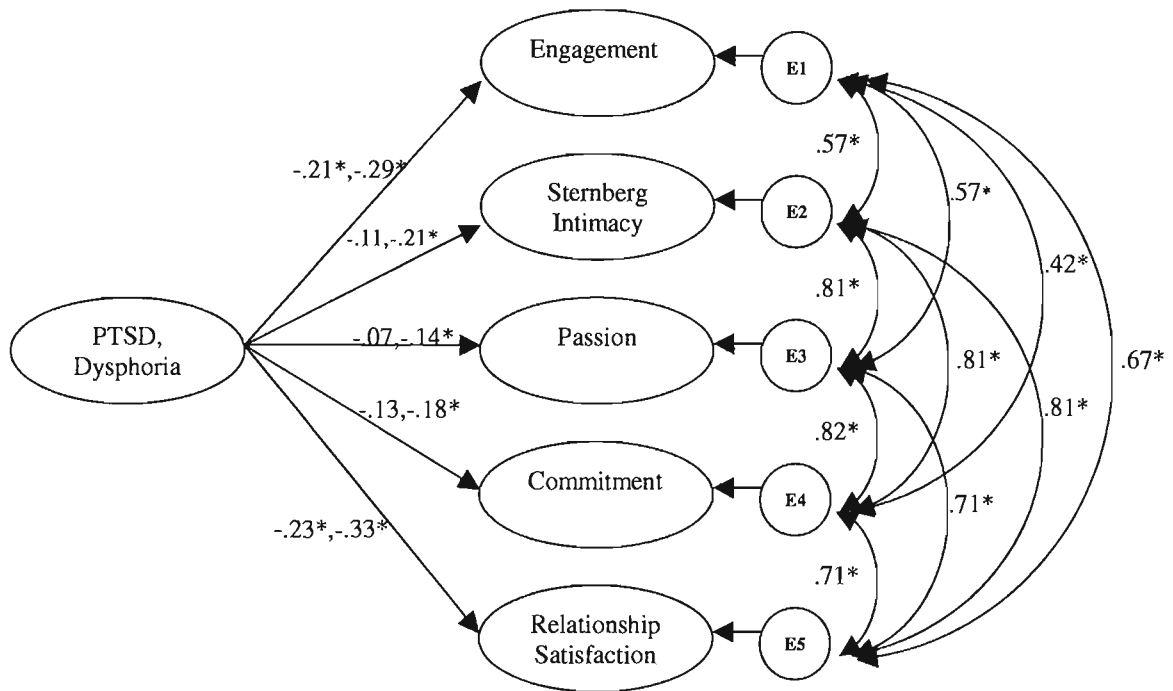


Figure 12. Direct paths between Total PTSD Symptoms, Dysphoria, and Relationship Quality for Men. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria. Paths between outcome variables were almost identical and are thus only shown for the Total PTSD Model.

variables for women (see Figure 11), but the same was not true for men (see Figure 12).

Although dysphoria was significantly associated with all relationship variables for men, total PTSD symptoms was only significantly associated with engagement and relationship satisfaction. Fit indices for these models are shown in Table 21.

Further, separate analyses indicated that the overarching latent relationship quality variable was significantly associated with total PTSD symptoms for both men and women, with the standardized regression weights being $-.144$ and $-.199$, respectively. Similarly, dysphoria was found to be significantly associated with Latent RQ for both men and women, with the standardized regression weights being $-.237$ and $-.245$, respectively. Again, fit indices for these models are shown in Table 21. Overall, the decision was made to proceed with engagement as the primary intra-individual relational

outcome for the mediation analysis given its centrality to the theoretical focus of the study and because it was similarly and in many cases more strongly linked to total PTSD symptoms and dysphoria. As such, the communication, affective, and total pathways will be tested for men and women with engagement as the outcome.

Table 21. *Testing Direct paths from PTSD to Relationship Quality (RQ) for Men and Women*

Sex	Model	χ^2	df	GFI	TLI	CFI	RMSEA	SRMR
Women	PTSD to 5 RQ Factors	1057.96*	449	.81	.93	.94	.07 (CI: .06-.07)	.044
	PTSD to Latent RQ	71.68**	42	.96	.98	.99	.05 (CI: .03-.07)	.042
	Dysphoria to 5 RQ Factors	1190.49*	511	.81	.92	.93	.07 (CI: .06-.07)	.048
	Dysphoria to Latent RQ	154.13	62	.93	.95	.96	.07 (CI: .06-.09)	.052
Men	PTSD to 5 RQ Factors	923.47*	449	.83	.94	.94	.06 (CI: .05-.07)	.050
	PTSD to Latent RQ	109.62*	42	.94	.96	.97	.07 (CI: .06-.09)	.062
	Dysphoria to 5 RQ Factors	1003.17	511	.83	.93	.94	.06 (CI: .05-.06)	.048
	Dysphoria to Latent RQ	143.43*	62	.99	.94	.95	.07 (CI: .05-.08)	.059

* $p < .001$; $p < .01$

Mediation – Communication Pathways

Engagement - Women

The communication pathways were examined and all were found to be significant (see Figure 13). Total PTSD symptoms were associated with demand-withdraw behaviour, constructive communication, and self-concealment, which, in turn were associated with engagement.

Fit indices for this model (See Table 22) were less than ideal for both total PTSD symptoms (SRMR = .126) and for

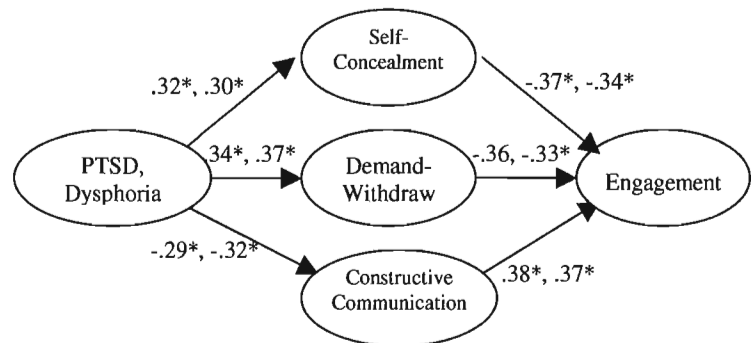


Figure 13. Communication paths between Total PTSD Symptoms, Dysphoria, and Relationship Quality for Women. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria.

residual covariances revealed considerable problems associated with constructive

communication in relation to demand-withdraw behaviour, self-concealment, and engagement. In fact, there were 67 standardized residual covariances in the total PTSD model that were greater than 2.00, and 64 in the dysphoria model. To address this problem, the decision was

made to remove constructive communication from the model. This is further justified given that some of the items for constructive communication involve

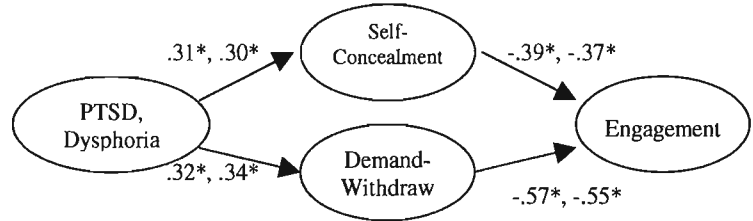


Figure 14. Communication paths, excluding Constructive Communication, between Total PTSD Symptoms, Dysphoria, and Relationship Quality for Women. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria.

potentially traumatic events such as threatening negative consequences (Item B3) and

Table 22. *Testing Intraindividual Communication Pathways*

Sex	Model	χ^2	df	GFI	TLI	CFI	RMSEA	SRMR
Women	PTSD to Engagement	700.17*	291	.85	.89	.90	.07 (CI: .06-.08)	.13
	PTSD to Engagement, without CC	277.31*	165	.91	.96	.96	.05 (CI: .04-.06)	.05
	Dysphoria to Engagement	781.63*	341	.85	.87	.88	.07 (CI: .06-.07)	.12
	Dysphoria to Engagement, without CC	335.62	203	.91	.95	.95	.05 (CI: .04-.06)	.05
Men	PTSD to Engagement	767.47*	291	.84	.87	.88	.06 (CI: .05-.07)	.14
	PTSD to Engagement, without CC	307.89*	165	.91	.96	.95	.05 (CI: .05-.06)	.09
	PTSD to Eng., without CC, with 1 mod.	267.39*	164	.92	.96	.97	.05 (CI: .04-.06)	.05
	Dysphoria to Engagement	824.67	341	.84	.85	.87	.07 (CI: .06-.08)	.13
	Dysphoria to Engagement, without CC	364.60*	203	.90	.94	.94	.05 (CI: .04-.06)	.08
	PTSD to Eng., without CC, with 1 mod.	328.50*	202	.91	.95	.96	.05 (CI: .04-.06)	.05

* $p < .001$; $p < .01$

name-calling, swearing, and character attacks (item B10). Removing constructive communication considerably improved model fit (see Table 22 and Figure 14). Further modifications were not applied and this model was chosen as best representing the communication pathway. The total PTSD model accounted for 48% of the variance in engagement, while the dysphoria model accounted for 47%.

Engagement - Men

As with women, the communication pathways (see Figure 15) were examined for men and found to be significant. PTSD symptoms were associated with demand-withdraw behaviour,

constructive communication, and self-concealment, which, in turn, were associated with engagement. Again, fit indices for this model (see Table 22) were less than ideal for both

total PTSD symptoms (SRMR =

.143) and for dysphoria (SRMR

= .125). As with women, an

examination of standardized

residual covariances for men

revealed considerable problems

associated with constructive

communication in relation to demand-withdraw behaviour, self-concealment, and

engagement. In fact, there were 68 standardized residual covariances in the total PTSD

model that were greater than 2.00, and 65 in the dysphoria model. Again, to address this

problem, the decision was made to remove constructive communication from the model.

This modification considerably improved model fit (see Table 22). One further

modification was applied which improved the fit and entailed permitting the residual

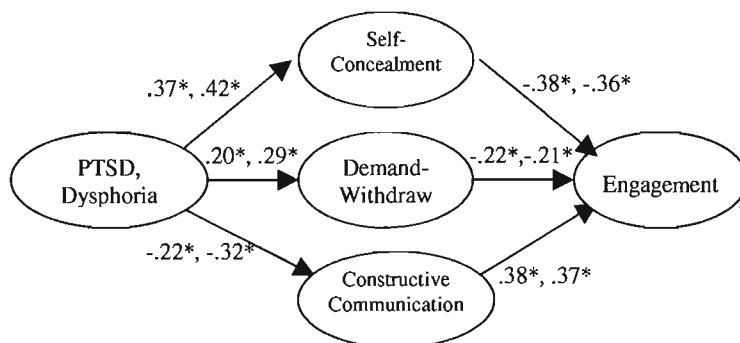


Figure 15. Communication paths between Total PTSD Symptoms, Dysphoria, and Relationship Quality for Men. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria.

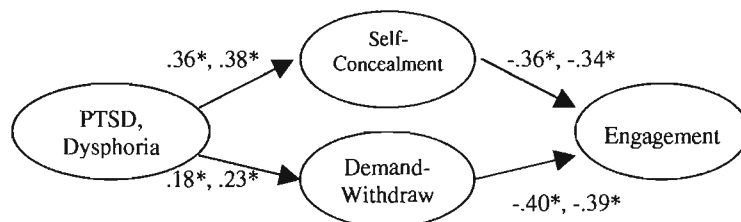


Figure 16. Communication paths, excluding Constructive Communication, between Total PTSD Symptoms, Dysphoria, and Relationship Quality for Men. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria.

error terms for demand-withdraw behaviour and self-concealment to covary. Further modifications were not applied and this model was chosen as best representing the communication pathway (see Figure 16). The total PTSD model accounted for 42% of the variance in engagement while the dysphoria model accounted for 43%.

Mediation – Affective Pathways

Understanding the relationship between PTSD and Alexithymia

As proposed, the role of alexithymia in the PTSD-engagement pathway was first examined by testing multiple competing models: 1) alexithymia as a precursor to PTSD symptoms, 2) alexithymia as a component of the posttraumatic response, and 3) alexithymia as an outcome of PTSD symptoms. These models were compared, with the latter being found to best represent the data (see Table 23). As such, including alexithymia as a mediator, as originally proposed, appeared to be justified.

Table 23. *Testing Relationship between Total PTSD Symptoms and Alexithymia*

Sex	Model	χ^2	df	GFI	TLI	CFI	RMSEA	SRMR
Women	Alexithymia + PTSD → Engagement	756.59*	103	.69	.71	.75	.15 (CI: .14-.16)	.15
	Alexithymia → PTSD → Engagement	214.49*	102	.92	.95	.96	.06 (CI: .05-.07)	.09
	PTSD → Alexithymia → Engagement	189.52*	102	.92	.96	.97	.05 (CI: .04-.07)	.05
Men	Alexithymia + PTSD → Engagement	735.44*	103	.68	.68	.73	.09 (CI: .08-.10)	.16
	Alexithymia → PTSD → Engagement	227.97*	102	.91	.94	.95	.07 (CI: .05-.08)	.11
	PTSD → Alexithymia → Engagement	169.86*	102	.94	.97	.97	.05 (CI: .03-.06)	.05

* $p < .001$

Affective Pathways – Women

The affective pathways (see Figure 17) were examined and all were found to be significant. Total PTSD symptoms and dysphoria were associated with alexithymia, negative affect, and positive affect,

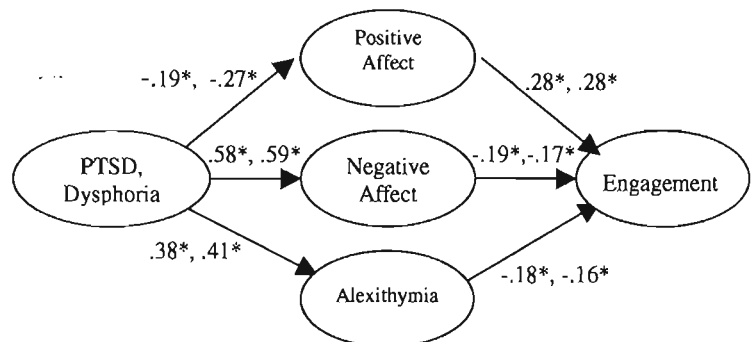


Figure 17. Affective paths between Total PTSD Symptoms, Dysphoria, and Intimacy for Women. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria.

which, in turn, were associated with engagement. Fit indices for this model (See Table 24) were less than ideal for both total PTSD symptoms (SRMR = .108) and for dysphoria (SRMR = .094). Modification Indices suggested permitting residual error terms to covary for all affective mediators. This modification resulted in an improvement in fit for both total PTSD symptoms (SRMR = .058) and for dysphoria (SRMR = .060). Further modifications were not applied and this model was chosen as best representing the affective pathway for women. The total PTSD model accounted for 25% of the variance in engagement while the dysphoria model accounted for 26%.

Affective Pathways – Men

The affective pathways (see Figure 18) were examined and all except positive affect¹⁴ were found to be significant. PTSD symptoms were associated with alexithymia and negative affect, which, in turn, were associated with engagement. Fit indices for this model (See Table 24) were less than ideal for both total PTSD symptoms (SRMR = .135) and for dysphoria (SRMR =

.113). Modification Indices

suggested permitting residual

error terms to covary for all

affective mediators. This

modification resulted in an

improvement in fit for both

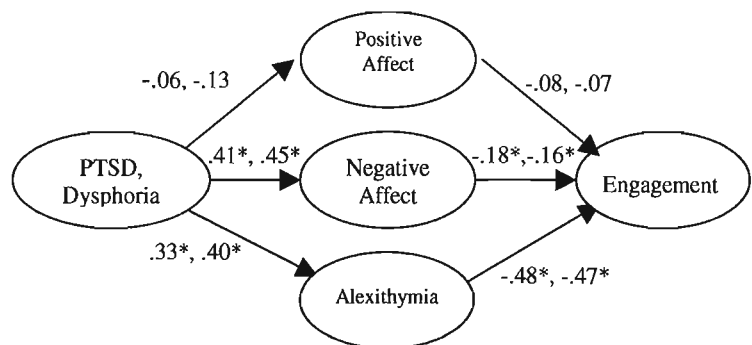


Figure 18. Affective paths between Total PTSD Symptoms, Dysphoria, and Intimacy for Men. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria.

¹⁴ Note that an exploratory alternative model was tested in which PA was an outcome of Engagement rather than a precursor/mediator and, in this case, PA was significantly linked to Engagement (.311, $p < .001$). The same model was tested for women and, again, PA was significant as an outcome of Engagement (.447, $p < .001$). As such, for men, it appears that positive perceptions of relationship quality lead to Positive Affect rather than PA leading to positive relational perceptions; whereas for women the relationship appears reciprocal. Caution in interpreting and applying this finding is warranted.

total PTSD symptoms (SRMR = .055) and for dysphoria (SRMR = .056). Further modifications were not applied and this model was chosen as best representing the affective pathway for men. Both the total PTSD and the dysphoria affective mediation models accounted for 32% of the variance in engagement for men.

Table 24. *Testing Intraindividual Affective Pathways*

Sex	Model	χ^2	df	GFI	TLI	CFI	RMSEA	SRMR
Women	PTSD to Engagement	587.54*	291	.86	.92	.93	.06 (CI: .05-.07)	.11
	PTSD to Engagement, with mod.	503.09*	288	.88	.95	.94	.05 (CI: .04-.06)	.06
	Dysphoria to Engagement	781.63*	341	.85	.90	.91	.06 (CI: .06-.07)	.09
	Dysphoria to Engagement, with mod.	652.28*	338	.86	.91	.92	.05 (CI: .04-.06)	.06
Men	PTSD to Engagement	616.53*	291	.86	.91	.92	.06 (CI: .06-.07)	.14
	PTSD to Engagement, with mod.	467.77*	288	.91	.95	.96	.05 (CI: .04-.05)	.06
	Dysphoria to Engagement	680.52*	341	.86	.90	.91	.06 (CI: .05-.06)	.11
	Dysphoria to Engagement, with mod.	520.03*	338	.89	.94	.94	.05 (CI: .04-.05)	.06

* $p < .001$; modification involved permitting residual terms to covary across mediators; modifications were added one at a time with chi-square difference tests confirming improvement in model fit.

Complete Intra-Individual Models

Women

With the structural models for the communication and affective pathways examined separately and a good fit found for each, they were combined in order to examine the total mediation model. This model did not fit the data well for total PTSD

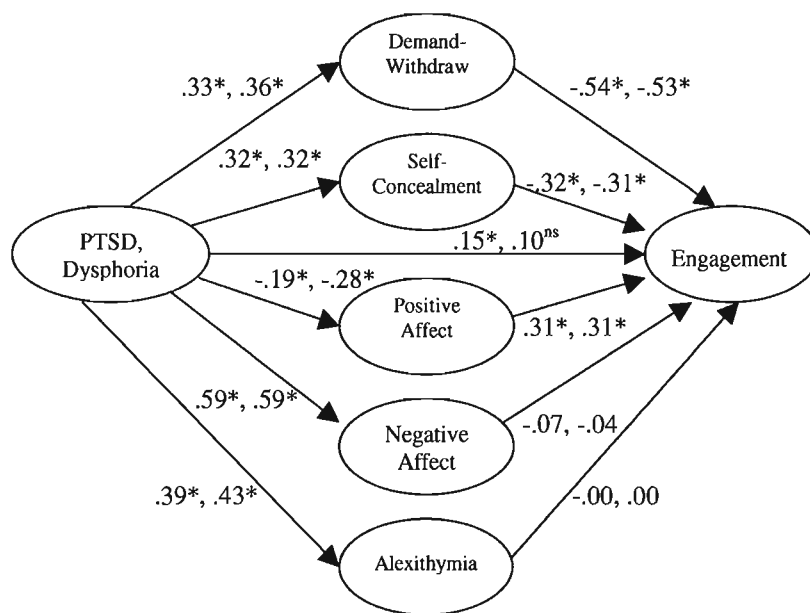


Figure 19. All paths between Total PTSD Symptoms, Dysphoria, and Engagement for Women. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria.

symptoms (SRMR = .085) or dysphoria (SRMR = .081) (see Table 25). Further, the alexithymia and negative affect pathways were now rendered nonsignificant (see Figure

19). It was thus speculated that alexithymia and negative affect might exert an effect on relationship quality through an impact on relational communication. Therefore, an alternative model was tested in which: 1) PTSD symptoms create an affective experience that is characterized by amplified negative affect and alexithymia, 2) this affective abyss leads to impaired

communication, and 3) high levels of self-concealment and demand-withdraw behaviour result in

a relationship that is lacking meaningful engagement/intimacy. This model proved a better fit based on the chi square difference test and fit indices for both total PTSD symptoms ($\chi^2_{\Delta}(6) = 51.17, p < .001$; SRMR = .056) and dysphoria ($\chi^2_{\Delta}(6) = 50.23, p < .001$; SRMR = .058) and was

accepted as the best representation of the individuals' experience of the pathway between PTSD symptoms and impaired intimacy (see Figure 20).

Both the total PTSD and the dysphoria mediation model

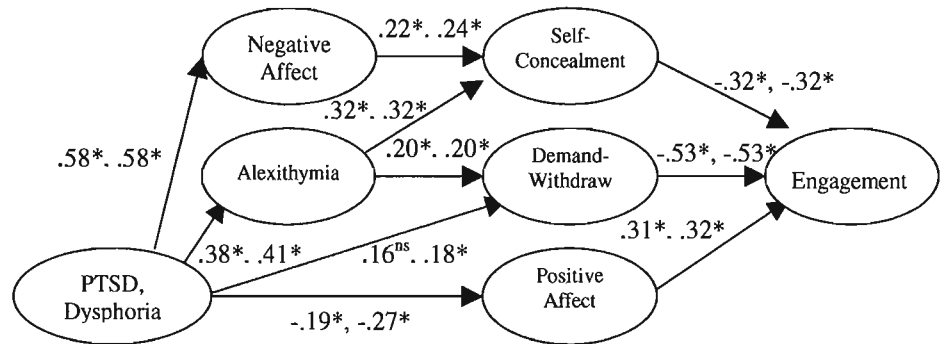


Figure 20. All paths between Total PTSD Symptoms, Dysphoria, and Engagement for Women, including direct paths from affective variables to communication variables. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria.

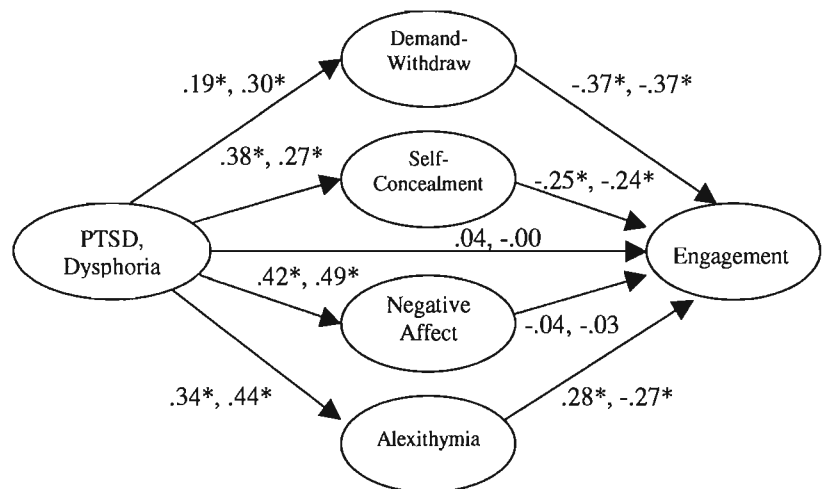


Figure 21. All paths between Total PTSD symptoms, Dysphoria, and Engagement for Men. Standardized regression weights are shown for Total PTSD symptoms, followed by those for Dysphoria.

accounted for 58% of the variance in engagement.

Men

Next, the total model for men was examined¹⁵. This model did not fit the data adequately for total PTSD (SRMR = .126) or dysphoria (SRMR = .108) (see Table 25). Further, the negative affect pathway was now rendered nonsignificant (see Figure 21). As such, the alternative model proposed above for women was also tested with the men. As with the women, this model proved a better fit based on the chi square difference test and fit indices for both total PTSD symptoms ($\chi^2_{\Delta}(4) = 120.49, p < .001$; SRMR = .056) and dysphoria ($\chi^2_{\Delta}(4) = 108.17, p < .001$; SRMR = .056). As such, this model was accepted as the best

representation of the individuals' experience of the pathway between PTSD symptoms

and engagement for

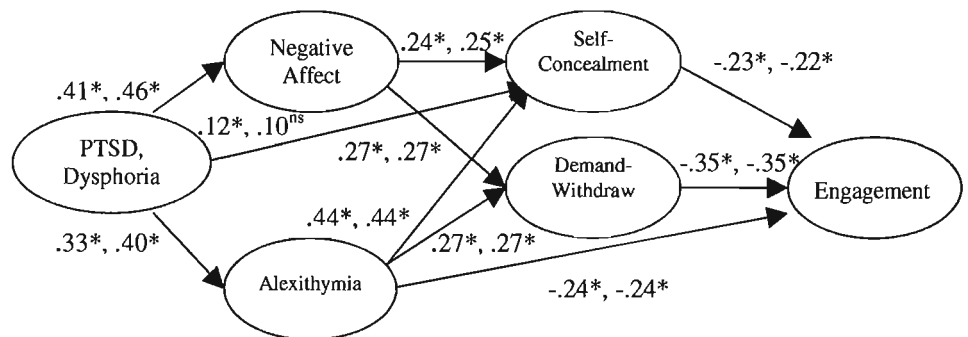


Figure 22. All paths between Total PTSD Symptoms, Dysphoria, and Engagement for Men, including direct paths from affective variables to communication variables. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria.

men (see Figure 22). Both the total PTSD and the dysphoria affective mediation models

Table 25. *Testing Intraindividual Structural Models including All Pathways*

Sex	Model	χ^2	df	GFI	TLI	CFI	RMSEA	SRMR
Women	PTSD to Engagement	903.57*	544	.85	.93	.94	.05 (CI: .04-.05)	.09
	PTSD to Engagement, Affect to Comm.	852.40*	538	.86	.94	.94	.04 (CI: .04-.05)	.06
	Dysphoria to Engagement	1051.01*	612	.84	.91	.92	.05 (CI: .04-.05)	.08
	Dysphoria to Eng., Affect to Comm.	1000.78*	606	.85	.92	.93	.05 (CI: .04-.05)	.06
Men	PTSD to Engagement	748.50*	393	.86	.92	.93	.06 (CI: .06-.07)	.13
	PTSD to Engagement, Affect to Comm.	628.01*	389	.88	.95	.95	.05 (CI: .04-.05)	.06
	Dysphoria to Engagement	819.13*	451	.86	.91	.92	.06 (CI: .05-.06)	.11
	Dysphoria to Eng., Affect to Comm.	710.96*	447	.87	.94	.94	.05 (CI: .04-.05)	.06

* $p < .001$; modification involved permitting direct paths from affective variables to communication variables

accounted for 46% of the variance in engagement.

Finally, competing models were examined for both men and women. As noted, these included: 1) a model wherein PTSD symptoms were considered as the outcome of intimacy (Figure 7), and 2) a model wherein the proposed mediators preceded PTSD symptoms (Figure 8). With respect to total PTSD symptoms, alternative model 1 did not fit the data as well as the proposed model for women ($\chi^2_{\Delta}(6) = 90.04, p < .001$) or men ($\chi^2_{\Delta}(4) = 38.59, p < .001$). Similarly, alternative model 2 did not fit the data as well as the proposed model for women ($\chi^2_{\Delta}(6) = 150.42, p < .001$) or men ($\chi^2_{\Delta}(4) = 114.74, p < .001$). These findings support the prediction that the affective and communication variables mediate the relationship between PTSD symptoms and intimacy.

¹⁵ Note that CC and PA were not included in this model.

Chapter 11 - Dyadic Analysis – Path Models

Dyadic Models - APIM

The next step in the analysis plan involved an examination of actor and partner effects using the Actor-Partner Interdependence Model method of analysis (Cook & Kenny, 2005; Kenny et al., 2006). First, an APIM was created and tested for each relationship quality outcome variable in order to ascertain if actor and/or partner effects existed across these facets of relationship quality. Note that within these models, residual effects were permitted to correlate in order to control for other sources of nonindependence such as measurement error and variables that were not included in the model.

Engagement

The APIM for engagement fit the data reasonably well for total PTSD symptoms ($\chi^2(203) = 381.19, p < .001$; GFI = .895; TLI = .944; CFI = .951; RMSEA = .054, CI = .046-.063; SRMR = .052) and for dysphoria ($\chi^2(291) = 543.53, p < .001$; GFI = .879; TLI = .908; CFI = .918; RMSEA = .054, CI = .047-.061; SRMR = .053) and resulted in significant actor effects for both men and women (see Figure 23). Two additional significant relationships were also found: 1) between the PTSD symptoms of each partner and 2) between the residuals of engagement. This first indicates a relationship composition effect (e.g., similarity) and the latter indicates residual nonindependence that is not

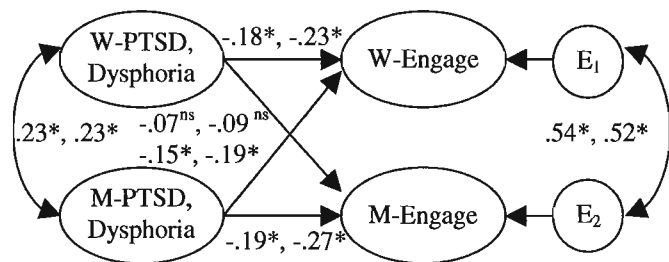


Figure 23. APIM for Engagement. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria.

explained by the APIM (Kenny et al., 2006). However, a significant partner effect only

existed such that the PTSD symptoms of the man were negatively associated with the engagement of the woman. As shown in Figure 23, the path between the woman's PTSD symptoms and the man's engagement was nonsignificant.

These findings, however, do not indicate if the actor and partner effects are significantly different from each other. To examine this, these paths must be constrained to equality and model fit re-examined. First, the actor paths were constrained to be equal for total PTSD symptoms ($\chi^2(204) = 381.86$) and dysphoria ($\chi^2(292) = 543.74$). This did not result in a significantly diminished fit based on the chi square difference test for either total PTSD symptoms ($\chi^2_{\Delta}(1) = .67, p > .05$) or dysphoria ($\chi^2_{\Delta}(1) = .21, p > .05$); thus, indicating that the relationship between PTSD symptoms and engagement was the same for women and men. Next, to examine the equivalence of partner effects, partner effects were constrained to be equal for total PTSD symptoms ($\chi^2(204) = 383.91$) and dysphoria ($\chi^2(292) = 549.39$). This did not result in a diminished fit within the total PTSD model ($\chi^2_{\Delta}(1) = 2.72, p > .05$); however, a significant decrement in fit was found for the dysphoria model ($\chi^2_{\Delta}(1) = 5.86, p < .05$). Therefore, the effect of the woman's PTSD symptoms on the man's engagement was weaker than the effect of the man's PTSD symptoms on the woman's engagement, but only for the dysphoria symptom cluster.

It is also possible to determine if actor effects are significantly different from partner effects for each member of the dyad. For women's engagement, constraining actor and partner effects to be equal resulted in $\chi^2(204) = 381.19$ for total PTSD symptoms and $\chi^2(292) = 544.76$ for dysphoria. The chi square difference test indicates that this constraint did not significantly diminish model fit for total PTSD symptoms

($\chi^2_{\Delta}(1) = 0.00, p > .05$) or dysphoria ($\chi^2_{\Delta}(1) = 1.23, p > .05$). As such, it appears that the effect of the woman's and the man's PTSD symptoms on the woman's engagement were not significantly different. The same held true for men for total PTSD ($\chi^2(204) = 383.17$; $\chi^2_{\Delta}(1) = 1.98, p > .05$), but not for dysphoria ($\chi^2(292) = 551.13$; $\chi^2_{\Delta}(1) = 7.60, p < .05$). Thus, for men, the effect of their dysphoria on their engagement was stronger than the effect of the woman's dysphoria on the man's engagement. In contrast, the woman's total PTSD symptoms ($\chi^2(204) = 387.11$; $\chi^2_{\Delta}(1) = 5.92, p < .05$) and dysphoria ($\chi^2(292) = 552.73$; $\chi^2_{\Delta}(1) = 9.20, p < .05$) did have a greater impact on her engagement than on the engagement of her partner. However, the man's total PTSD symptoms ($\chi^2(204) = 382.17$; $\chi^2_{\Delta}(1) = 0.98, p > .05$) and dysphoria ($\chi^2(292) = 544.70$; $\chi^2_{\Delta}(1) = 1.17, p > .05$) had a similar effect on the engagement of both individuals.

Sternberg Intimacy

The APIM for intimacy also fit the data well for total PTSD symptoms ($\chi^2(203) = 377.04, p < .001$; GFI = .899; TLI = .963; CFI = .968; RMSEA = .054, CI = .045-.062; SRMR = .044) and for dysphoria ($\chi^2(291) = 538.00, p < .001$; GFI = .896; TLI = .943; CFI = .949; RMSEA = .054, CI = .046-.061; SRMR = .049).

Significant actor effects were found for women for total

PTSD symptoms and dysphoria; however, for men, a significant

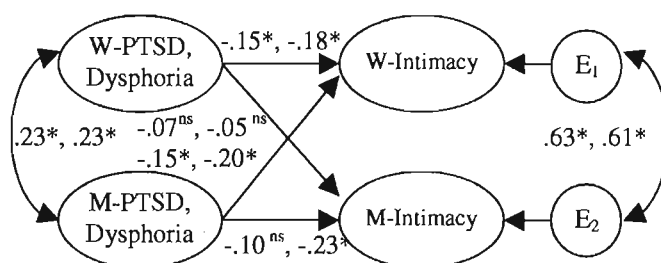


Figure 24. APIM for Sternberg Intimacy. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria.

actor effect was only found for dysphoria (see Figure 24). As was found with engagement, PTSD symptoms were correlated across partners, as were the residuals for

intimacy. A significant partner effect only existed with respect to the total PTSD symptoms and dysphoria of the man being associated with the intimacy of the woman. That is, as shown in Figure 24, the path between the woman's total PTSD and dysphoria symptoms and the man's intimacy was nonsignificant.

Passion

The APIM for passion also fit the data quite well for total PTSD symptoms ($\chi^2(203) = 366.46, p < .001$; GFI = .893; TLI = .966; CFI = .970; RMSEA = .052, CI = .044-.061; SRMR = .042) and for dysphoria ($\chi^2(203) = 366.46, p < .001$; GFI = .883; TLI = .950; CFI = .955; RMSEA = .051, CI = .043-.058; SRMR = .047); however, significant actor effects were only found for dysphoria (see Figure 25). As was found with engagement and intimacy, PTSD symptoms were correlated across partners, as were the residuals for passion. A

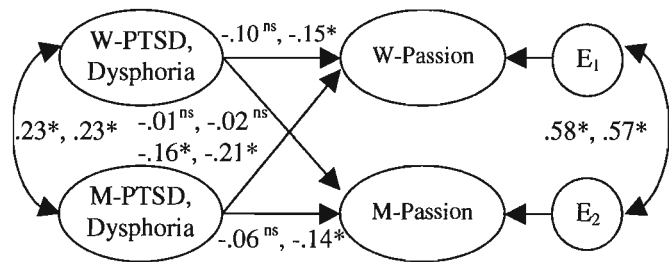


Figure 25. APIM for Sternberg Passion. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria.

significant partner effect only existed with respect to the total PTSD and dysphoria symptoms of the man being associated with the passion of the woman. That is, as shown in Figure 25, the path between the woman's total PTSD and dysphoria symptoms and the man's passion was nonsignificant.

Commitment

The APIM for commitment also fit the data well for total PTSD symptoms ($\chi^2(203) = 408.25, p < .001$; GFI = .890; TLI = .961; CFI = .966; RMSEA = .058, CI = .050-.067; SRMR = .042) and for dysphoria ($\chi^2(291) = 596.12, p < .001$; GFI = .866; TLI =

.937; CFI = .944; RMSEA = .060, CI = .053-.066; SRMR = .047). Significant actor effects were found for both total PTSD symptoms and dysphoria for women; however, the actor effect for men was only significant for dysphoria (see Figure 26). As was found with all other relationship quality

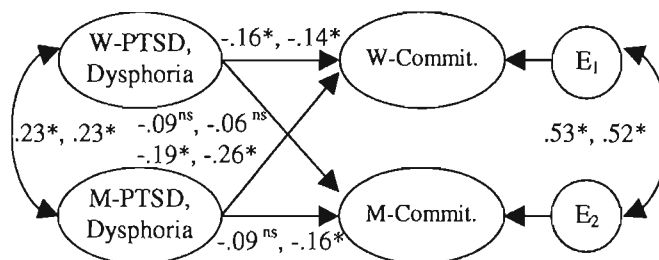


Figure 26. APIM for Sternberg Commitment. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria.

variables, PTSD symptoms were correlated across partners, as were the residuals for commitment. Again, a significant partner effect only existed with respect to the total PTSD and dysphoria symptoms of the man being associated with the commitment of the woman. That is, as shown in Figure 26, the path between the woman's total PTSD and dysphoria symptoms and the man's commitment was nonsignificant.

Relationship Satisfaction

The APIM for relationship satisfaction also fit the data well ($\chi^2(246) = 460.82, p < .001$; GFI = .884; TLI = .953; CFI = .958; RMSEA = .054, CI = .047-

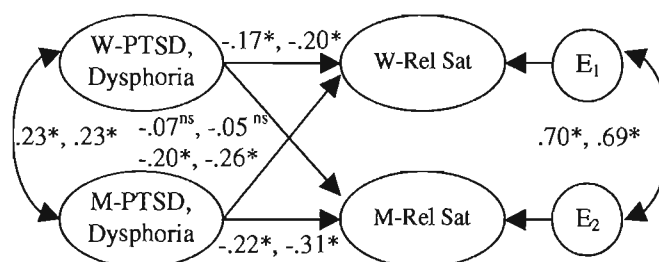


Figure 27. APIM for Relationship Satisfaction. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria.

.062; SRMR = .048) and for dysphoria ($\chi^2(342) = 645.12, p < .001$; GFI = .868; TLI = .926; CFI = .933; RMSEA = .055, CI = .048-.061; SRMR = .053). Significant actor effects were found for both total PTSD symptoms and dysphoria for both women and

men (see Figure 27). PTSD symptoms were correlated across partners, as were the residuals for relationship satisfaction. Again, a significant partner effect only existed with respect to the total PTSD and dysphoria symptoms of the man being associated with the relationship satisfaction of the woman. That is, as shown in Figure 27, the path between the woman's total PTSD and dysphoria symptoms and the man's relationship satisfaction was nonsignificant.

Relationship Quality

The APIM for the overarching relationship quality latent variable also fit the data well for total PTSD symptoms ($\chi^2(201) = 414.59, p < .001$; GFI = .889; TLI = .949; CFI = .956; RMSEA = .060, CI = .052-.068; SRMR = .058) and dysphoria ($\chi^2(289) = 598.44, p < .001$; GFI = .869; TLI = .918; CFI = .927; RMSEA = .060, CI = .053-.067; SRMR = .058). Significant actor effects were found for both total PTSD symptoms and dysphoria for both women and men (see Figure 28). As was found with all other relationship quality variables, PTSD symptoms were correlated across partners, as were the residuals for relationship quality.

Again, a significant partner effect only existed with

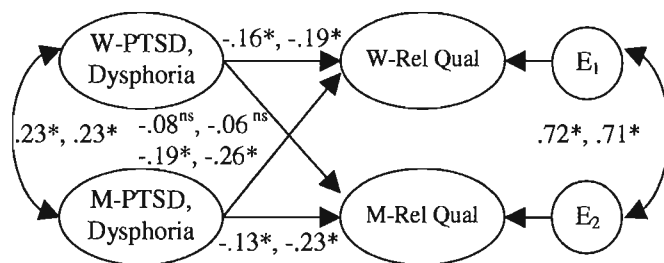


Figure 28. APIM for Relationship Quality. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria.

respect to the total PTSD and dysphoria symptoms of the man being associated with the relationship quality of the woman. That is, as shown in Figure 28, the path between the woman's total PTSD and dysphoria symptoms and the man's relationship quality was nonsignificant.

Dyadic Models – APIM with Communication Mediators

As was done with the intraindividual models, communication and affective pathways were first tested separately. For the communication pathways, model fit was good for most indices for total PTSD symptoms ($\chi^2(714) = 1111.79, p < .001$; GFI = .848; TLI = .935; CFI = .940; RMSEA = .043, CI = .038-.048; SRMR = .056) and for dysphoria ($\chi^2(874) = 1347.57, p < .001$; GFI = .836; TLI = .916; CFI = .922; RMSEA = .043, CI = .038-.047; SRMR = .055). Significant paths are shown in Figure 29. As shown, significant partner effects were limited to: 1) the woman's PTSD symptoms to the man's self-concealment and demand-withdraw behaviour, and 2) the woman's self-

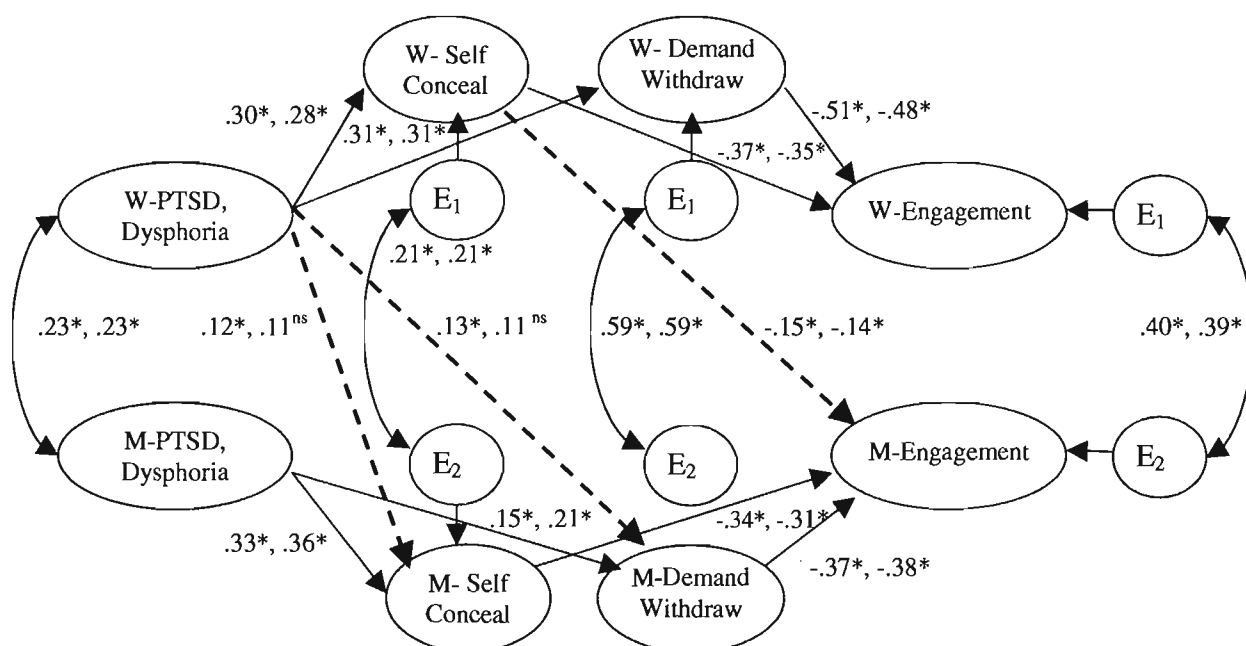


Figure 29. APIM for Engagement, including communication paths. Standardized regression weights are shown for Total PTSD symptoms, followed by those for Dysphoria. Partner effects shown as dashed lines.

concealment to the man's engagement. Partner effects were not found for man to woman paths. With respect to the woman's engagement, the total PTSD model accounted for 48.1% of the variance while the dysphoria model accounted for 48.0%. With respect to the man's engagement, the total PTSD model accounted for 40.9% of the variance while the dysphoria model accounted for 41.6%.

Dyadic Models – APIM with Affective Mediators

For the affective pathways, model fit was adequate for most indices for PTSD symptoms ($\chi^2(1233) = 1897.95, p < .001$; GFI = .809; TLI = .917; CFI = .923; RMSEA = .043, CI = .039-.046; SRMR = .060) and for dysphoria ($\chi^2(1441) = 2246.43, p < .001$;

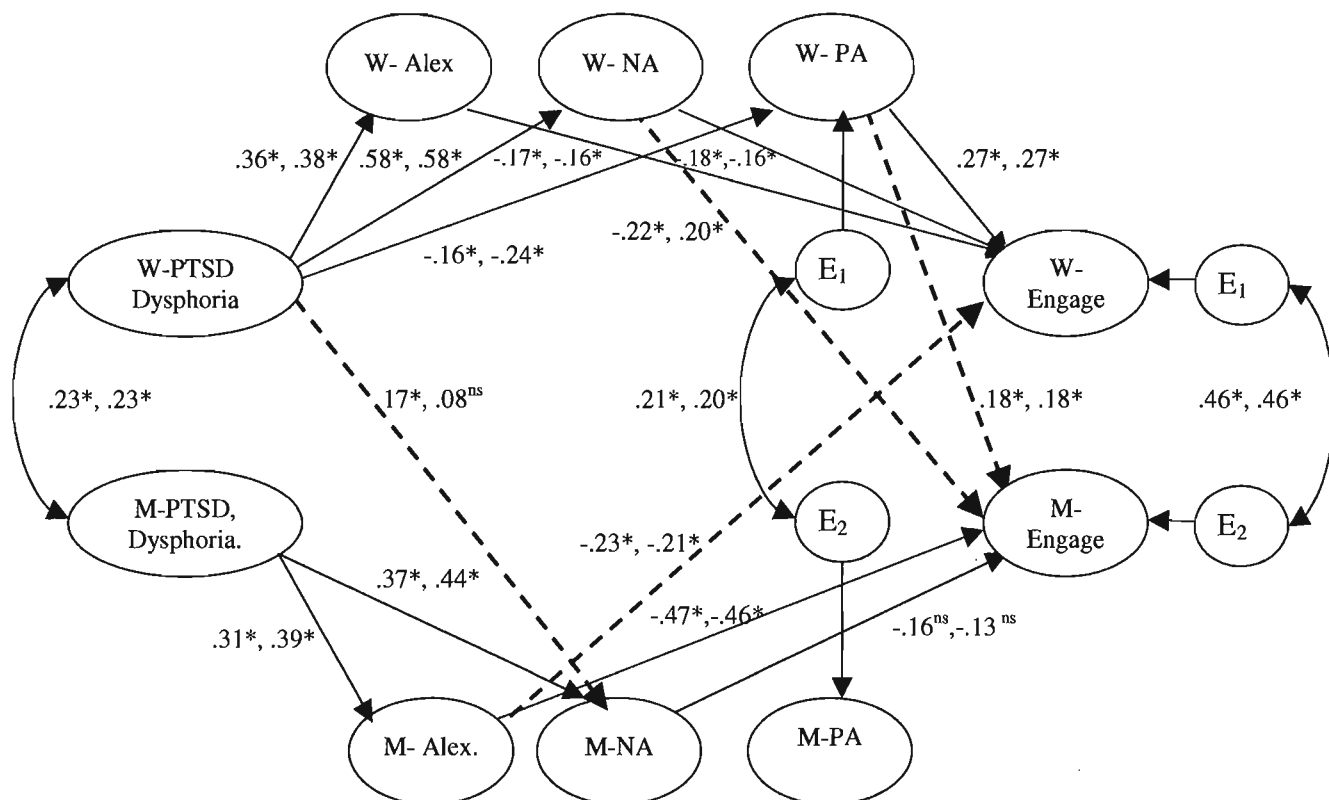


Figure 30. APIM for Engagement, including affective paths. Standardized regression weights are shown for Total PTSD Symptoms, followed by those for Dysphoria. Partner effects shown as dashed lines.

GFI = .794; TLI = .894; CFI = .901; RMSEA = .043, CI = .040-.047; SRMR = .059).

Significant paths are shown in Figure 30; as shown, significant partner effect paths are limited to: 1) the woman's PTSD symptoms to the man's negative affect, 2) the woman's negative affect to the man's engagement, 3) the woman's positive affect to the man's engagement, and 4) the man's alexithymia to the woman's engagement. With respect to the woman's engagement, the total PTSD model accounted for 28.4% of the variance while the dysphoria model accounted for 29.4%. With respect to the man's engagement,

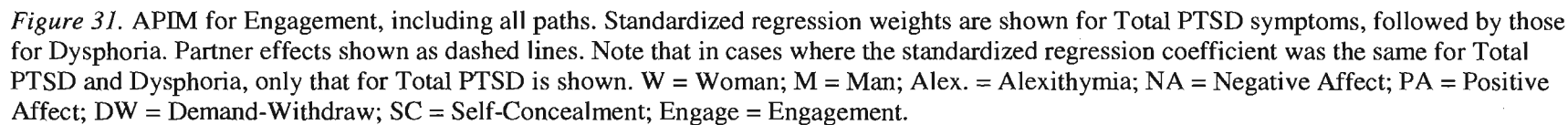
the total PTSD model accounted for 35.4% of the variance while the dysphoria model accounted for 35.2%.

Dyadic Models – All Mediators

Finally, the APIM was examined for engagement, including all proposed mediators. Given the intra-individual finding regarding affect variables preceding communication variables, paths from all affect variables to all communication variables were included in these models.

The fit was deemed adequate for total PTSD symptoms ($\chi^2(2261) = 3382.31, p < .001$; GFI = .769; TLI = .900; CFI = .907; RMSEA = .041, CI = .038-.044; SRMR = .056) and for dysphoria ($\chi^2(2541) = 3804.10, p < .001$; GFI = .757; TLI = .883; CFI = .890; RMSEA = .041, CI = .038-.044; SRMR = .056). As no major areas of misspecification were found, further steps were not taken to improve model fit.

Significant Paths are shown in Figure 31. As shown, significant partner effects from the woman to the man are limited to: 1) the woman's PTSD symptoms were positively linked to the man's negative affect, 2) the woman's negative affect was negatively associated with the man's engagement, 3) the woman's positive affect was positively associated with the man's engagement, 4) the woman's alexithymia was positively linked with the man's self-concealment. Significant partner effects from the man to the woman include: 1) the man's alexithymia was positively associated with the woman's self-concealment, 2) the man's negative affect was positively associated with the woman's demand-withdraw behaviour, and 3) the man's negative affect was *positively* associated with the woman's engagement. Thus, high levels of NA in the man were associated with high levels of engagement for the woman.



The total PTSD symptoms dyadic model accounted for 59.4% of the variance in engagement for women and 49.6% of the variance in engagement for men. Similarly, the dysphoria dyadic model accounted for 59.5% of the variance in engagement for women and 49.1% of the variance in engagement for men. Standardized direct, indirect, and total effects for total PTSD and dysphoria with respect to engagement are shown in Table 26. As expected, all total effects were negative, indicating that, overall, PTSD symptoms were detrimental to romantic relationships. However, this total effect appears comprised of negative indirect effects and positive direct effects. Further, a notable sex difference was found wherein the woman's PTSD symptoms had a direct positive association with the engagement of both her and her partner. However, the PTSD symptoms of the man were negatively associated with the woman's engagement and had a minimal direct association with his engagement.

Table 26. *Standardized Direct, Indirect, and Total Effects for Final Engagement Models*

Effect on	Model	Effect of	Direct Effect	Indirect Effect	Total Effect
Women	Total PTSD	Woman	.08	-.26	-.18
		Man	-.10	-.05	-.16
	Dysphoria	Woman	.10	-.33	-.23
		Man	-.13	-.07	-.20
Men	Total PTSD	Woman	.14	-.22	-.08
		Man	.02	-.22	-.20
	Dysphoria	Woman	.09	-.19	-.10
		Man	-.01	-.26	-.27

Chapter 12 - Dyadic Analysis – Secondary Traumatization

Secondary Traumatization

The final component of the dyadic analysis involved ascertaining the extent to which the PTSD symptoms of one partner were linked to the PTSD symptoms of the other partner and if this association was moderated by self-disclosure. To address this question, a multiple groups analysis was employed comparing dyads characterized by low levels of disclosure with dyads characterized by high levels of disclosure. This dichotomy was created through two steps. First, a median split was conducted for the 1-item trauma disclosure variable (i.e., the item immediately following the MPSS-SR and open-ended trauma description that asked “Please rate the extent to which you have told your partner about these events”). The median for both men and women was 9; as such, individuals who rated this item as 0 through 9 were classified as low disclosers and individuals who rated this item as 10 (i.e., *I have told my partner everything about these events*) were classified as high disclosers. Next, a dyad level dichotomous disclosure variable was created such that dyads comprised of two low-disclosing partners were considered low disclosing dyads ($N = 96$) and dyads comprised of at least one high disclosing partner were considered high disclosing dyads ($N = 201$). Note that total PTSD symptoms as reported by each member of the dyad were not significantly different across these dyads for men ($t(295) = .361, p > .05$) or women ($t(295) = .577, p > .05$).

A multiple groups analysis was then conducted. First the covariance between PTSD symptoms for men and women was constrained to be equal for low-disclosing and high-disclosing dyads. This constraint resulted in a diminished fit based on the chi-square difference test ($\chi^2_{\Delta}(1) = 4.10, p < .05$). As such, the conclusion that the association between the PTSD symptoms of each partner was lower for low-disclosing dyads ($r =$

.041, $p > .05$) than for high-disclosing dyads ($r = .332$, $p < .001$) was justified. That is, as predicted, secondary traumatization was supported and was less likely within dyads where the disclosure of details regarding the traumatic event(s) was limited or nonexistent.

An additional and more refined test of this pattern of results was also proposed and involved an examination of only those couples in which only one member of the dyad reported directly experiencing a traumatic event. This, however, proved difficult given the high frequency of reported traumatic events. A close inspection of study data revealed only 15 cases where one partner reported a traumatic event(s) and the other partner either did not report an event or indicated that the trauma(s) of which they were thinking when completing the MPSS-SR was something that had happened to their partner. For five cases, the traumatized partner was the man and in the other 10 cases, the traumatized partner was the woman. As such, a sufficient sub-sample did not exist to conduct this analysis.

Finally, it was also predicted that a lack of disclosure regarding the traumatic event(s) would result in impaired intimacy. This was demonstrated in that men ($t(295) = -3.43$, $p < .001$) and women ($t(295) = -4.33$, $p < .001$) in low-disclosure dyads reported less intimacy than men and women in high-disclosure dyads. To further examine this hypothesis, a multiple groups analysis was again employed with a focus on individual-level, rather than dyad-level, disclosure. For men, those in the low disclosure group did not differ from those in the high disclosure group in terms of the effect of their PTSD symptoms on their intimacy ($\chi^2_{\Delta}(1) = 0.002$, $p > .05$) or their partner's intimacy ($\chi^2_{\Delta}(1) = 0.18$, $p > .05$). Similarly, for women, those in the low disclosure group did not differ from

those in the high disclosure group in terms of the effect of their PTSD symptoms on their intimacy ($\chi^2_{\Delta}(1) = 0.87, p > .05$) or on their partner's intimacy ($\chi^2_{\Delta}(1) = 0.37, p > .05$). Therefore, it is concluded that a lack of disclosure of the details of the traumatic event is associated with less intimacy; however, this difference was not resultant directly from PTSD symptoms.

Chapter 13 - Discussion

Discussion

The current study has supported most hypotheses and has supported and extended previous research (e.g., Cook et al., 2004; Riggs et al., 1998) in finding that PTSD symptoms were negatively associated with intimacy and other facets of relationship quality, both within individuals and dyadically through partner effects. These negative associations were found to be fully mediated by a set of communication and affective variables. More specifically, the results are consistent with a sequence in which PTSD symptoms result in pronounced alexithymia and negative affect which, in turn, contribute to demand-withdraw behaviour and self-concealment, resulting in attenuated intimacy, as assessed by engagement. Partner effects and evidence suggesting secondary traumatization were also found. To paraphrase Sherman et al. (2008), trauma and PTSD symptoms certainly do have major consequences for a person's relationships.

The current study has replicated most previous research in this area (e.g., Carroll et al., 1985; Compton & Follette, 1998; DiLillo & Long, 1999; Jordan et al., 1992; Kulka et al., 1990; Riggs et al., 1998; Roberts et al., 1982; Solomon et al., 1987) by supporting a negative intra-individual association between PTSD symptoms and many facets of relationship quality. The current study has demonstrated this in three ways: 1) significant bivariate correlations, 2) significant differences between those who may be diagnosed with PTSD as compared to those who do not meet diagnostic criteria, and 3) through structural modeling of these associations. In all cases, PTSD symptoms were significantly and negatively associated with engagement. The present findings also extend beyond others in demonstrating that it is the symptoms of PTSD that are linked to relationship processes, apart from the specific types of traumatic events. Although others have

demonstrated this effect with combat veterans (e.g., Carroll, et al., 1991; Riggs et al., 1998) or survivors of sexual abuse (e.g., Beitchman et al., 1992; Davis et al., 2001; DiLillo & Long, 1999), a move toward examining PTSD symptoms and intimacy across a variety of traumatic events is an advance.

This significant intra-individual relationship was fully mediated by the proposed communication and affective paths. With respect to the communication pathways, previous research was supported that has found significant links between PTSD symptoms and constructive communication (e.g., Cook et al., 2004), demand-withdraw behaviour (e.g., Cook et al., 2004), and self-concealment (e.g., Barry & Mizrahi, 2005). Similarly, support was found for research that has linked constructive communication (e.g., Smith, Heaven, & Ciarrochi, 2008), demand-withdraw behaviour (e.g., Caughlin & Huston, 2002), and self-concealment (e.g., Larson & Chastain, 1990) to different facets of relationship quality. The current study, however, was the first to examine these variables together and the first to demonstrate significant communication pathways between PTSD symptoms and intimacy.

Likewise, support was found for the affective pathways. This study supported research that has linked PTSD symptoms with alexithymia (e.g., Frewen, et al., 2008), negative affect (e.g., Kashdan, et al., 2006), and positive affect (e.g., Shapinsky et al., 2005). Further, support has also been found for research that has demonstrated that alexithymia (e.g., Montebanocci et al., 2004), negative affect (e.g., Reis, 2001), and positive affect (e.g., Laurenceau, Troy, & Carver, 2005) are associated with different facets of relationship quality. A notable sex difference, however, indicates that a detriment in positive affect was not associated with PTSD symptoms for men, and did not

mediate the association between PTSD symptoms and intimacy. Still, overall, these findings support the proposed affective pathways between PTSD symptoms and intimacy, and again, was the first study to examine and demonstrate these pathways.

When combined, the communication and affective pathways tell an interesting story about how PTSD symptoms may jeopardize intimacy. For both men and women, it appears that PTSD symptoms contribute to a negative affective experience, which impairs communication processes, and diminishes intimacy. This negative affective experience also contributes directly to intimacy impairment. Thus, it appears that communication partially mediates the post-traumatic relationship of alexithymia and negative affect with intimacy.

These pathways were also evident within the dyadic analyses. Support was found for research that has demonstrated that the partners of individuals with a diagnosis of PTSD also reported attenuated relationship quality (e.g., Nelson & Wampler, 2000; Riggs et al., 1998). More specifically, the current study found that individuals with a partner who met the PTSD diagnostic cut-off reported less intimacy and relationship satisfaction than individuals with a partner who did not meet the PTSD diagnostic cut-off. However, this finding, though replicating previous research, does not adequately examine partner effects in the relationship between PTSD symptoms and intimacy. Further, this study moved beyond any available research and examined the association between PTSD symptoms and intimacy within the Actor-Partner Interdependence Model (Cook & Kenny, 2005). Using this method, significant direct partner effects were found, but only for the effect of the man's PTSD symptoms on the woman's intimacy (and other facets of relationship quality), further replicating the findings of previous research (e.g., Riggs et

al., 1998) and possibly identifying why others (e.g., Nelson, 1999) have not found partner effects. Clearly, studies that involve an examination of men who have a diagnosis of PTSD (as most have, using combat veterans) are likely to find partner effects. If the sample, however, is primarily comprised of traumatized women, partner effects may not be found. These findings, and the highly interdependent nature of these constructs, speaks to the necessity of involving both partners in studies of PTSD symptoms and intimacy. If data from both partners on all variables are not included in a study, then the ability to discern and interpret direct effects and partner effects is quite limited.

With respect to partner effects that incorporate the proposed mediators, evidence was found to support multiple mechanisms through which the impact of PTSD symptoms on relationships is interdependent. Although significant direct paths between the woman's PTSD symptoms and the man's intimacy were not found, indirect paths were found such that: 1) the woman's PTSD symptoms were positively linked to the man's negative affect, 2) the woman's negative affect was negatively associated with the man's engagement, 3) the woman's positive affect was positively associated with the man's engagement, 4) the woman's alexithymia was positively linked with the man's self-concealment. Therefore, partner effects were demonstrated directly for men and indirectly for women.

Interdependence was further demonstrated with respect to how the impact of trauma weaves itself into a relationship as shown in Figure 31. As shown in Figure 32, multiple significant paths are evident which may shed light on the processes through PTSD symptoms result in diminished relationship quality. As shown, all variables in the model are included in at least one of these mediated partner effect paths. One such path

involved the man's PTSD symptoms leading to an increase in his negative affect, which resulted in an increased perception of demand-withdraw behavior by the woman, and subsequently resulted in diminished intimacy. In another path, the woman's PTSD symptoms were associated with a decrease in her positive affect, which, in turn, resulted in less intimacy as perceived by the man. As a third example, a path that was evident for both partners that involved the PTSD symptoms of the individual being linked to pronounced alexithymia in the individual, which, in turn, resulted in increased self-concealment in the partner, followed by diminished intimacy in the partner. Thus, it appears that PTSD symptoms may lead to a lowered capacity for emotional engagement (i.e., alexithymia), which may make the partner less likely to disclose distressing information (i.e., self-concealment), which may result in attenuated intimacy. As shown in Figure 32, other meandering paths were also evident and, clearly, the processes occurring here are reciprocal and interdependent.

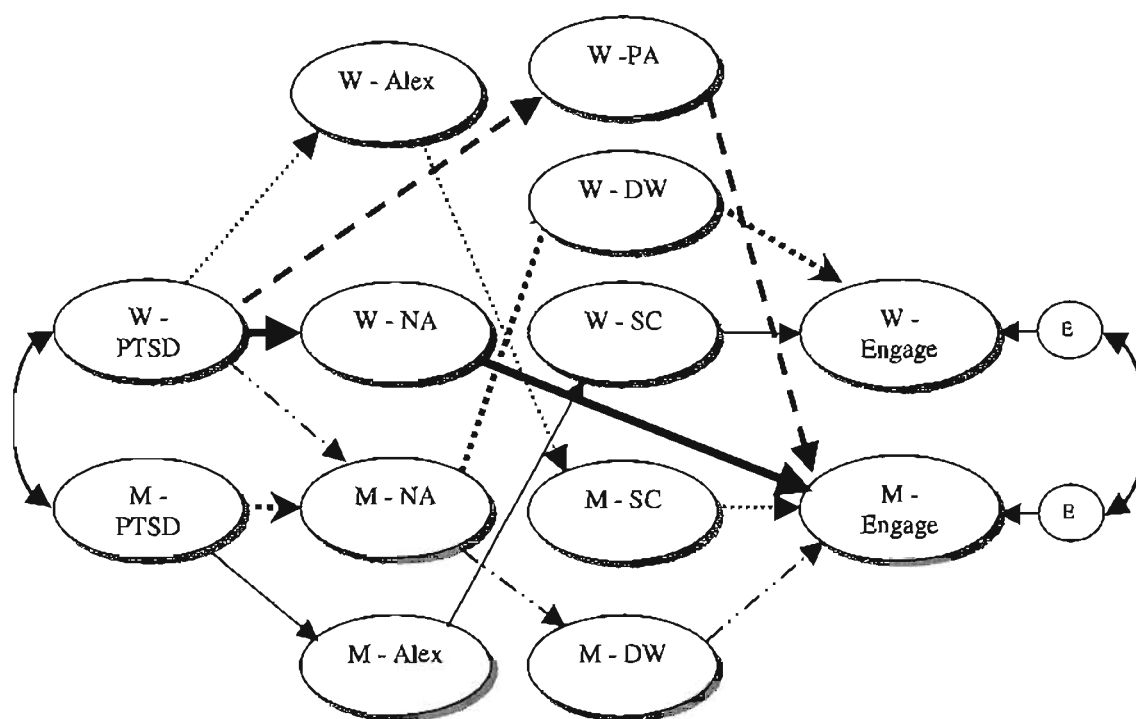


Figure 32. Mediated Partner Effect Paths between PTSD Symptoms and Engagement. Similarly styled arrows represent unique paths. Note: W = Woman; M = Man; Alex. = Alexithymia; NA = Negative Affect; PA = Positive Affect; DW = Demand-Withdraw; SC = Self-Concealment; Engage = Engagement.

Finally, interdependence was also demonstrated through the examination of secondary traumatization (Figley, 1983; Nelson Goff & Smith, 2005). As noted, secondary traumatization results when an individual who is emotionally connected to a traumatized person experiences symptoms of traumatization as a result of this stressor, even though the individual was not directly traumatized (Nelson-Goff et al., 2006). Consistent with previous research (e.g., Bramsen et al., 2002), the current study found a significant positive association between the PTSD symptoms of the female partner and those of the male partner. It is possible that this association represents a true partner effect such as secondary traumatization or a mutual influence model wherein secondary traumatization was occurring in both directions. This finding, however, and that of others (e.g., Lev-Wiesel & Amir, 2001), simply show a cross-sectional association that, alternatively, may be explained through: 1) assortative mating, wherein the partners have similar PTSD symptoms because they have similar backgrounds (e.g., both are survivors of childhood sexual abuse), or 2) common fate, which may involve both partners being exposed to the same causal factors (e.g., death of a child) (Kenny et al., 2006). In an attempt to tease apart these competing explanatory mechanisms, it was hypothesized that secondary traumatization requires the disclosure of details about the traumatic event(s). Thus, it was predicted that disclosure regarding the details of the traumatic event(s) would moderate this relationship such that the association between the PTSD symptoms of each partner would be high under situations of high disclosure and low or nonsignificant under situations of low disclosure. Dyads were classified as either low-disclosing or high-disclosing and, as predicted, it was found that the PTSD symptoms of partners in low-disclosing dyads were not significantly linked. In high-disclosing dyads,

however, the association was significant, and also significantly different from that of low-disclosing dyads. It is still possible, however, that this effect is the result of common fate and that the high-disclosure group was more likely to be comprised of dyads with shared traumas. However, an examination of the reported traumas across these groups does not support this explanation. Therefore, secondary traumatization is supported.

Thus, through these partner effects, this study is consistent with interdependence theory (Thibaut & Kelly, 1959) in suggesting that partners influence each other. Attachment theory (Bowlby, 1969; Mikulincer & Shaver, 2007) also provides a rationale for understanding the impact of PTSD symptoms on intimacy. As discussed, trauma and distress activate the attachment system and the individual engages in proximity-seeking in order to regulate distress. If, however, the attachment figure is unavailable or the traumatized individual has a history of unavailable and unresponsive attachment figures, alternative strategies may be employed such as hyperactivation and deactivation. Each of these strategies, as noted, may result in affective and communication problems within the relationship. Therefore, those individuals who are experiencing PTSD symptoms are likely to have an activated attachment system and also likely to engage in activities that may impair relationship quality.

These findings also map onto the *Fight-or-Flight* threat response model (Cannon, 1932) and the motivational processes inherent in Maslow's Hierarchy of Needs (Maslow, 1954). Each of these theoretical models helps to explain the findings that PTSD symptoms impair intimacy intra-individually and dyadically. Individuals who have unresolved trauma and existing PTSD symptoms are likely to have their motivational systems more geared toward self-preservation (e.g., *Fight-or-Flight*) and safety goals

rather than affiliative and romantic bonds. Thus, the relationship suffers for both the traumatized individual and his/her partner. This contention is supported by the finding that the total intra-individual and partner effects of PTSD symptoms on intimacy were all negative (see Table 26). However, a close inspection of the direct and indirect effects has also revealed support for the *Tend-and-Befriend* model (Taylor et al., 2000).

Interestingly, although all indirect effects were negative, the direct effects of the woman's PTSD symptoms on her intimacy and that of her partner were positive. Conversely, the PTSD symptoms of the man had a direct negative effect on the woman's intimacy and had a minimal association with his intimacy. If it is the case that men are thrust into a *Fight-or-Flight* response when facing a threat, then the physiological and psychological impacts associated with this threat may make it such that they withdraw from their partner, leading to impaired intimacy. However, if women are more inclined toward a *Tend-and-Befriend* response, they may ramp up activities geared toward fostering a strong bond. Thus, as was found, PTSD symptoms in women may actually lead to enhanced perceptions of engagement/intimacy in both her and her partner. In both cases, however, even though a positive direct effect was found, it was outweighed by the negative indirect effect and thus there existed a negative total effect, which, as noted, resulted in a nonsignificant partner effect from women to men.

Thus, the interdependent nature of the relationship (Thibaut & Kelly, 1959), the deactivation and hyperactivation of the attachment system (Bowlby, 1969; Mikulincer & Shaver, 2007), self-preservation through the *Fight-or-Flight* response (Cannon, 1932) and/or the *Tend-and-Befriend* response (Taylor et al., 2000), and a focus on safety over the relationship (Maslow, 1954) all may account for why PTSD symptoms impact the

individual and the partner. Therefore, a multi-faced and sex-specific approach to treating PTSD symptoms and minimizing their effect on relationships is warranted.

Measurement Issues

The present investigation also suggests several important measurement issues for researchers who study PTSD and relationship quality. The DSM-IV (APA, 1994) acknowledged that trauma may cause impairment in social functioning. The current study has definitely supported this contention. Further, the DSM-IV-TR (APA, 2000) recognized secondary traumatization by stating that traumatic events may include “learning about ... serious harm, or threat of death or injury experienced by a family member or other close associate,” (p.463). Again, the importance of this expanded definition of trauma is supported by this study. Further, as it appears that these revisions are aligned with a more prominent focus on the subjective experience of a traumatic event (Solomon & Horesh, 2007), a shift beyond the objective features of a traumatic event toward the experienced symptoms seems warranted.

The current study has also demonstrated that both DSM-Congruent and DSM-Incongruent traumatic events independently contribute to the experience of posttraumatic symptoms, supporting other similar findings (e.g., Gold et al., 2005; Mol et al., 2005; Rosen & Lilienfeld, 2008). As noted by Rosen and Lilienfeld (2008) “the full clinical syndrome of PTSD can arise frequently among psychiatrically distressed subjects without any occurrence of a Criterion A event” (p. 840). Further supporting this contention is the fact that the effect sizes for the current study for the association between PTSD symptoms and relationship quality are comparable to those found in other research studies that have focused on more severe events such as war captivity (e.g., Dekel et al.,

2008). The common occurrence of individuals experiencing multiple traumas also makes linking the symptoms to any one specific event rather artificial. Further, when multiple events are experienced, it is likely that the traumatized individual may not be certain as to which symptoms are linked to which events (Norris & Hamblen, 2004). Moreover, although the clinical and medico-legal utility of diagnostic cutoffs is clear (e.g., McFarlane, 1995), researchers should move away from the prevalent dichotomous approach in favour of the more informative continuous variable approach employed in the current study and by a small number of other researchers (e.g., Shalev & Freedman, 2005; Solomon & Mikulincer, 2006). A continuous variable approach is also supported by research that has demonstrated that diagnosis rates differ depending on the edition of the DSM that is employed, with no way to determine which diagnosis is the most valid (Peters et al., 1999; Schwarz & Kowalski, 1991; Solomon & Horesh, 2007).

Finally, the accepted structure of PTSD symptoms was also found to be questionable. This study joins others (e.g., Boelen et al., 2008) in finding support for the 4-factor Dysphoria model that was first proposed by Simms et al. (2002). Clearly, the 3-factor DSM model is problematic and revisions to the current diagnostic clustering are necessary and underway. This finding is particularly important in the context of recent studies that have demonstrated that the DSM symptom clusters are differentially related to relationship functioning (e.g., Solomon et al., 2008). These researchers, and others, have put forth recommendations regarding how clinical interventions should be tailored to focus on the impact of the avoidance/numbing symptom cluster in particular. If the factor structure of PTSD symptoms is highly questionable, then any clinical recommendations regarding specific symptom clusters are largely without merit. Using

the DSM model, the current study has demonstrated a significant negative association between the Avoidance and Numbing symptom cluster and intimacy for men only, replicating that which has been reported by others (e.g., Evans, McHugh, Hopwood, & Watt, 2003; Riggs et al., 1998; Solomon, Dekel, & Zerach, 2008). In contrast, when the 4-factor Dysphoria model was used, only the dysphoria symptom cluster emerged as being significantly associated with intimacy for both men and women. Recall that the dysphoria symptom cluster is comprised of the items related to numbing from the Avoidance and Numbing symptom cluster, as well as three hyperarousal symptoms (sleep disturbance, irritability, and difficulties concentrating). As Cook et al. (2004) postulated in reference to the Avoidance and Numbing symptom cluster, it is possible that dysphoria symptom cluster is simply a good indicator of total PTSD symptoms. Recall that across all analyses, minimal differences were found between total PTSD symptoms and dysphoria with respect to associations with any of the mediators or with any of the relationship quality outcome variables. It may be the case that the Numbing symptoms and the Arousal symptoms that comprise the dysphoria symptom cluster are those that are particularly linked to affective, communication, and intimacy problems.

Overall, given that the current study has demonstrated similar results using both the total PTSD symptoms and the dysphoria symptom cluster, it is recommended that research continue to examine links to relational quality using a total score until which time as more clarity, consensus, and direction are available as to the structure of PTSD symptoms and the reliability of its diagnostic criteria. As noted, since its inception, PTSD, more so than most every other diagnosis, has continued to generate controversy regarding diagnostic criteria and clinical utility (Spitzer et al., 2007). It is clear from the

present study that the clinical implications of PTSD symptoms in relation to distressed marriages are without question; however, diagnostic criteria and the structure of the symptom clusters require considerably more investigation. Therefore, before clinical interventions may be effectively developed based on specific symptoms clusters, it is important to better understand how symptoms actually cluster.

The present findings also speak to the conceptualization of relationship quality and the myriad methods and measures that are used to represent indices of relationship functioning. First, the current study has found support for an alternate factor structure for the PAIR (Schaefer & Olson, 2000). Schaefer and Olson (2000) have contended that the PAIR assesses 5 facets of intimacy. However, the current study finds support for a 3-factor model that was proposed by Moore et al., (1998). Within this model, the Engagement factor emerged as the best representation of intimacy given that it is separated from the communication factor and does not include such behavioural components as shared friendships. Further, it was also highly correlated with total intimacy and had a stronger relationship with many of the study variables, as compared to the total intimacy variable (see Tables 2 & 3). Therefore, this Engagement factor was found to best reflect the view of intimacy as “feelings of closeness, connectedness, and bondedness” (Sternberg, 1997, p.315). Still, there is currently a lack of research which has employed this engagement variable and the current study is only the second to examine and support this factor structure. Therefore, caution in interpreting and generalizing the results of this study is warranted. Other researchers who are examining intimacy are cautioned against simply accepting the factor structure as it has been.

presented by the original authors. Further, as with PTSD symptoms, caution is advised in developing clinical interventions based on unreliable factor structures.

Related to this, support has also been found for conceptualizing intimacy as something that is distinct from disclosure. Theoretical approaches to the study of intimacy generally consider it as arising from disclosure. For example, Clark and Reis (1988) defined intimacy as “a process in which one person expresses self-relevant feelings and information to another, and as a result of the other’s response comes to feel known, validated (i.e., obtains confirmation of his or her world view and personal worth), and cared for.” (p. 628). The current study examined intimacy as a bond that develops as a result of many interdependent factors (e.g., emotional closeness, disclosure, similarity). This bond, or sense of engagement, is clearly an important relational construct and further investigation is needed to understand this bond and to clarify and blend the existing models of intimacy.

The current research also found support for an overarching latent relationship quality variable, as has been demonstrated by others (e.g., Fletcher et al., 2000). A model that included the measured variables for each of the separate facets of relationship quality fit the data well. So, each of the approaches to examining the relational experience (i.e., intimacy, relationship satisfaction, commitment, and passion) contribute to a more general higher-order sense of relationship quality. As might be expected, the pattern of results that were found for relationship quality was nearly identical to those found for its components. Thus, the theoretical value of such an overarching construct is questionable. Further work is needed to determine the extent to which the factors that contribute to

latent relationship quality are associated with other important constructs (e.g., disclosure) beyond the association found with the latent variable.

Limitations

The foremost limitation of this research study was its cross-sectional design and inability to truly examine causality. Although structural equation modeling permits an examination of potential causal pathways, longitudinal designs are necessary to provide more definitive answers. Further, other research has found that certain correlates of relationship quality do not predict changes over time (e.g., Heavey et al., 1995). Of course, creative experimental designs would also be valuable, if ethically feasible. For example, it may be possible to observe and rate dyadic interactions/communication and assess intimacy and affect after couples have been randomly assigned to one of two conditions: 1) wherein each member of the dyad completes a trauma checklist and PTSD scale prior to the observation, and 2) wherein the trauma checklist and PTSD scale are completed after the observation period. If it is the case that recalling trauma(s) and PTSD symptoms prior to the observation activates dysphoria symptoms (e.g., emotional numbing, irritation, and difficulty concentrating) and leads to more communication problems, negative affect, and lower ratings of intimacy, as compared to the other condition, then causality is supported. Certainly, further research is needed to fully understand these relationships.

That said, a test of competing models in the current study has demonstrated that the proposed ordering of variables such that PTSD symptoms lead to affective and communication problems which, in turn, lead to attenuated intimacy fit the data better than models in which intimacy led to PTSD symptoms. This is not to say that close bonds

and social support are not beneficial to an individual who has been traumatized, as this has certainly been supported (e.g., Charuvastra & Cloitre, 2008; Perrier et al., 2010; Shapiro & Levendosky, 1999). Reciprocal paths are the most likely reality and would suggest a model wherein PTSD symptoms deteriorate intimacy via negative affect and poor communication, while a good relationship simultaneously lessens PTSD symptoms via a possible secure attachment (Mikulincer & Shaver, 2007) and the provision of support and compassion. The current study, however, merely demonstrates that a model in which PTSD symptoms contribute to the deterioration of a relationship is supported. Although reciprocal paths are certainly likely, this study concerned itself with an examination of how PTSD symptoms have implications for romantic relationships.

The nature of the sample may also be considered a shortcoming in that an investigation of a clinical construct (i.e., PTSD) was undertaken with a community sample. However, as noted, this sample was comprised of individuals who had experienced a broad range and large number of events generally considered traumatic in the clinical literature. Further, there were 148 individuals within the sample who, based on the MPSS-SR, could be diagnosed with PTSD. Moreover, that the current study was able to replicate and extend all previous work in this area using a community sample rather than just individuals who had all experienced a specific event (e.g., combat exposure) speaks to: 1) the far reaching impact of PTSD symptoms on intimacy, and 2) the value and applicability of this sample. Still, it would have been beneficial to ask participants if they had previously been diagnosed with PTSD or another mental illness, especially those associated with the posttraumatic response (i.e., depression, anxiety, substance dependence). As noted, some recruitment occurred through counseling centers

and through websites and listserves for individuals who had been traumatized. As such, participants also should have been asked if they had received any treatment for these posttraumatic symptoms. Overall, though, this sample may be considered a general community sample, including individuals with clinically relevant symptoms, some of whom were likely in treatment.

Related to this, the self-report method of assessing PTSD symptoms may be less valid than a thorough clinical interview in truly discerning diagnosis and symptom levels given that the clinician is able to engage the individual in a discussion of the traumatic events and reinforce their link with reported symptoms. Still, the current study has replicated other work that has used clinical diagnostic tools. Moreover, others have reported a considerable consistency between self-report measures of PTSD and clinical assessments (e.g., Solomon et al., 1993). Further, the artificiality of diagnostic cut-offs also makes a self-report method that treats PTSD symptoms as a continuous variable quite useful. As such, differences between these methods may not be large enough to justify the resources necessary to conduct such a clinical study. As noted, administering clinical interviews requires extensive training and cost, which diminishes the feasibility of this approach for research purposes. Further, the analytic techniques employed in the current study require large samples, which may not be feasible in clinical settings.

Even within the current study, the large number of analyses that were conducted introduces a sizable risk of Type I error. This risk would certainly be amplified in a smaller clinical sample. However, this also highlights a limitation of the current study. Multiple analytical steps were taken to construct measurement and structural models in order to examine the proposed intraindividual, dyadic, and mediating pathways. It was

felt, however, that an accurate and thorough examination of the relationship between PTSD symptoms and intimacy required an in-depth analysis of each of the constructs that comprised the intraindividual and dyadic models. As such, the risk of Type I error was considered acceptable given the steps that were necessary in order to fully understand these processes. Still, caution in interpreting and generalizing from these results is warranted.

Future Directions

Foremost among the necessary next steps for this field is a more complete understanding of the longitudinal relationships between these constructs. Only with longitudinal data will more definitive answers be provided about the intraindividual and partner effects inherent in the relationship between PTSD symptoms and intimacy. As has been noted, a growing body of literature supports the value of good relationships for recovery from posttraumatic distress (e.g., Charuvastra & Cloitre, 2008; Shapiro & Levendosky, 1999). Although the current study has supported a model in which PTSD symptoms deteriorate relationship quality, longitudinal data are necessary to fully understand the complex relationship between these variables. Further, longitudinal data may permit an examination of the extent to which the demonstrated link between PTSD symptoms and intimacy is a function of a general negative or positive bias in responding. Perhaps individuals who view the world through a negative lens are more inclined to endorse PTSD symptoms and to negatively evaluate their relationship. Such a longitudinal approach would also permit a simultaneous examination of relationship dissolution, wherein there is a complete absence of intimacy. A problem with cross-sectional designs, especially those that only include couples that have been together for

many years (e.g., Cook et al., 2004), is that they are incapable of accounting for relationships that have ended due to the strain of PTSD symptoms. A longitudinal study, preferably time series, however, would allow one to model change in these constructs over time and to account for dyads that have been irrevocably damaged or disrupted.

Further research is also needed to examine these associations within a true clinical sample of individuals who are experiencing high levels of PTSD symptoms. As these are the individuals who are likely most at risk for relational impairment, interventions are most likely to be needed with this population. Therefore, a more complete understanding of attenuated intimacy in this clinical sample would permit a refinement of available treatment options (e.g., Emotionally-Focused Marital Therapy; Johnson & Williams-Keeler, 1998).

The high levels of comorbidity between PTSD and other forms of psychopathology such as depression, anxiety, and substance abuse also highlights the need for a simultaneous assessment of each of these constructs. To truly discern the unique effect of PTSD symptoms, variance due to depression, anxiety, and substance use would have to be controlled. It is possible that romantic relationships are actually affected by these disorders, rather than by PTSD symptoms specifically. Moreover, it is also possible that these are not distinct posttraumatic responses. Some evidence does support an approach in which symptoms of PTSD and depression load onto a single general posttraumatic response rather than two separate diagnoses (e.g., O'Donnell, Creamer, & Pattison, 2004).

It is also important to consider that the posttraumatic response may not be entirely negative. An emerging literature on posttraumatic growth suggests that for both

individuals and dyads, the experience of overcoming adversity may introduce new coping mechanisms, strengthen existing coping mechanisms, increase the sense of personal strength, introduce a greater appreciation for life, and strengthen attachment bonds (e.g., Linley & Joseph, 2004). This is not a return to a pre-trauma baseline, but an actual improvement in functioning and quality of life, which also appears to make individuals less susceptible to future negative traumatic responses. The noted *Tend-and-Befriend* response (Taylor et al., 2000) of women seems to fit well with this evidence and line of theoretical reasoning. It will be important for future research to assess and incorporate posttraumatic growth when studying PTSD symptoms and intimacy. This area of research may shed important light on the direct positive associations that were found in the current study.

Just as a focused examination of clinically distressed individuals would provide valuable insights, so would an examination of potential moderators of the PTSD symptom – intimacy link. As noted, attachment theory (Bowlby, 1969; Mikulincer & Shaver, 2007) provides a rationale for how PTSD symptoms may affect intimacy. It is likely, however, that attachment orientation moderates this relationship. That is, individuals who are considered securely attached would be less likely, as compared to those who are insecurely attached, to suffer from PTSD symptoms, to have low relationship quality, or to have their relationship affected by trauma. Such moderation would exist given that securely attached individuals are more likely to experience healthy affect regulation through appropriate attachment strategies (i.e., proximity-seeking). Insecurely attached individuals, however, would be more inclined toward hyperactivation and deactivation as strategies to cope with distress (Mikulincer & Shaver, 2007). As

noted, these are the processes that are most likely to result in attenuated intimacy.

Therefore, it is likely that attachment orientation moderates the relationship between PTSD symptoms and intimacy and provides an avenue through which treatment may be focused so as to be optimally effective.

Related to this, it is also possible that some of the mediators examined in the current study are better suited as moderating variables. Particularly, it could be the case that a relationship that is characterized by effective communication and problem solving may be buffered against the detrimental effects of PTSD symptoms. Clearly, further research is needed to tease apart the complex pathways between PTSD symptoms and intimacy.

Other possible moderators of this relationship include the length of time that has passed since the traumatic event, the length of the relationship, the relationship status, participant age, socio-economic status, and likely many others. Although some of these could have been examined within the current study, it was deemed important to not further expand the number of analyses that were conducted. Central to the current study was the examination of pathways between PTSD symptoms and intimacy. However, understanding how these potential moderating variables impact the noted pathways is an important next step. Relationship length, for example, has been shown to moderate the relationship between marital communication and marital satisfaction (e.g., Pasupathi, Carstensen, Levenson, & Gottman, 1999). Similarly, the time that has elapsed since the traumatic event has been shown to be associated with less distress (e.g., Perrier et al., 2010). However, within the current study, it was impossible to discern which traumas were directly influencing PTSD symptoms, and, as such, it was not possible to create a

variable that validly captured the time that had passed since the traumatic event(s). As such, it was also not possible to distinguish between traumatic events that occurred during the current romantic relationship as compared to those events that occurred prior to the relationship. Still, a focus on current PTSD symptoms may make any attempt to examine elapsed time somewhat meaningless.

Finally, we must consider how these results may guide clinical interventions for traumatized individuals and dyads. There currently exists a number of treatment protocols that are aimed toward treating trauma within a relational context. Foremost amongst these is Emotionally-Focused Therapy (EFT) (Johnson, 2002; Johnson & Greenberg, 1985; Johnson & Williams-Keeler, 1998). EFT has proven particularly effective with distressed couples and with simultaneously treating the symptoms of PTSD. The current study supports this approach and also has implications for the incorporation of alexithymia and disclosure as important constructs in the treatment of PTSD and relationship distress. As PTSD is associated with an emotional numbing and a difficulty with identifying and describing feelings, assisting trauma survivors in overcoming this emotional detriment is particularly important for minimizing the impact that alexithymia has on communication patterns and engagement. Further, the role of disclosure cannot be taken lightly. As has been demonstrated here, high levels of disclosure regarding the traumatic events appears to be associated with an increased likelihood of secondary traumatization. As such, the therapist is cautioned against fully immersing the couple in the details of each other's trauma history, without first building strategies for coping with this information. Of course, a first step in this healing process involves actually getting both partners to enter into, and engage in, appropriate therapy, which may be quite challenging (Sherman et al.,

2008). The importance of engaging both partners cannot be understated; as noted by Johnson (2002), “if a person’s connection with significant others is not part of the coping and healing process, then, inevitably, it becomes part of the problem and even a source of retraumatization” (p.7).

The current study has also identified important sex differences that may moderate how the trauma histories and PTSD symptoms of one partner affect the other. As noted, it appears that the PTSD symptoms of women are simultaneously positively and negatively associated with intimacy in both partners. In contrast, however, the posttraumatic response of the man is predominantly negative for the both individuals. As has been highlighted, this sex difference may be explained through sex differences in the *Fight-or-Flight* (Cannon, 1932) threat response, which involves women being more inclined toward a *Tend-and-Befriend* response (Taylor et al., 2000). Delineating how this differential response to stress impacts the relational experience of each partner is an important next step for both research and clinical practice. If it is the case that the *Tend-and-Befriend* response minimizes the negative impact of PTSD symptoms on the relationship, then interventions geared toward strengthening this affiliative tendency are important for women. Building this process as a coping mechanism for men is also crucial, as is minimizing the negative indirect impact of PTSD symptoms on intimacy.

In conclusion, the current study has highlighted the intraindividual and dyadic mechanisms through which PTSD symptoms may impair intimacy. As the subjective experience of trauma becomes a more prominent feature of the diagnosis of PTSD, highlighting the impact on close relationships is vital. Trauma has the ability to destroy the lives and loves of those it touches. It weaves its way into a relationship and depletes

its intimacy through the very interdependence that initially created a strong affectional bond. Solomon and Horesh (2007) have advocated that the distress component of PTSD include questions of contentment with interpersonal functioning. The value of this cannot be understated as it may serve to draw attention to relational strain, jump start the healing process, prevent secondary traumatization, and allow intimacy to be strengthened rather than broken.

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Appendix I - Measures

Trauma/PTSD

Trauma – Life Events Checklist

Blake D, Weathers F, Nagy L, Kaloupek D, Klauminzer G, Charney D, et al (2000). *Clinician-Administered PTSD Scale (CAPS) Instructional Manual*. Springfield, VA: National Center for PTSD, National Technical Information Service.

Gray, M. J., Litz, B. T., Hsu, J. L., & Lombardo, T. W. (2004). Psychometric properties of the Life Events Checklist. *Assessment*, 11, 330-341.

Listed below are some difficult or stressful things that sometimes happen to people. For each event, check one or more of the boxes to the right to indicate that: (a) It *happened to you* personally, (b) you *learned about it* happening to someone close to you, or (c) it *doesn't apply* to you. Please also indicate the number of years that have passed since the event.

Be sure to consider your *entire life* (growing up, as well as adulthood) as you go through the list of events.

	Event	Happened to me	Years since event	Learned about it	Years since event	Doesn't apply
1	Natural disaster (for example, flood, hurricane, tornado, earthquake)					
2	Fire or explosion					
3	Transportation accident (for example, car accident, boat accident, train wreck, plane crash)					
4	Serious accident at work, home, or during recreational activity					
5	Exposure to toxic substance (for example, dangerous chemicals, radiation)					
6	Physical assault (for example, being attacked, hit, slapped, kicked, beaten up)					
7	Assault with a weapon (for example, being shot, stabbed, threatened with a knife, gun, bomb)					
8	Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm)					
9	Other unwanted or uncomfortable sexual experience					
10	Combat or exposure to a war-zone (in the military or as a civilian)					
11	Captivity (for example, being kidnapped, abducted, held hostage, prisoner of war)					
12	Life-threatening illness or injury					
13	Severe human suffering					

14	Sudden, violent death (for example, homicide, suicide)	N/A				
15	Sudden, unexpected death of someone close to you	N/A				
16	Serious injury, harm, or death you caused to someone else	N/A				
17	Infidelity					
18	Distressing relationship breakup					
19	Expected death of someone close to you					
20	Personal or professional failure					
21	Troubles with the law					
22	Non-life threatening illness					
23	Abortion					
24	Miscarriage					
25	Bullying					
26	Death of a pet					
27	Addictions					
28	Non-physical conflict					
29	Any other stressful event or experience					

PTSD – MPSS-SR

Falsetti S. A., Resnick H. S., Resick P. A., & Kilpatrick D.G. (1993). The modified PTSD Symptom Scale: A brief self-report measure of posttraumatic stress disorder. *The Behavior Therapist*, 16, 161–162.

- All items are used to indicate total PTSD symptoms
- Items 7, 8, 9, 10, 11, 12, 13, and 14 are used in indicate Dysphoria

MODIFIED PTSD SYMPTOM SCALE

The purpose of this scale is to measure the frequency and severity of symptoms in the past two weeks that you may have been having in reaction to a traumatic event or events. Please indicate the frequency, how often you have the symptom, to the left of the item. Then indicate the severity (how upsetting the symptom is) by circling the letter that fits best on the right side.

FREQUENCY

0 = NOT AT ALL
 1 = ONCE A WEEK OR LESS
 2 = 2 TO 4 TIMES A WEEK
 3 = 5 OR MORE TIMES A WEEK

SEVERITY

A = NOT AT ALL DISTRESSING
 B = A LITTLE BIT DISTRESSING
 C = MODERATELY DISTRESSING
 D = QUITE A BIT DISTRESSING
 E = EXTREMELY DISTRESSING

FREQUENCY

SEVERITY

_____	1. Have you had repeated or intrusive upsetting thoughts or recollections of the event(s)?	A	B	C	D	E
_____	2. Have you been having repeated bad dreams or nightmares about the event(s)?	A	B	C	D	E
_____	3. Have you had the experience of suddenly reliving the event(s), flashbacks of it, or acting or feeling as if the event were happening again?	A	B	C	D	E
_____	4. Have you been intensely EMOTIONALLY upset when reminded of the event(s), including anniversaries of when it happened?	A	B	C	D	E
_____	5. Do you often make efforts to avoid thoughts or feelings associated with the event(s)?	A	B	C	D	E
_____	6. Do you often make efforts to avoid activities, situations, or places that remind you of the event(s)?	A	B	C	D	E
_____	7. Are there any important aspects about the event(s) that you still cannot recall?	A	B	C	D	E
_____	8. Have you markedly lost interest in free time activities that used to be important to you?	A	B	C	D	E
_____	9. Have you felt detached or cut off from others around you since the event?	A	B	C	D	E
_____	10. Have you felt that your ability to experience emotions is less (unable to have loving feelings, feel numb, or can't cry when sad)?	A	B	C	D	E
_____	11. Have you felt that any future plans or hopes have changed because of the event(s) (for example: no career, marriage, children, or long life)?	A	B	C	D	E
_____	12. Have you been having a lot of difficulty falling or staying asleep?	A	B	C	D	E
_____	13. Have you been continuously irritable or having outbursts of anger?	A	B	C	D	E
_____	14. Have you been having persistent difficulty concentrating?	A	B	C	D	E
_____	15. Are you overtly alert (checking to see who is around you) since the event(s)?	A	B	C	D	E
_____	16. Have you been jumpier, more easily startled, since the event(s)?	A	B	C	D	E
_____	17. Have you been having intense PHYSICAL reactions (for example: sweating, heart beating fast) when reminded of the event(s)?	A	B	C	D	E

Please briefly indicate the traumatic event(s) you were thinking about when filling out this questionnaire. _____

Disclosure of Trauma

“Please rate the extent to which you have told your partner about these events on a scale ranging from 0 = I have told my partner nothing about any of these event(s) to 10 = I have told my partner everything about these event(s).”

Mediators – Communication

Communication Patterns Questionnaire - CPQ

Christensen, A. (1987). Detection of conflict patterns in couples. In K. Halweg & M. J. Goldstein (Eds.), *Understanding major mental disorder: The contribution of family interaction research* (pp. 250-265). New York: Family Process Press.

Christensen, A. (1988). Dysfunctional interaction patterns in couples. In P. Noller & M.A. Fitzpatrick (Eds.), *Perspectives on marital interaction* (pp. 31-52). Clevedon & Philadelphia: Multilingual Matters.

- Items A2, B1 B2, B3 B4, B10a, & B10b are used to indicate constructive communication
- Items A3a, A3b, B5a, B5b, B6a, & B6b are used to indicate demand-withdraw behaviour

We are interested in how you and your partner typically deal with problems in your relationship. Please rate each item on a scale of 1 (= very unlikely) to 9 (= very likely).

A. WHEN SOME PROBLEM IN THE RELATIONSHIP ARISES,

	Very Unlikely								Very Likely
1. <u>Mutual Avoidance</u> . Both members avoid discussing the problem.	1	2	3	4	5	6	7	8	9
2. <u>Mutual Discussion</u> . Both members try to discuss the problem.	1	2	3	4	5	6	7	8	9
3. <u>Discussion/Avoidance</u> .									
a. Man tries to start a discussion while Woman tries to avoid a discussion.	1	2	3	4	5	6	7	8	9
b. Woman tries to start a discussion while Man tries to avoid a discussion.	1	2	3	4	5	6	7	8	9

B. DURING A DISCUSSION OF A RELATIONSHIP PROBLEM,

1. <u>Mutual Blame</u> . Both members blame, accuse, and criticize each other.	1	2	3	4	5	6	7	8	9
2. <u>Mutual Expression</u> . Both members express their feelings to each other.	1	2	3	4	5	6	7	8	9
3. <u>Mutual Threat</u> . Both members threaten each other with negative consequences.	1	2	3	4	5	6	7	8	9
4. <u>Mutual Negotiation</u> . Both members	1	2	3	4	5	6	7	8	9

suggest possible solutions and compromises.

5. Demand/Withdraw.

a. Man nags and demands while Woman withdraws, becomes silent, or refuses to discuss the matter further. 1 2 3 4 5 6 7 8 9

b. Woman nags and demands while Man withdraws, becomes silent, or refuses to discuss the matter further. 1 2 3 4 5 6 7 8 9

6. Criticize/Defend.

a. Man criticizes while Woman defends herself. 1 2 3 4 5 6 7 8 9

b. Woman criticizes while Man defends himself. 1 2 3 4 5 6 7 8 9

Very
Unlikely

Very
Likely

7. Pressure/Resist.

a. Man pressures Woman to take some action or stop some action, while Woman resists. 1 2 3 4 5 6 7 8 9

b. Woman pressures Man to take some action or stop some action, while Man resists. 1 2 3 4 5 6 7 8 9

8. Emotional/Logical.

a. Man expresses feelings while Woman offers reasons and solutions. 1 2 3 4 5 6 7 8 9

b. Woman expresses feelings while Man offers reasons and solutions. 1 2 3 4 5 6 7 8 9

9. Threat/Back down.

a. Man threatens negative consequences and Woman gives in or backs down. 1 2 3 4 5 6 7 8 9

b. Woman threatens negative consequences and Man gives in or backs down. 1 2 3 4 5 6 7 8 9

10. Verbal Aggression.

a. Man calls Woman names, swears at her, or attacks her character. 1 2 3 4 5 6 7 8 9

b. Woman calls Man names, swears at him, or attack his character. 1 2 3 4 5 6 7 8 9

11. Physical Aggression.

a. Man pushes, shoves, slaps, hits, or kicks Woman. 1 2 3 4 5 6 7 8 9

b. Woman pushes, shoves, slaps, hits, or kicks Man. 1 2 3 4 5 6 7 8 9

C. AFTER A DISCUSSION OF A RELATIONSHIP PROBLEM,

1. Mutual Understanding. Both feel each other has understood his/her position. 1 2 3 4 5 6 7 8 9

2. Mutual Withdrawal. Both withdraw from each other after the discussion. 1 2 3 4 5 6 7 8 9

3. Mutual Resolution. Both feel that the problem has been solved. 1 2 3 4 5 6 7 8 9

4. Mutual Withholding. Neither partner is giving to the other after the discussion. 1 2 3 4 5 6 7 8 9

Very
Unlikely

Very
Likely

5. Mutual Reconciliation. After the discussion, both try to be especially nice to each other. 1 2 3 4 5 6 7 8 9

6. Guilt/Hurt.

a. Man feels guilty for what he said or did while Woman feels hurt. 1 2 3 4 5 6 7 8 9

b. Woman feels guilty for what she said or did while Man feels hurt. 1 2 3 4 5 6 7 8 9

7. Reconcile/Withdraw.

a. Man tries to be especially nice, acts as if things are back to normal, while Woman acts distant. 1 2 3 4 5 6 7 8 9

b. Woman tries to be especially nice, acts as if things are back to normal, while Man acts distant. 1 2 3 4 5 6 7 8 9

8. Pressure/Resist.

a. Man pressures Woman to apologize or promise to do better, while Woman resists. 1 2 3 4 5 6 7 8 9

b. Woman pressures Man to apologize or promise to do better, while Man resists 1 2 3 4 5 6 7 8 9

9. Support Seeking.

a. Man seeks support from others (parent, friend, children) 1 2 3 4 5 6 7 8 9

b. Woman seeks support from others (parent, friend, children) 1 2 3 4 5 6 7 8 9

Self-Concealment Scale - SCS

Larson, D. G., & Chastain, R. L. (1990). Self-concealment: Conceptualization, measurement, and health implications. *Journal of Social and Clinical Psychology*, 9, 439-455.

- All 10 items are used to indicate Self-Concealment

Please answer the following questions with reference to your spouse or romantic partner. Please indicate the extent of your agreement with each of the following statements using the scale below:

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

I have an important secret that I haven't shared with _____.	1	2	3	4	5
If I shared all my secrets with _____, _____ would like me less.	1	2	3	4	5
There are lots of things about me that I keep to myself.	1	2	3	4	5
Some of my secrets have really tormented me.	1	2	3	4	5
When something bad happens to me, I tend to keep it to myself.	1	2	3	4	5
I'm often afraid I'll reveal something I don't want to.	1	2	3	4	5
Telling a secret often backfires and I wish I hadn't told it.	1	2	3	4	5
I have a secret that is so private I would lie if _____ asked me about it.	1	2	3	4	5
My secrets are too embarrassing to share with _____.	1	2	3	4	5
I have negative thoughts about myself that I never share with _____.	1	2	3	4	5

Mediators – Affect

Affect - PANAS

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063-1070.

- Items 1, 4, 8, 9, 11, 13, 15, 16, 18, and 20 are used to indicate Positive Affect
- Items 2, 3, 5, 6, 7, 10, 12, 14, 17, and 19 are used to indicate Negative Affect

This scale consists of a list of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you generally feel this way, that is, how you feel on average. Use the following scale to record your answers.

	Not at all	Very slightly	Moderately	Quite a bit	Extremely
	1	2	3	4	5
On average, I tend to feel:					
1. Interested	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Distressed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Upset	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Strong	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Guilty	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Scared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Hostile	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Enthusiastic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Proud	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Irritable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Alert	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Ashamed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Inspired	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Nervous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Determined	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Attentive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Jittery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Active	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Afraid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Excited	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Alexithymia – TAS-20

Bagby, R. M., Parker, J. D. A., & Taylor, G. J. (1994). The twenty-item Toronto Alexithymia Scale – I. Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research*, 38, 23-32.

Bagby, R. M., Taylor, G. J., & Parker, J. D. A. (1994). The twenty-item Toronto Alexithymia Scale – II. Convergent, discriminant, and concurrent validity. *Journal of Psychosomatic Research*, 38, 33-40.

- All 20 items are used to indicate Alexithymia

Please answer the following questions about how you feel. Read each item and then indicate the extent to which you feel this way by selecting the appropriate box.

	Strongly Disagree				Strongly Agree
Statement	1	2	3	4	5
1. I am often confused about what emotion I am feeling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. It is difficult for me to find the right words for my feelings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I have physical sensations that even doctors do not understand.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I am able to describe my feelings easily.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I prefer to analyze problems rather than just describe them.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. When I am upset, I don't know if I am sad, frightened or angry.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I am often puzzled by sensations in my body.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I prefer to just let things happen rather than understand why they turned out this way.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. I have feelings that I cannot quite identify.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Being in touch with emotions is essential.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. I find it hard to describe how I feel about people.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. People tell me to describe my feelings more.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. I do not know what is going on inside me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. I often do not know why I am angry.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. I prefer talking to people about their daily activities rather	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

than their feelings.					
16. I prefer to watch "light" entertainment shows rather than psychological dramas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. It is difficult for me to reveal my innermost feelings, even to close friends.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. I can feel close to someone, even in moments of silence.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. I find examination of my feelings useful in solving personal problems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Looking for hidden meanings in movies or plays distracts from their enjoyment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Relationship Quality

Intimacy – Personal Assessment of Intimacy in Relationships (PAIR)

Schaefer, M. T., & Olson, D. H. (1981). Assessing intimacy: the PAIR Inventory. *Journal of Marital and Family Therapy*, 7, 47-60.

- 6 subscales
 - i. Emotional Intimacy (items 1, 7, 13r, 19, 25r, 31r)
 - ii. Social Intimacy (items 2, 8r, 14r, 20, 26, 32r)
 - iii. Sexual Intimacy (items 3, 9r, 15, 21r, 27, 33r)
 - iv. Intellectual Intimacy (items 4, 10r, 16r, 22r, 28, 34)
 - v. Recreational Intimacy (items 5, 11r, 17, 23, 29r, 35r)
 - vi. Conventionality (items 6, 12r, 18, 24, 30r, 36r)
- Reverse scored items are noted with 'r'
- Scale is 0 to 4
- Subscales are created by summing each of the items and multiplying by 4. Thus, each subscale score ranges from 0 to 96.
- Items 9, 10, 11, 13, 14, 15, 16, 21, 22, 25, 28, 29, 31, 32, and 33 were used to create the Engagement Variable

Indicate to what degree you agree or disagree with the following statements based on your current relationship with 0 = *strongly disagree* and 4 = *strongly agree*.

1. My partner listens to me when I need someone to talk to.	0	1	2	3	4
2. We enjoy spending time with other couples.	0	1	2	3	4
3. I am satisfied with the level of affection in our relationship.	0	1	2	3	4
4. My partner helps me clarify my thoughts.	0	1	2	3	4
5. We enjoy the same recreational activities.	0	1	2	3	4
6. My partner has all of the qualities I've always wanted in a mate.	0	1	2	3	4

7. I can state my feelings without him/her getting defensive.	0	1	2	3	4
8. As a couple, we usually "keep to ourselves."	0	1	2	3	4
9. I feel our level of affection is just routine.	0	1	2	3	4
10. When having a serious discussion, it seems we have little in common.	0	1	2	3	4
11. I share in few of my partner's interests.	0	1	2	3	4
12. There are times when I do not feel a great deal of love and affection for my partner.	0	1	2	3	4
13. I often feel distant from my partner.	0	1	2	3	4
14. We have few friends in common.	0	1	2	3	4
15. I am able to tell my partner when I want sexual intimacy.	0	1	2	3	4
16. I feel "put-down" in a serious conversation with my partner.	0	1	2	3	4
17. We like playing and having fun together.	0	1	2	3	4
18. Every new thing I have learned about my partner has pleased me.	0	1	2	3	4
19. My partner can really understand my hurts and joys.	0	1	2	3	4
20. Having time together with friends is an important part of our shared activities.	0	1	2	3	4
21. Because of my partner's lack of caring, I "hold back" my sexual interest.	0	1	2	3	4
22. I feel it is useless to discuss some things with my partner.	0	1	2	3	4
23. We enjoy the out-of-doors together.	0	1	2	3	4
24. My partner and I understand each other completely.	0	1	2	3	4
25. I feel neglected at times by my partner.	0	1	2	3	4
26. Many of my partner's closest friends are also my closest friends.	0	1	2	3	4
27. Sexual expression is an essential part of our relationship.	0	1	2	3	4
28. My partner seldom tries to change my ideas.	0	1	2	3	4
29. We seldom find time to do fun things together.	0	1	2	3	4
30. My partner has some negative traits that bother me.	0	1	2	3	4
31. I sometimes feel lonely when we're together.	0	1	2	3	4
32. My partner disapproves of some of my friends.	0	1	2	3	4
33. My partner seems disinterested in sex.	0	1	2	3	4
34. We have an endless number of things to talk about.	0	1	2	3	4
35. We share few of the same interests.	0	1	2	3	4
36. I have some needs that are not being met by my relationship.	0	1	2	3	4

Relationship Satisfaction – Relationship Assessment Scale (RAS)

Hendrick, S. S. (1988). A generic measure of relationship satisfaction. *Journal of Marriage and the Family*, 50, 93-98.

- Items 4 and 7 are reverse keyed
- Satisfaction score created by averaging all 7 items.

1. How well does your partner meet your needs?

☐ Poorly

 ☐

 ☐ Average

 ☐

 ☐ Very Well

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

☐ ☐ ☐ ☐ ☐
 Unsatisfied Average Very Satisfied

3. How good is your relationship compared to most?

☐ ☐ ☐ ☐ ☐
 Poor Average Excellent

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

☐ ☐ ☐ ☐ ☐
 Never Average Very Often

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

☐ ☐ ☐ ☐ ☐
 Hardly at all Average Completely

6. How much do you love your partner?

☐ ☐ ☐ ☐ ☐
 Not much Average Very much

7. How many problems are there in your relationship?

☐ ☐ ☐ ☐ ☐
 Very few Average Very many

Sternberg Triangular Love Scale

Sternberg, R. J. (1998). *Cupid's arrow: The course of love through time*. Cambridge, UK: Cambridge University Press.

Sternberg, R. J. (1997). Construct validation of a triangular love scale. *European Journal of Social Psychology*, 27, 313-335.

- 3, 15-item subscales: Intimacy (items 1-15), Passion (items 16-30), & Commitment (items 31-45)
- Scores for each subscale produced by averaging the associated 15 items

The blanks represent the person with whom you are in a relationship. Rate each statement on a 1-to-9 scale, where 1 = "not at all," 5 = "moderately," and 9 = "extremely." Use intermediate points on the scale to indicate intermediate levels of feelings. The rating should represent the

extent to which the statement is characteristic of your relationships. In other words, to what extent would you say that this statement reflects how you feel in your relationship?

1. I am actively supportive of _____'s well-being	1 2 3 4 5 6 7 8 9
2. I have a warm relationship with _____	1 2 3 4 5 6 7 8 9
3. I am able to count on _____ in times of need	1 2 3 4 5 6 7 8 9
4. _____ is able to count on me in times of need	1 2 3 4 5 6 7 8 9
5. I am willing to share myself and my possessions with _____	1 2 3 4 5 6 7 8 9
6. I receive considerable emotional support from _____	1 2 3 4 5 6 7 8 9
7. I give considerable emotional support to _____	1 2 3 4 5 6 7 8 9
8. I communicate well with _____	1 2 3 4 5 6 7 8 9
9. I value _____ greatly in my life	1 2 3 4 5 6 7 8 9
10. I feel close to _____	1 2 3 4 5 6 7 8 9
11. I have a comfortable relationship with _____	1 2 3 4 5 6 7 8 9
12. I feel that I really understand _____	1 2 3 4 5 6 7 8 9
13. I feel that _____ really understands me	1 2 3 4 5 6 7 8 9
14. I feel that I really can trust _____	1 2 3 4 5 6 7 8 9
15. I share deeply personal information about myself with _____	1 2 3 4 5 6 7 8 9
16. Just seeing _____ excites me	1 2 3 4 5 6 7 8 9
17. I find myself thinking about _____ frequently during the day	1 2 3 4 5 6 7 8 9
18. My relationship with _____ is very romantic	1 2 3 4 5 6 7 8 9
19. I find _____ to be very personally attractive	1 2 3 4 5 6 7 8 9
20. I idealize _____	1 2 3 4 5 6 7 8 9
21. I cannot imagine another person making me as happy as _____ does	1 2 3 4 5 6 7 8 9
22. I would rather be with _____ than with anyone else	1 2 3 4 5 6 7 8 9

23. There is nothing more important to me than my relationship with _____	1 2 3 4 5 6 7 8 9
24. I especially like physical contact with _____	1 2 3 4 5 6 7 8 9
25. There is something almost "magical" about my relationship with _____	1 2 3 4 5 6 7 8 9
26. I adore _____	1 2 3 4 5 6 7 8 9
27. I cannot imagine life without _____	1 2 3 4 5 6 7 8 9
28. My relationship with _____ is passionate	1 2 3 4 5 6 7 8 9
29. When I see romantic movies and read romantic books I think of _____	1 2 3 4 5 6 7 8 9
30. I fantasize about _____	1 2 3 4 5 6 7 8 9
31. I know that I care about _____	1 2 3 4 5 6 7 8 9
32. I am committed to maintaining my relationship with _____	1 2 3 4 5 6 7 8 9
33. Because of my commitment to _____, I would not let other people come between us	1 2 3 4 5 6 7 8 9
34. I have confidence in the stability of my relationship with _____	1 2 3 4 5 6 7 8 9
35. I could not let anything get in the way of my commitment to _____	1 2 3 4 5 6 7 8 9
36. I expect my love for _____ to last for the rest of my life	1 2 3 4 5 6 7 8 9
37. I will always feel a strong responsibility for _____	1 2 3 4 5 6 7 8 9
38. I view my commitment to _____ as a solid one	1 2 3 4 5 6 7 8 9
39. I cannot imagine ending my relationship with _____	1 2 3 4 5 6 7 8 9
40. I am certain of my love for _____	1 2 3 4 5 6 7 8 9
41. I view my relationship with _____ as permanent	1 2 3 4 5 6 7 8 9
42. I view my relationship with _____ as a good decision	1 2 3 4 5 6 7 8 9
43. I feel a sense of responsibility toward _____	1 2 3 4 5 6 7 8 9
44. I plan to continue in my relationship with _____	1 2 3 4 5 6 7 8 9
45. Even when _____ is hard to deal with, I remain committed to our relationship	1 2 3 4 5 6 7 8 9

Appendix 2 - Ethics Approval



Brock University

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Telephone (905) 688-5350 ext. 5035
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DATE: May 31, 2005

FROM: Linda Rose-Krasnor, Chair
Research Ethics Board (REB)

TO: Stan Sadava, Psychology
Nancy DeCOURVILLE

FILE: 04-392 - SADAVA

TITLE: The Brock University Social Health Study

The Brock University Research Ethics Board has reviewed the above research proposal.

DECISION: Accepted as clarified

However, you may want to add on consent that participants are free to withdraw at any time before pressing "submit". After submitting, data is anonymous and therefore cannot be withdrawn.

This project has received ethics clearance for the period of May 31, 2005 to June 01, 2008 subject to full REB ratification at the Research Ethics Board's next scheduled meeting. The clearance may be extended upon request. *The study may now proceed.*

Please note that the Research Ethics Board (REB) requires that you adhere to the protocol as last reviewed and approved by the REB. During the course of research no deviations from, or changes to, the protocol, recruitment, or consent form may be initiated without prior written approval from the REB. The Board must approve any modifications before they can be implemented. If you wish to modify your research project, please refer to <http://www.brocku.ca/researchservices/forms> to complete the appropriate form **Revision or Modification to an Ongoing Application**.

Adverse or unexpected events must be reported to the REB as soon as possible with an indication of how these events affect, in the view of the Principal Investigator, the safety of the participants and the continuation of the protocol.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and approvals of those facilities or institutions are obtained and filed with the REB prior to the initiation of any research protocols.

The Tri-Council Policy Statement requires that ongoing research be monitored. A Final Report is required for all projects upon completion of the project. Researchers with projects lasting more than one year are required to submit a Continuing Review Report annually. The Office of Research Services will contact you when this form *Continuing Review/Final Report* is required.

Please quote your REB file number on all future correspondence.