POST-TRAUMA RELATIONSHIP PROCESSES AND TRAUMA-RELATED DISCLOSURE IN FEMALE SURVIVORS OF SEXUAL ASSAULT

by

Jennifer DiMauro

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Master of Arts
George Mason University, 2014

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ABSTRACT

POST-TRAUMA RELATIONSHIP PROCESSES AND TRAUMA-RELATED DISCLOSURE IN FEMALE SURVIVORS OF SEXUAL ASSAULT

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George Mason University, 2017

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Approximately one in five women in the United States will experience unwanted sexual contact during her lifetime. Relative to survivors of other traumatic events, survivors of sexual assault have an increased likelihood of meeting criteria for posttraumatic stress disorder (PTSD) and higher levels of PTSD symptom severity. Recent research has highlighted the importance of social support – particularly within the context of intimate relationships – in post-trauma functioning and recovery. To date, however, the vast majority of this research has focused exclusively on male combat veterans and their female partners.

This dissertation addresses the need for additional empirical information regarding the intimate relationships of sexual assault survivors in two separate but related manuscripts. Both projects utilize data from a diverse sample of 153 adult women with a lifetime history of sexual assault who were in committed, monogamous relationships with

someone other than their assailant at the time of their participation. Participants were recruited through two sources: (1) online through ads on sexual assault survivor resource websites, and (2) via advertisements and flyers at university- and community-based trauma centers and outpatient psychological clinics, all of which are frequented by women presenting subsequent to a sexual assault. Participants reported on variables of interest via online questionnaires.

The first manuscript investigates the strength of the association between PTSD symptoms and intimate relationship satisfaction, as well as the role of several specific interpersonal processes: positive and negative communication, hostility, and frequency of and satisfaction with sexual relationship. Counter to hypotheses and previous research with combat veteran samples, PTSD and relationship satisfaction were not significantly correlated. Also, in models of direct and indirect effects, the direct effect of PTSD on relationship satisfaction was actually positive, while indirect effects through negative communication, positive communication, and sexual satisfaction were all significantly negative. Post-hoc analyses suggested that results for those who indicated that they were not currently participating in treatment (n = 109) were more similar to results from prior combat veteran samples. Specifically, results demonstrated a negative overall association of PTSD and relationship satisfaction for these individuals. Moreover, in the model of indirect and direct effects, there was a near-zero direct effect of PTSD but significant negative indirect effects via positive and negative communication and sexual satisfaction. In contrast, for those who were currently in treatment (n = 48), the direct effect of PTSD on relationship satisfaction was positive, with nonsignificant indirect effects. Of note,

these differences between those who were and were not currently in treatment were not statistically significant, as the sample was underpowered to detect such interactions. However, the results offer preliminary evidence to suggest that communication and sexual satisfaction may be particularly salient issues for sexual assault survivors' post-trauma psychopathological and relationship functioning, but participation in treatment may be associated with reduced impact of PTSD on interpersonal functioning.

The second manuscript examines the association of PTSD symptom severity with disclosure related to the experience of sexual assault to one's intimate partner, as well as the association of trauma-related shame and perception of partners' negative and positive responses to trauma-related disclosure. A subsample of 104 participants who had disclosed their experience of sexual assault to their current romantic partner was utilized to address these aims. These participants reported a moderate amount of trauma-related disclosure, with the vast majority of participants' responses clustered near the midpoint between "not at all" and "a great deal." Counter to hypotheses, level of engagement in trauma-related disclosure was unrelated to PTSD symptom severity. PTSD, shame, negative responses, and positive responses were all significantly positively correlated with each other, except for positive and negative responses, which were unrelated. Of these variables, only positive responses demonstrated a significant, bivariate association with level of disclosure, but when trauma-related shame, negative responses, and positive responses were accounted for simultaneously, both shame and positive responses were related (in expected directions). That shame was significant only in the multivariate analysis suggests that, within the context of female sexual assault survivors' romantic

relationships, positive responses from partners may overpower any individual experiences of shame in predicting engagement in trauma-related disclosure. When the effects of negative and positive responses are controlled, shame demonstrates the expected negative association with disclosure to one's partner.

INTRODUCTION

Epidemiological studies report that the majority of community residents in the United States have experienced at least one traumatic event (Breslau, 2009). Though the lifetime prevalence of posttraumatic stress disorder (PTSD) is only 7.3% in the general population (Roberts, Gilman, Breslau, Breslau, & Koenen, 2011), this subset is nonetheless vulnerable to several negative outcomes, such as depressive symptoms, substance abuse, concurrent medical problems, impairment in activities of daily living, and lost productivity (Ettner, Frank, & Kessler, 1997; Jayakody, Danziger, & Kessler, 1998; Karney, Ramchand, Osilla, Caldarone, & Burns, 2008; Kessler & Frank, 1997; Kessler & Greenberg, 2002). Furthermore, though there are a variety of effective therapeutic options available to those suffering from PTSD symptoms, an average of one-third of trauma survivors do not respond to treatment (e.g., Vickerman & Margolin, 2009; Watts et al., 2013). As such, further research is necessary to improve the effectiveness of treatments for trauma survivors.

Substantial research has demonstrated that a lack of social support is one of the strongest predictors of the development and maintenance of PTSD symptoms (meta-analyses by Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003). More specifically, recent research with veteran populations has shown that family/couple dysfunction is tied to less treatment-seeking in those with greater PTSD and depressive

symptomatology (Meis, Barry, Kehle, Erbes, & Polusny, 2010) and poorer treatment response for those who do seek treatment (Evans, Cowlishaw, Forbes, Parslow, & Lewis, 2010; Price, Gros, Strachan, Ruggiero, & Arcierno, 2011). Conversely, empirical studies have also shown that higher levels of PTSD symptoms are associated with significant distress in close relationships (meta-analyses by Lambert, Engh, Hasbun, & Holzer, 2012; Taft, Watkins, Stafford, Street, & Monson, 2011) across sex (meta-analysis by Taft et al., 2011) and different types of trauma (e.g., Courtois, 1979; DiLillo & Long, 1999; Koenen, Stellman, Sommer, & Stellman, 2008; Lunney & Schnurr, 2007).

These findings highlight the importance of social relationships – and intimate relationships in particular – for those who have experienced trauma. As such, addressing relationships in treatments for PTSD may help improve individual functioning in this population. Moreover, even when individual psychotherapies for PTSD produce overall improvements in psychosocial functioning, those improvements do not consistently extend to individuals' intimate relationship functioning (Schnurr, Hayes, Lunney, McFall, & Uddo, 2006). Thus, therapy that includes attention to such relationships (e.g., Monson et al., 2012) may help not only to improve reduction in PTSD and comorbid symptom severity, but also to improve relationship functioning in this population.

To inform such therapies, empirical knowledge about relationship functioning and specific interpersonal processes is critical. Studies have begun to investigate such constructs, but to date, the vast majority have focused exclusively on male combat veterans and their female partners (review by Campbell & Renshaw, 2017). Relative to other traumas, sexual assault is common, with over 200,000 cases per year in the United

States (RAINN, 2009). Sexual assault is also associated with some of the most severe psychological aftermath (e.g., Breslau, Davis, Andreski, & Peterson, 1991; Beck, Grant, Clapp, & Palyo, 2009; Dickinson et al., 1999; Kessler et al., 1995; Wirtz & Harrell, 1987). Although female sexual assault survivors with PTSD evidence a similar pattern of detachment and estrangement as combat veterans with PTSD (e.g., Graham et al., 2016), the findings from studies of the intimate relationships of male combat veterans might not extend to female sexual assault survivors, for a number of reasons.

First, for survivors of sexual assault in romantic relationships, potential triggers of their PTSD and related symptomatology (e.g., physical intimacy) are a fundamental aspect of the romantic relationship itself (e.g., Byrne & Riggs, 2002; Tolin & Foa, 2006). Indeed, significant research has demonstrated that physical intimacy and sexual functioning are integral to relationship satisfaction and functioning (e.g., Heiman et al., 2011; McCabe, 1999; McCarthy, 2003). Second, because sexual assault survivors tend to be female and combat veterans tend to be male (Kessler et al., 1995), sex differences may play a critical role in distinguishing the psychopathological and relationship functioning across these groups. Epidemiological research has consistently shown that female survivors of trauma are at higher risk than male survivors to develop PTSD generally (e.g., Breslau, 2009; Kessler et al., 1995) – and this risk is even more pronounced when the traumatic events involve assaultive violence (e.g., Breslau et al., 1998, Kessler et al., 1995, Stein, Walker, & Forde, 2000). Furthermore, an extensive quantitative review of sex differences in trauma response found that women who develop PTSD symptoms following trauma may be more likely than men to exhibit greater PTSD severity (e.g.,

Tolin & Foa, 2006). Empirical studies of long-term outcomes beyond psychopathology have also found evidence that, relative to men, women experience greater decrement to overall quality of life and well-being in response to traumatic events (e.g., Holbrook, Hoyt, Stein, & Sieber, 2002).

This dissertation consists of two empirical studies that address the need for additional empirical information regarding the intimate relationships of sexual assault survivors. In the first project (Chapter 2), I investigate the strength of the association between PTSD and relationship satisfaction, as well as the role of three intimate relationship variables that have been identified as potential underlying mechanisms of that association in male combat veterans: sexuality, communication, and hostility. In the second project (Chapter 3), I explore in greater depth one particular element of these relationships, trauma-related disclosure. Specifically, I examine the association of sexual assault-related disclosure to romantic partners, the association of such disclosure with PTSD symptom severity, and the potential role of trauma-related shame and perception of partners' negative and positive response to disclosure in overall levels of disclosure.

Both of these projects draw on data from a diverse sample of 153 adult women with a lifetime history of sexual assault. All participants were in committed, monogamous relationships with someone other than their assailant at the time of their participation. Participants were recruited online through ads on sexual assault survivor resource websites, or via advertisements and flyers at university- and community-based trauma centers and outpatient psychological clinics. Participants reported on variables of interest via online questionnaires. Ultimately, these projects provide some of the first

empirical investigations into specific interpersonal processes in the context of intimate relationships for female survivors of sexual assault.

PTSD AND RELATIONSHIP SATISFACTION IN FEMALE SURVIVORS OF SEXUAL ASSAULT: THE ROLES OF SEXUALITY, COMMUNICATION, AND HOSTILITY

Introduction

Substantial research has demonstrated that a lack of social support is one of the strongest predictors of the development and maintenance of posttraumatic stress disorder (PTSD) symptoms (meta-analyses by Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003). More specifically, recent research with veteran populations has shown that family/couple dysfunction is tied to less treatment-seeking in those with greater PTSD and depressive symptomatology (Meis, Barry, Kehle, Erbes, & Polusny, 2010) and poorer treatment response for those who do seek treatment (Evans, Cowlishaw, Forbes, Parslow, & Lewis, 2010; Price, Gros, Strachan, Ruggiero, & Arcierno, 2011). Conversely, empirical studies have also shown that higher levels of PTSD symptoms are associated with significant distress in close relationships across sex and trauma type (meta-analyses by Lambert, Engh, Hasbun, & Holzer, 2012; Taft, Watkins, Stafford, Street, & Monson, 2011). Moreover, even when individual psychotherapies for PTSD produce overall improvements in psychosocial functioning, these improvements do not consistently extend to individuals' intimate relationship functioning (Schnurr, Hayes, Lunney, McFall, & Uddo, 2006).

These associations between PTSD symptoms and various elements of interpersonal relationships highlight the importance of social relationships – and intimate

relationships in particular – for those who have experienced trauma. As such, addressing relationships in treatments for PTSD (e.g., Monson et al., 2012) may help enhance reductions in PTSD and comorbid symptom severity and improvements in relationship satisfaction. To inform such therapies, empirical knowledge about potential mechanisms of the association between PTSD symptoms and relationship functioning is critical. Studies have begun to identify such mechanisms, but to date, the vast majority have focused exclusively on male combat veterans and their female partners (review by Campbell & Renshaw, 2017).

Relative to other traumas, sexual assault is common, with over 200,000 cases per year in the United States (RAINN, 2009), and it is associated with some of the most severe psychological aftermath (e.g., Beck, Grant, Clapp, & Palyo, 2009; Dickinson et al., 1999; Kessler et al., 1995). Notably, research on DSM-5 symptom profiles suggests that female sexual assault survivors evidence a similar pattern of detachment and estrangement as combat veterans (e.g., Graham et al., 2016). However, no research study has yet examined the presence of an association between PTSD and relationship satisfaction in a sexual assault sample. This dearth in the literature is significant, given that the findings from studies of combat veterans might not extend to sexual assault survivors, due to sex differences (sexual assault survivors tend to be female and combat veterans tend to be male; Kessler et al., 1995), and differences in the nature of the traumatic events themselves.

The current study provides empirical information regarding the intimate relationships of sexual assault survivors. Specifically, in a sample of female sexual

assault survivors, I investigated the strength of the association between PTSD and relationship satisfaction, as well as the role of three intimate relationship variables: 1) sexuality, 2) communication, and 3) hostility. Each of these factors is discussed below.

Sexuality

Research has begun to explore the association between PTSD symptoms, sexuality, and relationship satisfaction. Cross-sectional research has shown that deficits in post-trauma physical intimacy may partially explain the association between PTSD symptoms and relationship functioning in survivors of non-sexual trauma and their partners (Dekel, Enoch, & Solomon, 2008; Nelson Goff, Crow, Reisbig, & Hamilton, 2007; Zerach, Anat, Solomon, & Heruti, 2010). Female sexual assault survivors may demonstrate a similar pattern of deficit and distress with regard to PTSD and physical intimacy (Byrne & Riggs, 2002). Sexual assault survivors frequently experience fear of sexual stimuli and dysfunction of arousal and desire, which may persist for years post-assault and which contribute to decreased participation, pleasure, and satisfaction in sexual activities (meta-analysis by van Berlo & Ensink, 2000). The relevant literature also suggests that sexual satisfaction and pleasure in sexual activities diminishes for the majority of survivors for at least 1 year after the assault (van Berlo & Ensink, 2000).

The intimate relationships of sexual survivors may also be unique due to the potential for physical intimacy to be a trauma-related trigger (e.g., Byrne & Riggs, 2002; Tolin & Foa, 2006). Thus, sexual problems may contribute to even greater increases in distress and impairment in this population relative to others. For example, combat veterans with PTSD do not endorse elevated fear-related avoidance of sexuality like

female sexual assault survivors do (e.g., Cosgrove et al., 2002; Hirsch, 2009; Hosain et al., 2013; Letourneau, Schewe, & Frueh, 1997; Riggs, Byrne, Weathers, & Litz, 1998). Moreover, veterans with combat-related PTSD symptoms do not typically encounter obvious and salient reminders of their trauma in the context of their relationships (e.g., Cosgrove et al., 2002; Hirsch, 2009; Hosain et al., 2013; Letourneau et al., 1997; Riggs et al., 1998). On the other hand, physical intimacy and sexual functioning, which are integral to relationship satisfaction and functioning (e.g., Heiman et al., 2011; McCabe, 1999; McCarthy, 2003), may be potential triggers of PTSD symptomatology in survivors of sexual assault survivors (e.g., Byrne & Riggs, 2002; Tolin & Foa, 2006). Therefore, female sexual assault survivors may evidence a significant association between PTSD, relationship satisfaction, and sexual variables, as a function of the pervasiveness of salient triggers and the presence of fear of sexuality.

Communication

Regular intimate communication and self-disclosure are hallmarks of functional romantic relationships (e.g., Laurenceau, Barrett, & Rovine, 2005). Yet significant research using varied methodologies with non-sexual trauma samples has demonstrated that individuals with PTSD evidence poorer relationship communication than those without PTSD (e.g., Al-Turkait & Ohaeri, 2008; Palmer, 2008). These findings are significant, given the importance of communication for women in relationships, regardless of PTSD. For instance, low levels of positive communication are associated with significant relationship distress and greater likelihood of divorce for married women but not men (Stanley, Markman, & Whitton, 2002). Furthermore, women's increased

engagement in general self-disclosure may serve as a protective factor against post-trauma psychopathology and related relationship distress (meta-analysis by Dindia & Allen, 1992). Relatedly, enhanced communication with intimate partners has been shown to offset the emotional numbing and avoidance associated with PTSD, as well as enhance emotional intimacy and relationship functioning (e.g., Monson et al., 2012), suggesting that communication problems may mediate the association between PTSD symptoms and relationship satisfaction (e.g., Allen, Rhoades, Stanley, & Markman, 2010; Glenn, Beckham, Feldman, Kirby, Hertzberg, & Moore, 2002). Accordingly, it is possible that female sexual assault survivors with PTSD may engage in lower levels of intimate communication, which in turn may be associated with decreased relationship satisfaction.

Hostility

Hostility and anger are hallmarks of PTSD, and are associated with a variety of negative health outcomes and impairments in relationship functioning (e.g., Linder, Crick, & Collins, 2002; Vrana et al., 2009). Notably, women may evidence low levels of hostility and aggression generally (e.g., Archer, 2004), but the current empirical research related to women's post-trauma hostility and aggression is mixed. Specifically, though one meta-analysis revealed that trauma-exposed adults report significantly higher levels of these constructs than those without PTSD (Orth & Wieland, 2006), women may be more likely to experience and express internalizing problems, relative to externalizing problems, in response to trauma (Gavloski, Blain, Chappuis, & Fletcher, 2013; Kirz, Drescher, Klein, Gusman, & Schwartz, 2001; Miller & Resick, 2007). Furthermore, a meta-analysis of PTSD symptoms and intimate relationship problems demonstrated that

women with a diagnosis of PTSD are less likely than their male counterparts to engage in physical aggression – but are still more likely to do so than women with non-clinical levels of PTSD (Taft et al., 2011). Accordingly, it is possible that hostility may partially account for the association between PTSD symptom severity and relationship satisfaction for female survivors of sexual assault.

Summary

In sum, female survivors of sexual assault are expected to evidence a significant association between PTSD symptom severity and relationship satisfaction. Given the nature of sexual assault, decreased sexual frequency and satisfaction are hypothesized to account for greater variance in that association, relative to impaired communication and greater hostility. Results supporting this hypothesis will clarify unique treatment targets for sexual assault survivors seeking both individual- and couple-level therapies.

Method

Participants and Procedures

Advertisements were posted and flyers were made available at university- and community-based trauma centers and outpatient psychological clinics, all of which are frequented by women presenting subsequent to a sexual assault. Additionally, targeted online advertisements were posted on sexual assault survivor resource support sites. All recruitment materials directed interested individuals to the study website, which included information about the study, the informed consent document, and an online screening survey. The screening survey determined participant eligibility based on the following inclusion criteria: individuals had to (1) be at least 18 years old, proficient in English, and able to pass informed consent comprehension questions; (2) identify as female; (3)

continue to experience distress from a sexual assault perpetrated by someone other than their current partner; and (4) be in a significant heterosexual relationship, defined as a married, cohabiting for at least 3 months, or in a committed monogamous relationship for at least 6 months. The screening survey forwarded eligible participants to the full survey, or informed ineligible participants of their disqualification and thanked them for their time.

A total of 230 individuals completed the eligibility screen. Of these, 25 did not consent to participate in the full survey, 16 were not currently in a romantic relationship, 13 had experienced unwanted sexual contact from their current partner, 9 were male, and 3 denied a history of unwanted sexual contact. The remaining 164 individuals were enrolled in the study. After completion, participants were compensated with an electronic gift card for their participation.

Due to the online nature of the study, multiple validity checks were employed. First, several multiple-choice questions with simple, factual answers (e.g., “The dog has four…: a) eyes, b) teeth, c) legs, d) tails”) were interspersed throughout the survey to identify participants who might be selecting responses at random. Three participants failed at least one validity check, resulting in their removal from the study. IP addresses were also checked, with seven back-to-back completions from the same IP address identified. These seven participants were removed. Finally, 1 participant was removed due to completing the survey in more than one standard deviation less than the average completion time. The removal of these 11 individuals resulted in a final sample size of 153 participants.

Measures

Demographics and background. Demographic information collected included participant gender, partner gender, age, racial and ethnic background, income, highest level of education, relationship status, relationship length, and time cohabitating. Additional background information included self-reports of previous and current psychiatric history (including diagnosis and relevant treatment) using face-valid questions (e.g., "yes" or "no" response to the query, "Are you currently receiving treatment for psychological distress?"). Participants also provided specific information about their most recent sexual assault – including time since assault, relationship to the assailant, gender of the assailant, multiple vs. single assailants, and relationship status at the time of assault – via face-valid items.

Posttraumatic stress. Participants completed the *PTSD Checklist* (PCL-5; Weathers et al., 2013). The PCL-5 is a 20-item, self-report, Likert-type scale that assesses symptoms of PTSD based on the criteria in the *Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition* (American Psychiatric Association, 2013). This scale has high internal consistency, test-retest reliability, and convergent and discriminant validity (e.g., Blevins et al., 2015; Bovin et al., 2016). Each item reflects one of the specific criteria for PTSD, and is answered on a scale from 0 (*not at all*) to 4 (*extremely*). Weathers et al. (2013) propose a cutoff score of 33 as indicative of probable PTSD. Participants' mean score was 30.05 (SD = 23.04), with 40.7% scoring 33 or greater. The measure demonstrated strong internal consistency ($\alpha = .97$) in the present sample. Of note, this range is consistent with that of combat veterans in empirical studies examining similar constructs (e.g. Campbell & Renshaw, 2013).

Relationship satisfaction. Participants provided self-report of relationship satisfaction using the 4-item version of the *Couples Satisfaction Index* (CSI-4; Funk & Rogge, 2007), which was developed from item response theory analyses of data from over 5,000 participants and demonstrates strong convergent validity and excellent construct validity. This measure queries respondents about their degree of happiness, warmth and comfort, feelings of reward, and overall satisfaction in their current relationship. It demonstrated strong internal consistency ($\alpha = .92$) in the present sample.

Communication. Participants completed the short form of the *Communication Patterns Questionnaire* (CPQ-SF; Furtis, Campbell, Nielsen, & Burwell, 2010), an 11-item Likert-type scale that measures how partners handle problems in their relationship using various strategies from 1 (*very unlikely*) to 9 (*very likely*). This measure includes subscales assessing negative communication (demand/withdrawal across both partners) and positive communication. The CPQ-SF demonstrates adequate internal consistency and validity (Furtis et al., 2010), and the negative communication ($\alpha = .88$) and positive communication ($\alpha = .89$) subscales demonstrated adequate internal consistency in the present sample.

Hostility. Participants completed the short form of the *Revised Conflict Tactics Scale* (Straus & Douglas, 2004), a 20-item measure assessing three tactics used in response to conflict in romantic relationships. Nine of these items constitute the established hostility subscale. Both the overall measure and the hostility subscale demonstrate strong concurrent and construct validity (Straus & Douglas, 2004). The hostility subscale demonstrated strong internal consistency ($\alpha = .93$) in the present

sample.

Sexual functioning. Participants provided self-report of sexual frequency using an individual face-valid item querying participants about the average number of times they had sexual contact with their partner during the course of a week. Participants also completed the *Female Sexual Function Index* (FSFI; Rosen et al., 2000), a 19-item, face-valid Likert-type scale of female sexual satisfaction and functioning over the past 4 weeks. Both the overall measure and the established sexual satisfaction subscale demonstrate excellent internal consistency (e.g., Rosen et al., 2000). The sexual satisfaction subscale, which is calculated using three of the 19 scale items, demonstrated adequate internal consistency ($\alpha = .87$) in the present sample.

Data Analysis

Prior to all analyses, variables were checked for normality, and transformed if needed. The RCTS hostility subscale score demonstrated a positive skew, which was corrected using a log transformation prior to its inclusion in any statistical analyses. All other variables were found to be normally distributed. After evaluating basic descriptive statistics and intercorrelations, the primary mediation hypotheses were evaluated using the Preacher & Hayes (2004, 2008) bootstrapping approach with 5,000 resamples. This approach generates estimates of direct and indirect effects, along with confidence intervals. If the upper and lower bounds of a 95% confidence interval do not contain zero, the effect is deemed significant. Potential mediators were evaluated simultaneously. The mediation model was run four times: 1) without covariates, 2) with time since assault entered as a covariate, 3) with relationship length entered as a covariate, and 4) with

developmental period at time of assault entered as a covariate. Because the pattern of indirect effects remained consistent across models when all covariates were added, results are reported without covariates.

Results

The sample was comprised entirely of female participants. Complete sample demographics are reported in Table 1.

Table 1

Sample Demographics

	n (%)
Relationship Status	
Married	24 (15.7%)
Engaged	19 (12.4%)
Planning marriage	40 (26.1%)
Committed relationship	70 (45.8%)
Race	
White/Caucasian	89 (58.2%)
Black/African-American	23 (15.0%)
Asian/Asian-American	15 (9.8%)
American Indian/Alaskan Native	4 (2.6%)
Biracial/Multiracial	4 (2.6%)

Hispanic/Latino-a	17 (11.1%)
Other	1 (0.7%)

The majority were in heterosexual relationships (94.8%), with a wide variety of relationship statuses and significant racial/ethnic diversity. Participants reported a mean age of 28.46 years (SD = 6.02), and a mean relationship length of 3.97 years (SD = 3.32). All participants endorsed a history of unwanted sexual contact, with an average time since assault of 6.29 years (*SD* = 6.20). For 41.8% of the sample, the incidence of unwanted sexual contact occurred during adulthood; for another 35.9%, it occurred prior to age 18; and the remainder (22.2%) endorsed unwanted sexual contact during both childhood and adulthood. Of those who provided relevant data, the majority reported that their assailant was male (93.48%) and that they had experienced unwanted sexual contact more than once (88.65%). A sizable minority of participants (23.8%) reported being engaged in psychological treatment of some kind at the time of study participation.

Descriptive statistics and intercorrelations for all variables of interest are reported in Table 2.

Table 2

Means, Standard Deviations, and Intercorrelations for All Variables

	Mean (*SD*)	1	2	3	4	5	6

1. PTSD Symptoms	30.05 (23.04)						
2. Relationship Satisfaction	13.95 (4.60)	-.10					
3. Sexual Satisfaction	10.85 (3.30)	-.29***	.54***				
4. Sexual Frequency	6.10 (5.50)	.41***	-.08	.09			
5. Negative Communication	19.24 (9.89)	.28**	-.52***	-.36***	.23**		
6. Positive Communication	20.33 (6.17)	-.38***	.66***	.526***	-.22**	-.47***	
7. Hostility[†]	4.91 (9.10)	.58***	-.40***	-.32***	.53***	.56***	-.59***

Note. PTSD = Posttraumatic stress disorder.

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

[†] The mean and standard deviation are reported for the untransformed version of this variable. Due to its non-normal distribution, correlations are reported with the log transformed version.

Nearly all variables demonstrated significant correlational relationships with each other. Notably, however, PTSD and relationship satisfaction were not significantly related. This result was in contrast to findings from the vast literature on combat veterans.

Despite the lack of bivariate correlation between PTSD and relationship satisfaction, analyses of indirect and direct effects were conducted, in line with recommendations by multiple statisticians (e.g., MacKinnon, Lockwood, & Williams, 2004; Shrout & Bolger, 2002). The mediation model incorporating all proposed mediators simultaneously was significant ($F[1, 140] = 9.86$, $p < .01$; $R^2 = .07$). Results from this model are reported in Table 3.

Table 3

Direct and Indirect Effects (via Proposed Mediators) of PTSD on Relationship Satisfaction for Comprehensive Model

	Direct Effects			Indirect Effect of PTSD via Specific Mediators		
	B	SE	*t*	B	SE	95% CI
PTSD	0.29	0.07	4.13***	--	--	--
Sex. Satis.	0.27	0.07	4.02***	-0.08	0.03	(-0.16, -0.03)†
Sex. Fre.	-0.03	0.07	-0.50	-0.01	0.03	(-0.07, 0.04)
Neg. Comm.	-0.28	0.08	-3.94***	-0.07	0.03	(-0.16, -0.02)†
Pos. Comm.	0.48	0.07	6.47***	-0.18	0.05	(-0.29, -0.09)†
Hostility	0.01	0.09	0.15	0.01	0.06	(-0.12, 0.13)

Note. PTSD = Posttraumatic stress disorder; Sex. Satis. = sexual satisfaction; Sex. Fre. = sexual frequency; Neg. Comm. = negative communication; Pos. Comm. = positive communication; CI = confidence interval.

*** $p < .001$.

† 95% CI does not contain 0, indicating that the indirect effect is significant at $p < .05$.

The direct effect of PTSD on relationship satisfaction was significant, but in a positive direction. Significant, negative indirect effects of PTSD were detected through negative communication, positive communication, and sexual satisfaction. The indirect effects of PTSD through hostility and sexual frequency were nonsignificant. These findings suggest that, when all variables of interest are considered simultaneously, PTSD symptoms have significant, negative indirect effects on relationship satisfaction via communication and sexual satisfaction. Notably, positive communication appeared to convey the strongest indirect effect, contradicting the hypothesis that sexual satisfaction would be the strongest mediator.

Post-hoc Analyses

Because the lack of a significant bivariate association between PTSD and relationship satisfaction ran counter to findings from the vast literature on trauma survivors in general, I conducted several post-hoc tests of potential moderators of this association. The variables tested included: (1) relationship status, (2) developmental period at the time of assault, (3) history of treatment engagement, and (4) current engagement in treatment. These variables were selected, given that most prior research

has focused on married/engaged couples, that survivors of childhood sexual assault may differ from other sexual assault survivors, and that there may be treatment effects. The correlation coefficients representing the association between PTSD symptom severity and relationship satisfaction were compared across the four sets of groups, using a formula from Hays (1988). The association did not differ significantly across three of the grouping variables: relationship status (all *Z*s < 1.30, all *p*s > .200), developmental period at the time of assault (all *Z*s < 1.80, all *p*s > .067), or history of treatment engagement (*Z* = 0.86, *p* = .391). However, the correlation between PTSD symptom severity and relationship satisfaction significantly differed based on whether participants were or were not currently participating in treatment (*z* = -1.89, *p* = .044). For those not currently participating in treatment, the correlation was significantly negative (*r* = -.22, *p* = .028), consistent with prior findings from samples of survivors of other types of trauma. In contrast, the correlation was nonsignificant for those who were currently in treatment (*r* = .13, *p* = .425).

Given this difference, I examined whether participants' PTSD symptom severity and relationship satisfaction differed based on current treatment engagement, using two ANOVAs. PTSD symptom severity significantly differed across groups (*F*[1, 144] = 37.77, *p* < .001), such that those who were currently participating in treatment reported significantly higher levels of PTSD (*M* = 46.21, *SD* = 18.97) than those who were not (*M* = 23.24, *SD* = 21.19). Relationship satisfaction did not differ across the two groups (*F*[1, 152] = 0.10, *p* = .76).

To further explore this possible difference, the dichotomous "current participation in treatment" variable was integrated as a moderator in the comprehensive model of direct and indirect effects. Although significant moderation was not detected (likely due to lack of power), the pattern of results was noteworthy. For those currently in treatment, the conditional direct effect of PTSD on relationship satisfaction was significantly positive (B = 0.40, SE = 0.13, p = .002), and all indirect effects were nonsignificant (see Table 5). In contrast, for those not currently in treatment, the conditional direct effect of PTSD was nonsignificant (B = 0.12, SE = 0.10, p = .243), and indirect effects via negative communication, positive communication, and sexual satisfaction were all significantly negative (see Table 4).

Table 4

Indirect Effects (via Proposed Mediators) of PTSD on Relationship Satisfaction at Both Values of the Moderator

	Moderator Value	Indirect Effects		
		B	SE	95% CI
Sexual Satisfaction				
	No Current Treatment	-0.05	0.04	(-0.15, -0.00)[†]
	Current Treatment	-0.11	0.09	(-0.34, 0.03)
Sexual Frequency				
	No Current Treatment	0.06	0.04	(-0.01, 0.16)
	Current Treatment	-0.04	0.06	(-0.22, 0.01)

Negative Communication				
	No Current Treatment	-0.10	0.05	(-0.23, -0.02)†
	Current Treatment	-0.02	0.04	(-0.17, 0.03)
Positive Communication				
	No Current Treatment	-0.18	0.07	(-0.35, -0.07)†
	Current Treatment	-0.01	-0.11	(-0.21, 0.24)
Hostility				
	No Current Treatment	-0.02	0.08	(-0.19, 0.14)
	Current Treatment	0.01	0.05	(-0.04, 0.20)

Note. CI = confidence interval.

† 95% CI does not contain 0, indicating that the indirect effect is significant at $p < .05$.

Discussion

Substantial research in military samples has demonstrated that PTSD symptoms and intimate relationship processes are interlinked in multiple ways. The current study aimed to extend this knowledge to female sexual assault survivors, a group that has not yet been studied in this context. Although the means and ranges of PTSD symptom severity and relationship satisfaction in this sample were consistent with other empirical research examining similar constructs (meta-analysis by Taft et al., 2011), the association of these variables was surprisingly nonsignificant in this sample. Notably, the small effect size and reasonable size of the sample argue against the possibility of low power as a reason for this finding. Post-hoc analyses revealed different patterns of associations for

those who were and were not currently in treatment. Specifically, those who were not currently in treatment demonstrated a significantly negative correlation between PTSD symptom severity and relationship satisfaction, consistent with prior research in other samples. In contrast, for those who were in treatment, PTSD and relationship satisfaction were uncorrelated. Thus, it may be that the individuals who were in treatment in this sample were somehow fundamentally different than other samples of trauma survivors, or it may be that treatment had a mitigating effect on this association. Given the post-hoc nature of these analyses and the lack of power to detect interactions, further research is needed to address this possibility.

The revelation of a positive direct effect of PTSD on relationship satisfaction in multivariate analyses that controlled for specific relationship processes also ran counter to previous research with combat veterans (review by Campbell & Renshaw, 2017). It is possible that, once the variance from specific relationship processes like impaired communication is removed, higher levels of PTSD may have a positive effect in some relationships, such that a partner may initially feel needed or important by assuming a caretaker role for the comparatively dependent survivors. In relationships of female survivors with male partners, this dynamic may also be reinforced by gender roles and expectations. It is also possible that, once specific relationship processes are factored out of the association of PTSD with relationship satisfaction, the remaining aspects of PTSD symptoms reflect a greater self-awareness and self-monitoring of one's distress. Such awareness may help improve relationship satisfaction directly or indirectly, perhaps by leading survivors to engage in treatment and thereby reducing partner burden. This

interpretation is bolstered by the finding that those who were currently participating in treatment reported significantly higher levels of PTSD than those who were not. Furthermore, the pattern of effects in the mediation models suggest that the direct positive effect of PTSD on relationship satisfaction was particularly pronounced in the subset of individuals who were currently in treatment, and near zero for those not in treatment. Given the post-hoc nature and reduced power associated with these results, however, further research is again needed to address this possibility.

In spite of the lack of association of PTSD with relationship satisfaction in the entire sample, findings suggested that survivors experiencing higher levels of PTSD had intimate relationships that were characterized by more conflict, less positive communication, and less satisfaction with physical intimacy. Furthermore, all of these variables were, in turn, associated with reduced relationship satisfaction. This pattern of effects remained consistent even when controlling for time since assault, relationship length, and developmental period at the time of assault. Results from the post-hoc analyses further suggested that these indirect effects were particularly pronounced for the subset of participants who were not currently engaged in treatment. These results are somewhat consistent with findings that couples-based therapy for PTSD is associated with decreases in PTSD symptom severity, improvements in communication, and enhanced relationship functioning and satisfaction (e.g., Monson, 2012). It is also possible that the positive impact of individual therapy on survivors' functioning could benefit the relationship, or that the act of seeking treatment may improve relationship functioning or encourage hope in both partners, However, the cross-sectional nature of

the data prevents causal inferences.

The findings that female survivors of sexual assault evidence high levels of negative communication and low levels of positive communication suggest that impaired communication may be critical to post-trauma relationship functioning in this population. Accordingly, the tendency for women to communicate more effectively than men in romantic relationships may be overwhelmed by the effects of trauma on communication.

With regard to sexuality, only individuals' satisfaction accounted for significant variance when considered in tandem with communication and hostility. For sexual assault survivors, post-trauma sexual frequency may be related more to habit, or personal or partner expectations, than a desire for or enjoyment of sexual contact, resulting in a negligible association with relationship satisfaction. Comparatively, sexual assault is likely to affect enjoyment in sexual contact (Byrne & Riggs, 2002), which, as a critical aspect of romantic relationship functioning (e.g., Heiman et al., 2011; McCabe, 1999; McCarthy, 2003), may impact relationship satisfaction. Increasing sexual assault survivors' sexual satisfaction, regardless of sexual frequency, may thus be particularly important for this population's post-trauma functioning. Of note, sexual frequency and sexual satisfaction were unrelated in this sample, which contrasts with previous findings in non-clinical samples (e.g., Laumann, Gagnon, Michael, & Michaels, 1994). Additional research is thus needed to investigate whether this lack of association is replicated in other sexual assault survivor samples.

Taken together, the results of the present study suggest that negative communication, positive communication, and sexual satisfaction are salient issues for

sexual assault survivors' post-trauma psychopathological and relationship functioning. Moreover, post-hoc analyses suggest that participation in treatment may offset (or be associated with other factors that offset) these effects in some way. It is possible that treatment helps to reduce some of the negative effects of impaired communication and sexual dissatisfaction. However, it is also possible that those who seek out and engage in treatment may differ individually and/or relationally from those who do not participate in treatment.

Strengths, Limitations, and Future Directions

The primary strengths of the present study include the relative diversity of the sample and the examination of post-trauma relationships in survivors of sexual assault, who have not yet been studied in this context. However, there are multiple limitations to consider when interpreting the findings. First, all assessment relied on retrospective, self-report scales. Thus, the results are subject to multiple sources of bias. Additionally, the data were cross-sectional, which prohibits any causal inferences. Also, only survivors (and not their romantic partners) completed measures. In studies of romantic relationships, gathering data from both partners allows for a more comprehensive examination of the couple. Further, despite the relative diversity of the sample with regard to race/ethnicity, relationship status, and timing of assault, findings from the present study may not be fully generalizable to (1) female sexual assault survivors in non-heterosexual relationships, (2) male survivors of sexual assault, (3) survivors of multiple types of trauma, (4) more clinically severe populations, or (5) samples with greater diversity of age and relationship length. Specifically, the average PTSD symptom

severity in the present sample was subclinical, leaving questions about the replicability of findings in clinical samples. Finally, the post-hoc analyses were complicated by low power. Accordingly, the associated results should be interpreted with caution, and similar analyses should be replicated in future studies with larger samples.

These limitations notwithstanding, this study presents the first empirical findings of this nature in an important and understudied population. The results present preliminary evidence that female survivors of sexual assault who are experiencing PTSD symptoms but are not in treatment may suffer in their romantic relationships. Moreover, communication and sexual satisfaction may be important mechanisms of relationship distress in this population. Accordingly, future research should examine more closely particular aspects of and responses to communication (e.g., trauma-related disclosure) and specific facets of sexual satisfaction and functioning (e.g., desire, arousal) in these couples. Such investigations could significantly expand the literature, and may have significant implications on the current understanding of trauma reactions following sexual assault, and ultimately, expand existing treatment approaches for this population.

TRAUMA-RELATED DISCLOSURE IN SEXUAL ASSAULT SURVIVORS' INTIMATE RELATIONSHIPS: ASSOCIATIONS WITH PTSD, SHAME, AND PARTNERS' RESPONSES

Introduction

Approximately one in five women in the United States will be raped in her lifetime (Koss, 1993). Survivors of sexual assault regularly experience heightened fear, anxiety, and depression (see reviews by Frazier & Borgida, 1997; Resick, 1993), as well as substance abuse, impairment in activities of daily living, and lost productivity for several months, and sometimes years, post-assault (Ettner, Frank, & Kessler, 1997; Jayakody, Danziger, & Kessler, 1998; Kessler & Frank, 1997; Kessler & Greenberg, 2002). Experience of assault is also associated with significant medical problems, and is a more powerful predictor of physician visits and outpatient medical costs than several other factors (e.g., age, smoking, alcohol use) known to be related to health problems (Koss, Koss, & Woodruff, 1991). Additionally, relative to other types of traumatic events, sexual assault is associated with some of the most severe psychological aftermath, including an increased likelihood of meeting criteria for posttraumatic stress disorder (PTSD) and greater PTSD symptom severity (e.g., Breslau, Davis, Andreski, & Peterson, 1991; Beck, Grant, Clapp, & Palyo, 2009; Dickinson et al., 1999; Kessler et al., 1995; Tolin & Foa, 2006; Wirtz & Harrell, 1987).

One critical factor to post-trauma functioning and recovery is engagement in trauma-related disclosure (e.g., Frattaroli, 2006; Guay, Billette, & Marchand, 2006; Sloan

& Wisco, 2014). Trauma survivors predominantly disclose to support sources, because they believe that such disclosure will help them to feel better (Marriott, Lewis, & Gobin, 2016). Indeed, trauma-related disclosure to sources of social support is associated with significant reductions in PTSD and depression, as well as significant increases in posttraumatic growth (e.g., Gray et al., 2012). Along these lines, the potential benefit of emotional disclosure to supportive others is often cited as a key mechanism underlying the well-established association of social support with reduced post-trauma distress (e.g., Guay et al., 2006). From this perspective, perceived social support reflects both survivors' opportunity to disclose about a traumatic event (e.g., Sloan & Wisco, 2014) and the quality of others' responses to such disclosures (e.g., Frattaroli, 2006).

Trauma-related disclosure within the context of intimate relationships may be particularly important (e.g., Frattaroli, 2006; Guay et al., 2006; Sloan & Wisco, 2014), given that romantic partners are a primary source of social support for adults (Doherty & Feeney, 2004). Furthermore, some research suggests that trauma survivors may be particularly likely to disclose to romantic partners, whom they perceive to be concerned about and invested in their well-being (Marriott, Lewis, & Gobin, 2016). In support of these ideas are findings from a handful of recent studies that document links between enhanced disclosure to romantic partners and lower symptoms of PTSD in combat veterans (Balderrama-Durbin et al., 2013; Campbell & Renshaw, 2013; Hoyt, Renshaw, & Pasupathi, 2013; Monk & Nelson Goff, 2014). Additionally, strategic approach therapy, which is designed to reduce PTSD symptoms through disclosure exercises with an intimate partner (Sautter et al., 2009), has been shown to effectively decrease

symptom severity (Sautter et al., 2015). However, there has been no study of trauma-related disclosure within the context of intimate relationships in survivors of sexual assault.

This dearth in the literature is significant, given that the romantic relationships of survivors of sexual assault may differ from relationships of survivors of other traumas. Potential triggers of sexual assault survivors' PTSD and related symptoms include physical intimacy and sexual functioning (e.g., Byrne & Riggs, 2002; Tolin & Foa, 2006), which are integral to relationship satisfaction and functioning (e.g., Heiman et al., 2011; McCabe, 1999; McCarthy, 2003). Furthermore, those who have experienced unwanted sexual contact within the context of a prior romantic relationship may have broader negative associations with such relationships, as well as difficulty trusting subsequent romantic partners. Thus, the nature of sexual trauma is intertwined with intimate relationship functioning, but no empirical research has yet examined trauma-related disclosure within the context of sexual assault survivors' intimate relationships. Accordingly, the primary goal of the current study is to explore the extent of trauma-related disclosure to partners, and the association of such disclosure with PTSD symptoms, in a sample of female sexual assault survivors in romantic relationships.

Given the potential importance of trauma-related disclosure to intimate partners for sexual assault survivors, the current literature would also benefit from a greater understanding of what factors may relate to level of engagement in such disclosure. One key correlate of avoidance of trauma disclosure is shame (Sable, Danis, Mauzy, & Gallagher, 2006; Thompson, Sitterle, Clay, & Kingree, 2007), and this association is even

stronger for survivors of sexual assault relative to survivors of other types of physical assault (Thompson et al., 2007). Current research suggests that the association between higher shame and reduced disclosure in this population may be due, in part, to fear of negative judgement from others (Budden, 2009). Fear of negative judgment following sexual assault is understandable – substantial research demonstrates that negative reactions to survivors of sexual assault (Aherns, Campbell, Ternier-Thames, Wasco, & Sefl, 2007; Campbell et al., 1999; Starzynski, Ullman, Filipas, & Townsend, 2005) and victim-blaming (e.g., Feiring & Taska, 2005; Filipas & Ullman, 2001; Fontana, Swartz, & Rosenheck, 1997; Ullman, 2010) are unfortunately common. Such reactions are associated with significant dysfunction in romantic relationships (Campbell, Aherns, Sefl, Wasco, & Barnes, 2001; Ullman, 2000), and are particularly pronounced in terms of men's responses to women who have been assaulted (Grubb & Harrower, 2013). To date, no empirical research has yet empirically investigated the associations of trauma-related disclosure, shame, and perceived negative responses within the context of intimate relationships.

It is possible that shame and feared negative judgment from romantic partners may demonstrate the same – or perhaps even a greater – impact as in other relationships. Specifically, survivors may be more likely to value their partners' opinions and attitudes over others' – and perhaps even their own. Thus, if partners respond negatively to trauma-related disclosure, such as by placing blame on the survivor, the survivor may be influenced to hold more negative beliefs about herself and to be less likely to disclose generally and to her partner specifically. Alternatively, the partner's role as a primary

source of social support may override the influence of shame, and perhaps even negative responses, resulting in a lack of association between these constructs and level of engagement in trauma-related disclosure.

Interestingly, prior research in this area has distinguished between positive and negative responses, with evidence that they are not simply opposites (e.g., Andrews, Brewin, & Rose, 2003; Ullman, 1996b; Ullman & Filipas, 2001, 2005). In such studies, positive responses demonstrate less consistent associations with post-trauma functioning. Some research reports that positive reactions have negligible associations with other factors (Andrews et al., 2003; Ullman, 1996b; Ullman, 1999), while other studies suggest that they may be associated with decreased self-blame, as well as significant reductions in PTSD (Ullman, 1996a; Campbell et al., 2001). In the context of intimate relationships, partners' positive responses to one's disclosure of sexual assault may be more likely to demonstrate clear benefits, due to partners' impactful role as a primary supporter. Indeed, trauma survivors may be more likely to disclose to their romantic partners, because they generally believe their partner may be uniquely sympathetic to and understanding of their distress, or concerned about and invested in their well-being (Marriott et al., 2016). If these beliefs are bolstered by specific perceptions that their partner responds sympathetically and supportively to their assault, survivors may be even more likely to disclose, or to disclose more. Surprisingly, however, no research has yet evaluated the associations of perceived positive responses to disclosure with overall levels of sexual assault survivors' disclosure to their romantic partners.

Aims and Hypotheses

The primary aim of the current study was to examine the association between sexual assault-related disclosure and PTSD symptom severity within the context of intimate relationships, with the hypothesis that trauma-related disclosure and PTSD symptom severity would be significantly, negative correlated. The secondary aim of the current study was to analyze the association of trauma-related disclosure to intimate partners with trauma-related shame, and perception of partners' negative and positive response to disclosure. In addition to basic associations, I examined the relative contributions of trauma-related shame and perception of partners' responses to the prediction of engagement in trauma-related disclosure. Shame and partners' negative responses to disclosure were expected to be significantly, negatively associated with level of engagement in trauma-related disclosure. Partners' positive responses were expected to be significantly, positively associated with disclosure.

Method

Participants and Procedures

Fliers and brochures were distributed at trauma centers, university wellness centers, and outpatient psychological clinics, and advertisements were posted online at a variety of resource and support sites for sexual assault survivors. All recruitment materials directed potential participants to the study website, which included study information, the informed consent document, and an eligibility survey. This initial survey determined participants' eligibility based on the following criteria: individuals had to (1) be at least 18 years old, proficient in English, and able to pass informed consent comprehension questions; (2) identify as female; (3) experience distress from a sexual

assault perpetrated by someone other than their current romantic partner; and (4) be married, cohabitating for at least 3 months, or in a committed monogamous relationship for at least 6 months. At the end of the screening survey, eligible participants were forwarded to the full survey. Others were informed of their ineligibility and thanked for their time.

Two hundred and thirty individuals completed the eligibility survey. Of these, 66 were deemed ineligible because they did not consent to participate in the full survey (n = 25), were not currently in a romantic relationship (n = 16), had received unwanted sexual contact from their current partner (n = 13), identified as male (n = 9), or had not experienced unwanted sexual contact (n = 3). The remaining 164 individuals were screened into the study and completed the full survey. After completion, participants were remunerated for their participation with an electronic gift card.

Due to the online nature of the study, multiple validity checks were incorporated into the survey. These checks included multiple-choice items with simple, factual queries (e.g., “The dog has four…: (a) eyes, (b) teeth, (c) legs, (d) tails”), designed to identify participants selecting responses at random. Three participants failed at least one of these items, resulting in the removal of their data from analyses. Another 7 participants were deemed potential fraud due to back-to-back completions from the same IP address, and a final participant was removed due to completing the survey in more than one standard deviation below the mean of the average completion time.

Of the remaining 153 participants, 49 participants indicated that they had not disclosed their experience of sexual assault to their current romantic partner. Given the

focus of the current investigation, these participants were also excluded from the present analyses. Thus, the final sample consisted of 104 participants.

Measures

Demographics and background. Participants provided demographic information regarding their gender, their partner's gender, age, racial and ethnic background, income, highest level of education, relationship status, relationship length, and time cohabitating. Participants also self-reported previous and current psychiatric history (including diagnosis and relevant treatment) using face-valid questions (e.g., "yes" or "no" response to the query, "Are you currently receiving treatment for psychological distress?"). Additionally, participants provided specific information about their most recent sexual assault – including time since assault, relationship to the assailant, gender of the assailant, multiple vs. single assailants, relationship status at the time of assault, and whether or not they had disclosed their experience of sexual assault to their current romantic partner – via face-valid items.

Posttraumatic stress. Participants completed the *PTSD Checklist* (PCL-5; Weathers et al., 2013), a 20-item, self-report, Likert-type scale. The PCL-5 assesses symptoms of PTSD based on the criteria in the *Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition* (American Psychiatric Association, 2013). This measure demonstrates high internal consistency, test-retest reliability, and convergent and discriminant validity (e.g., Blevins et al., 2015; Bovin et al., 2016). It similarly demonstrated strong internal consistency ($\alpha = .97$) in the present sample. Each item reflects one of the specific criteria for PTSD and is answered on a scale from 0 (*not at*

all) to 4 (*extremely*). Weathers et al. (2013) proposed a cutoff score of 33 as indicative of probable PTSD. In the present sample, participants' mean score was 35.73 (SD = 23.26), with 52.0% scoring 33 or above.

Disclosure. All participants completed the *Partner Communication about Stressful Experiences* scale (see Appendix; Allen & Renshaw, 2015). This measure consists of 8 items on a 7-point Likert scale, to evaluate respondents' level of engagement in trauma-related disclosure. It assesses the frequency and extent of disclosure about traumatic experiences (e.g., "There are parts of these experiences that I have intentionally kept from my partner"), with higher scores indicating more engagement in disclosure. Although this measure was developed for use with combat veterans, the items were adapted to query about communication related to the experience of sexual assault. Psychometric analyses of this measure are forthcoming; the scale demonstrated adequate internal consistency in the present sample *(*$\alpha = .86$).

Shame. Participants completed the *Experience of Shame Scale* (ESS; Andrews, Qian, & Valentine, 2002), a 25-item measure that assess the frequency of shame experiences related to one's character, behavior, and body on a 4-point Likert scale from 1 (*not at all*) to 4 (*very much*), relative to their experience of trauma. The ESS demonstrates good discriminant and construct validity, as well as high test-retest reliability (Andrews et al., 2002). The measure demonstrated strong internal consistency ($\alpha = .98$) in the present sample.

Perceived response to disclosure. All participants completed the *Partner Response to Disclosure* scale (see Appendix; Allen & Renshaw, 2015), which consists of

11 items on a 6-point Likert scale, to evaluate their perception of their partners' response to their trauma-related disclosure. Each item queries about the presence or lack of perceived understanding and sympathy (e.g., "My partner seemed understanding about what I went through"; "My partner seems to blame, doubt, judge, or question me about this experience"). Although this measure was developed for use with combat veterans, the items were adapted to query about attitudes related to the experience of sexual assault. Psychometric analyses of this measure have not yet been published.

To assess the ability of the scale to separately detect both positive and negative responses, I conducted principal axis factoring with oblimin rotation on the 11 items. Inspection of the resulting Scree plot and factor loadings suggested a two-factor solution that accounted for 61.04% of the variance. As shown in Table 5, all 11 items demonstrated a loading of at least .53 on one factor, with a loading of less than .26 on the other.

Table 5

Partner Response to Disclosure: Items and Factor Loadings

	Factors	
	Positive Response	Negative Response
1. My partner seemed understanding about what I went through.	**.91**	.04
2. My partner feels sympathy towards me for what happened.	**.89**	-.03

3. My partner could not understand this because they have not had my experience.*	-.05	**.71**
4. My partner does not understand how difficult it is to simply continue with "normal" daily life after what happened.*	-.08	**.69**
5. My partner's reactions have been helpful.	**.84**	.05
6. My partner finds my reactions to these experiences to be exaggerated.*	.03	**.81**
7. My partner feels uncomfortable talking about my experiences.*	-.05	**.59**
8. My partner seems to blame, doubt, judge, or question me about this experience.*	.11	**.83**
9. My partner was very accepting and supportive when we talked about this.	**.94**	.17
10. I thought talking to my partner would go well, but it did not.*	.09	**.70**
11. I thought talking to my partner would be awful, but it actually went really well.	**.53**	-.25

*Items reverse-coded.

Note. Scores have been **bolded** to indicate each item's loading onto the appropriate scale.

The factors were analogous to perceived positive responses (5 items) and perceived negative responses (6 items). Items within each factor demonstrated strong internal

consistency in the present sample (α = .91 for perceived positive responses; α = .86 for perceived negative responses). Accordingly, subscale scores for perceived positive responses and perceived negative responses were calculated by summing the constituent items. Higher scores on these subscales correspond, respectively, to more positive responses and more negative responses.

Data Analysis

Prior to all analyses, the normality of all variables was confirmed. Next, basic associations among level of disclosure, PTSD symptom severity, shame, and perceived negative and positive responses to disclosure were examined via correlations. Subsequently, the relative contribution of trauma-related shame and perceived attitudes to the prediction of level of disclosure was evaluated using a multiple linear regression. The regression was checked for problems with multicollinearity (using variance inflation factor) and normality of residuals, with no problems identified.

Results

All participants in the present study were female, and endorsed a history of unwanted sexual contact. Participants reported a mean age of 28.07 years (SD = 5.66), and a mean relationship length of 3.84 years (SD = 3.30). They reported an average time since assault of 6.66 years (*SD* = 6.27). For 41.3% of the sample, the incidence of unwanted sexual contact occurred during adulthood; for another 33.7%, it occurred prior to age 18; and the remainder (25.0%) endorsed unwanted sexual contact during both childhood and adulthood. The majority were in heterosexual relationships (93.3%), but

the sample demonstrated a wide variety of relationship statuses and significant racial/ethnic diversity (see Table 6).

Table 6

Sample Demographics

	n (%)
Relationship Status	
Married	20 (19.2%)
Engaged	16 (15.4%)
Planning marriage	29 (27.9%)
Committed relationship	39 (37.5%)
Race/Ethnicity	
White/Caucasian	61 (58.7%)
Black/African-American	12 (11.4%)
Asian/Asian-American	9 (8.7%)
American Indian/Alaskan Native	1 (1.0%)
Biracial/Multiracial	4 (3.8%)
Hispanic/Latino-a	16 (15.4%)
Other	1 (1.0%)

Descriptive statistics and intercorrelations for all variables of interest are reported in Table 7. Sexual assault survivors in this sample reported a moderate amount of trauma-

related disclosure, with the vast majority of participants' responses clustered near the midpoint between "not at all" and "a great deal." On average, they reported "a little bit" of trauma-related shame, that they "somewhat disagreed" that their partners had provided negative responses, and that they "somewhat agreed" that their partners had provided positive responses. Counter to hypotheses, level of engagement in trauma-related disclosure was uncorrelated with PTSD symptom severity. In fact, level of disclosure was significantly related only to partners' positive responses, with a medium effect size. PTSD, shame, negative responses, and positive responses were all significantly positively correlated with each other, except for positive and negative responses, which were unrelated.

Table 7

Means, Standard Deviations, and Intercorrelations for All Variables

	Mean (*SD*)	1	2	3	4
1. Disclosure	36.11 (12.53)				
2. PTSD Symptoms	35.73 (23.26)	-.07			
3. Shame	58.24 (22.58)	-.08	.56***		
4. Negative Responses	8.84 (7.31)	-.09	.44***	.21*	
5. Positive Responses	15.84 (7.44)	.48***	.20*	.26*	.07

Note. PTSD = Posttraumatic stress disorder.

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

The multiple linear regression evaluating the relative contribution of shame, negative responses, and positive responses to the prediction of disclosure was significant ($F[3, 98] = 12.03$, $R^2 = .28$, $p < .001$). Consistent with the singularly significant correlation between trauma-related disclosure and positive responses, perceived positive responses from partners demonstrated the strongest effect. Interestingly, trauma-related shame was also significantly associated with level of engagement in disclosure, despite the lack of a significant bivariate association between these variables. Coefficients from the regression are reported in Table 8.

Table 8

Coefficients from Regression of Disclosure onto Shame, Negative Responses, and Positive Responses

	B	SE	B
Shame	-.20	0.09	-.20*
Negative Responses	-.07	0.09	-.07
Positive Responses	.53	0.09	.53***

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

Discussion

Though recent research has highlighted the importance of trauma-related disclosure within the context of intimate relationships (e.g., Frattaroli, 2006; Guay et al., 2006; Sloan & Wisco, 2014), this phenomenon has yet to be examined specifically in

survivors of sexual assault. This dearth in the literature is significant, given that the romantic relationships of survivors of sexual assault may differ from relationships of survivors of other traumas. The current study thus aimed to examine the association of sexual assault-related disclosure with PTSD symptom severity in the context of intimate relationships, as well as how such disclosure relates to trauma-related shame and perception of partners' negative and positive response to disclosure.

The moderate level of engagement in trauma-related disclosure in this sample suggests that, when female survivors of sexual assault disclose to their partners, they do not take an "all or nothing" approach. Rather, they modestly share information regarding their trauma experiences with their romantic partners. The current literature documenting level of trauma-related disclosure across different populations is limited, but suggests that this moderate amount of disclosure may be slightly greater than what is typical for male combat veterans disclosing to their romantic partners (e.g., Koenen, Stellman, Sommer, & Steelman, 2008; Solomon, Dekel, & Mikulciner, 2008). Such a pattern would be consistent with a meta-analysis of sex differences in general self-disclosure, which found that women tend to disclose slightly more than men (e.g., Dindia & Allen, 1992). At the same time, because survivors who had not disclosed their sexual assault at all to their partners were excluded, these results clearly may be inflated.

Surprisingly, level of engagement in trauma-related disclosure to partners was not related to PTSD symptom severity in this sample. This finding runs counter to a priori hypotheses and related foundational literature (e.g., Gray et al., 2012), which has typically revealed a negative association between PTSD and disclosure. Given that much

of the existing literature has focused on male combat veterans, it may be that female trauma survivors are more likely than their male counterparts to engage in disclosure, regardless of stress or related symptomatology (e.g., Tamres, Janicki, & Helgeson, 2002). On the other hand, women are also more likely to have larger social support networks and to receive support from multiple sources (e.g., Antonucci & Akiyama, 1987), which may limit the unique benefits of disclosure to partners alone. Another possibility is that survivors perceive their partners to be sympathetic and supportive regardless of how symptomatic they are, leading to greater disclosure that is unconnected with symptom severity. In addition, sexual assault survivors tend to experience greater PTSD-related symptoms of avoidance (e.g., Dworkin et al., 2016) and hyperarousal (e.g., Risser, Hetzel-Riggin, Thomsen, & McCanne, 2006), which are not as reliably linked to disclosure as symptoms of emotional numbing. Any of these possibilities would serve to lessen the association between the trauma-related disclosure and PTSD symptom severity within the context of female sexual assault survivors' romantic relationships. Future research is needed to determine whether these findings replicate and, if so, what mechanisms might explain the different pattern of findings.

Explorations of bivariate associations revealed that level of disclosure was also unrelated to shame and perception of negative responses from partners to disclosure, but strongly, positively associated with positive responses from partners. These findings run counter to ample research demonstrating that the high levels of shame frequently reported by survivors of sexual assault relate to avoidance of disclosure (Sable et al., 2006), and that negative but not positive responses to disclosure are associated with post-trauma

functioning (Andrews et al., 2003; Campbell et al., 2001; Ullman, 1996, 1999, 2000). It is possible that prior findings regarding disclosure in general are not as applicable to disclosure specifically to one's partner. The desire to be open and honest with one's partner in order to maintain a primary source of social support, and the expectation that partners may be more supportive and sympathetic to disclosure than others, may be more powerful for female sexual assault survivors than feelings of shame or perceived negative responses. Of note, it is also possible that the present study suffers from a sampling bias, such that individuals who are willing to disclosure specifics of their traumas and current functioning in an online survey are also more likely to disclose to their partners, regardless of felt shame or perceived negative responses.

The substantial positive association of positive responses with level of engagement in disclosure suggests that such reactions may be key to encouraging further disclosure within the context of romantic relationships. It is possible that positive responses are so influential in encouraging greater disclosure to one's partner, they offset any damaging or discouraging effects of negative responses or shame, which were unrelated to disclosure on a bivariate level. The potential importance of perceived positive responses from partners was further emphasized by the finding that this association remained significant even when trauma-related shame and negative responses were accounted for. Although these findings contrast with some prior literature on the relative lack of importance of positive responses for disclosure in general (e.g., Ullman, 1996a; Campbell et al., 2001), they are consistent with the limited research suggesting that trauma survivors may be more likely to disclose to their romantic partners, because

they generally believe their partner may be uniquely sympathetic to and understanding of their distress, or concerned about and invested in their well-being (Marriott et al., 2016). When these beliefs are bolstered by specific perceptions that their partner responds sympathetically and supportively to their assault and related disclosures, sexual assault survivors may be even more likely to disclose, or to disclose more.

Notably, in a multivariate analysis accounting for shame, negative responses, and positive responses, shame was significantly, negatively associated with level of engagement in trauma-related disclosure. In other words, once the effects of positive and negative responses to disclosure were controlled, sexual assault survivors' experience of trauma-related shame was associated with reduced engagement in trauma-related disclosure to romantic partners. This finding is consistent with the literature demonstrating that trauma-related shame is associated with avoidance of disclosure (Sable et al., 2006). Furthermore, the multivariate, but not bivariate, significance of trauma-related shame suggests that, once the variance in disclosure to partners that is accounted for by perceived responses is removed, the remaining variance in disclosure is negatively associated with shame.

Taken together, the results of the current study suggest that female survivors of sexual assault confront opposing forces when considering if, and how much, to disclose to their partners about their experience of sexual assault. On the one hand, survivors may perceive greater positive than negative responses from their partners, and those positive responses appear to encourage sexual assault survivors to engage in higher levels of disclosure. On the other hand, sexual assault survivors in particular report high levels of

trauma-related shame (cf., Sable et al., 2006), and the results of this study suggest that shame may contribute to a reduced likelihood of disclosure. Results from this sample suggest that positive responses from partners may counteract some of the harmful effects of shame or negative responses, but further research is needed to determine if these findings replicate in other samples. If so, the findings suggest that positive responses *from romantic partners specifically* (relative to positive responses from other individuals) may be uniquely influential in encouraging engagement in trauma-related disclosure for female survivors of sexual assault.

Strengths, Limitations, and Future Directions

The primary strengths of the present study include the relative diversity of the sample and the novel examination of trauma-related disclosure within sexual assault survivors' intimate relationships. However, there are also multiple limitations to consider. First, all assessment relied on retrospective, self-report measures, which are subject to bias. The data were also cross-sectional, prohibiting causal inferences. Furthermore, despite the relative diversity of the sample with regard to race/ethnicity, relationship status, and timing of assault, the results may not generalize to (1) female sexual assault survivors in non-heterosexual relationships, (2) male survivors of sexual assault, (3) survivors of multiple types of trauma, or (4) more clinically severe populations.

These limitations notwithstanding, this study presents the first empirical findings of this kind in an important sample. Specifically, the results provide preliminary evidence that for survivors of sexual assault in romantic relationships, level of engagement in trauma-related disclosure is positively associated with perceptions of their partners'

positive responses, and negatively associated with trauma-related shame. It is thus possible that this population may be particularly likely to engage in trauma-related disclosure when they perceive their partners to respond positively and when they experience less trauma-related shame. At the same time, it is unclear that disclosure in the context of romantic relationships has the same beneficial effect as broader disclosure, in terms of reductions in PTSD symptoms. Future studies should continue to identify predictors of engagement in trauma-related disclosure to romantic partners in female survivors of sexual assault, and clarify the association of such disclosure with PTSD symptom severity in this population. Research on a broad variety of relationships is also needed, as disclosure may differ substantively across different interpersonal contexts.

APPENDIX

Partner Communication about Stressful Experiences

Instructions:
We just asked you about your experience(s) of sexual assault. Individuals who have experienced this kind of difficult event vary considerably in how much they talk to others about it. We'd like to know if you have talked to your current romantic partner about these experiences.

Not at all						A great deal
1	2	3	4	5	6	7

1. I have discussed these experiences with my partner.
2. There are parts of these experiences that I have intentionally kept from my partner.
3. There are parts of these experiences that I will not discuss with my partner.
4. I intend to keep some or all of these experiences a secret from my partner.
5. I have talked to my partner about the sights, sounds, and/or smells related to these experiences.
6. I have told my partner the graphic details of these experiences.
7. I have talked to my partner about my thoughts and feelings about these experiences.
8. I have talked to my partner about the effects of these experiences on how I think and feel.

Partner Response to Disclosure

Instructions:
Individuals who have experienced sexual assault vary considerably in how their partners seem to react. Give us your best guess about the following, whether or not you have discussed these events.

Please rate each question on the following scale

Strongly Disagree					Strongly agree
0	1	2	3	4	5

1. My partner seemed understanding about what I went through.
2. My partner feels sympathy towards me for what happened.
3. My partner could not understand this because they have not had my experience.
4. My partner does not understand how difficult it is simply to continue with "normal" daily life after what happened.
5. My partner's reactions have been helpful.
6. My partner finds my reaction to these experiences to be exaggerated.
7. My partner feels uncomfortable talking about my experiences.
8. My partner seems to blame, doubt, judge, or question me about this experience.
9. My partner was very accepting and supportive when we talked about this.
10. I thought talking to my partner would go well, but it did not.
11. I thought talking to my partner would be awful, but it actually went really well.

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