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ORIGINAL ARTICLE

Are Peritraumatic Perceptions of Fear/Life Threat and Posttraumatic Negative Self-Conscious Appraisals/Emotions Differentially Associated with PTSD Symptoms?

Han N. Tran[1] · **J. Gayle Beck**[1]

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Abstract
In light of revisions to the diagnostic classification and criteria of PTSD in the *DSM-5* that underscore a range of negative self-related appraisals and emotions beyond fear/anxiety, the current study examined the relative associations of peritraumatic perceptions of fear/life threat and posttraumatic negative self-conscious appraisals and emotions (shame, guilt, negative beliefs about the self, self-blame) with specific PTSD symptom clusters: re-experiencing, avoidance, numbing, and hyperarousal. The sample included 257 female survivors of intimate partner violence. Structural equation modeling analyses revealed that peritraumatic perceptions of fear/life threat and posttraumatic negative self-conscious appraisals/emotions significantly correlated with each of the PTSD symptom clusters. Findings support the conceptualization of PTSD as involving concurrent fear- and self-related cognitive/emotional factors.

Keywords Peritraumatic perceptions of fear/life threat · Negative self-conscious appraisals · Shame · Guilt · PTSD symptoms

Introduction

Historically, posttraumatic stress disorder (PTSD) has been predominantly conceptualized as an anxiety-based disorder. Revisions to the diagnostic classification and criteria of PTSD were made in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorder* (*DSM-5;* American Psychiatric Association [APA] 2013) that highlight negative self-conscious emotions (e.g., shame, guilt) as well as dysfunctional appraisals of the self (e.g., negative beliefs about the self, self-blame). These changes expand the scope and nature of PTSD, as further reflected in its re-categorization as a trauma and stress-related disorder. In a continued effort to advance understanding of the role of non-fear-based appraisals and emotions in PTSD, this report considers the relative associations of peritraumatic perceptions of fear/life threat and posttraumatic negative self-conscious appraisals/emotions with specific PTSD symptom clusters of re-experiencing, avoidance, numbing, and physiological hyperarousal.

When considering peritraumatic perceptions of fear and life threat (e.g., perceived danger or imminent death), it has been proposed that these perceptions, via associative learning, result in an ongoing sense that the world is dangerous and overgeneralized fear, contributing to current PTSD symptoms (e.g., Ehlers and Clark 2000; Foa and Kozak 1986; Zoellner et al. 2014). Although other peritraumatic processes have been noted in the literature (e.g., dissociation; Ehlers and Clark 2000), perceptions of fear/life threat at the time of trauma exposure are highlighted to a greater extent within existing conceptual models of PTSD (e.g., Foa and Kozak 1986). Further, our fear-based conceptualization of PTSD has significantly influenced treatment approaches for this disorder, notably exposure-based interventions (e.g., Foa and Kozak 1986). Empirically, Ozer et al.'s (2003) meta-analysis showed that peritraumatic perceptions of fear/life threat had a moderate association (r = .26) with PTSD symptoms and diagnosis. As reviewed, however, recent developments in the field suggest the need to expand the conceptualization of PTSD beyond fear/anxiety. For example, in a

✉ Han N. Tran
htran3@memphis.edu

J. Gayle Beck
jgbeck@memphis.edu

[1] Department of Psychology, University of Memphis, 400 Innovation Drive, Memphis, TN 38152, USA

hierarchical regression analysis, Halligan et al. (2003) noted that peritraumatic perceptions of fear/life threat did not independently have a significant contribution to the variance in PTSD symptoms when examined alongside other influences (e.g., disorganized trauma memories, negative appraisals of intrusion symptoms). Examination of peritraumatic perceptions of fear and life threat in concert with other maladaptive appraisals and emotions thus has the potential to advance the conceptualization of and treatment approaches to PTSD. As such, the present study examined peritraumatic perceptions of fear/life threat in conjunction with posttraumatic negative self-conscious appraisals and emotions, specifically negative beliefs about one's self (e.g., "I am inadequate"), self-blame, shame, and guilt. Negative self-conscious appraisals and emotions have been strongly implicated, theoretically and empirically, in PTSD across varying trauma samples and are now underscored in the *DSM* criteria for the disorder (e.g., APA 2013; Andrews et al. 2000; Beck et al. 2011; Ehlers and Clark 2000; Foa et al. 1999; Kubany et al. 1995; Lee et al. 2001; Meyer et al. 2012; Najdowski and Ullman 2009; Pugh et al. 2015; Street and Arias 2001). To date, most of these studies have examined negative self-conscious appraisals and emotions as individual constructs, leaving gaps in our understanding of these thoughts and emotions as a whole in association with PTSD.

The present study conceptualized posttraumatic negative self-conscious appraisals and emotions as one latent construct. Negative beliefs about one's self, self-blame, shame, and guilt have been documented to commonly co-occur in the aftermath of a traumatic event (e.g., Beck et al. 2011; Lee et al. 2001). Moreover, theoretical and empirical writings have discussed the interrelatedness of these thoughts and emotions (e.g., Ehlers and Clark 2000; Lewis 1997, 2008). Lewis (1997, 2008), for example, suggested that trauma-related negative self-attributions often result in feelings of guilt and shame, depending on whether the focus is one's actions (guilt) or one's entire self (shame); further, guilt may lead to shame. Empirically, Beck et al. (2015) found that self-blame correlated with guilt and shame; as well, shame correlated with negative thoughts about one's self in this report. Furthermore, as reviewed, empirical studies have documented significant positive associations of shame and guilt with PTSD symptoms when these emotions were examined separately (e.g., Beck et al. 2011; Street and Arias 2001). When shame and guilt were considered concurrently as separate independent variables however, the correlation of guilt with PTSD symptoms has been found to be non-significant or negative in some instances (e.g., Leskela et al. 2002; Pineles et al. 2006; Vásquez et al. 2012), likely owing to a statistical suppression effect. Current conceptual models suggest a significant positive association between guilt and PTSD, as supported by related research (e.g., Kubany et al. 1995; Lee et al. 2001; Pugh et al. 2015). In sum, theoretical and empirical accounts have shown that posttraumatic negative self-conscious appraisals/emotions commonly co-occur and are particularly interrelated. As such, the effects of specific appraisals/emotions on PTSD symptoms may not be easily disentangled (Blum 2008; Pineles et al. 2006; Vásquez et al. 2012). Examination of these appraisals and emotions together as a latent construct thus represents a methodological advantage, as this approach may more accurately highlight their relationship with PTSD. To date, no previous studies have utilized this statistical approach to investigate the associations of posttraumatic negative self-conscious appraisals/emotions with PTSD symptoms.

Examination of peritraumatic perceptions of fear/life threat and posttraumatic negative self-conscious appraisals and emotions in association with PTSD symptoms is especially pertinent among individuals exposed to intimate partner violence (IPV). The experience of IPV involves protracted physical, sexual, and/or psychological abuse by a current or former intimate partner (Breiding et al. 2015). The constructs under consideration in the current report have been shown separately to significantly contribute to the variance in PTSD symptoms in this trauma population (e.g., Beck et al. 2011; Kemp et al. 1995; Perrin et al. 1996; Reich et al. 2015). Importantly, IPV is experienced by one in four women in the United States during their lifetime (Breiding et al. 2008) and is associated with wide ranging adverse outcomes (Orava et al. 1996; Star et al. 1979; Campbell 1989; Dutton et al. 2006; Astin et al. 1993; Kemp et al. 1991), representing a public health concern. Empirical attention to this trauma population may inform public health policies as well as early intervention efforts.

An additional consideration of the current report is the associations of peritraumatic perceptions of fear/life threat alongside posttraumatic self-conscious appraisals/emotions with specific *DSM-IV* PTSD symptom clusters. Examination at the symptom cluster level advances the literature regarding whether distinct factors are associated with specific clusters. For example, Dewey et al. (2014) found that peritraumatic fear correlated with re-experiencing and avoidance/numbing symptoms, but not hyperarousal symptoms. Guilt and shame related to the traumatic experience, however, have been shown to be associated with each of these three clusters (Carmassi et al. 2017). With regard to negative beliefs about the self and self-blame, Blain et al. (2013) examined the associations of these appraisals with PTSD symptom clusters based on a four-factor *DSM-IV* PTSD model that distinguishes avoidance from numbing symptoms. Negative self-beliefs were found to be associated only with re-experiencing and numbing symptoms, and self-blame with numbing symptoms. These preliminary findings provide initial evidence for the potential differential associations of peritraumatic perceptions of fear/life threat

and negative self-conscious appraisals/emotions with specific PTSD symptom clusters.

The present study thus investigated the relative contributions of peritraumatic perceptions of fear/life threat and posttraumatic negative self-conscious appraisals/emotions to the variance in specific PTSD symptom clusters: re-experiencing, avoidance, numbing, and hyperarousal. Based on the results from Blain et al. (2013) showing negative beliefs about the self and self-blame to have differential patterns of association with numbing versus avoidance symptoms, the current study focused on the *DSM-IV* four-factor model of PTSD, separating avoidance and numbing symptoms. We hypothesized that peritraumatic perceptions of fear/life threat would be significantly correlated with re-experiencing, avoidance, and numbing but not hyperarousal symptoms, following the results of Dewey et al. (2014). As a latent construct, posttraumatic self-conscious appraisals/emotions were hypothesized to have a significant association with all four symptom clusters, based on combined findings from Blain et al. (2013) and Carmassi et al. (2017).

Method

Participants

The current sample included community women who sought psychological assessment and possible treatment following IPV at a university-based research clinic, recruited through public service announcements and outreach events at local health fairs, advocacy centers, churches, and college campuses. Women qualified if they experienced physical (e.g., hitting, slapping, injuring with a weapon), sexual (e.g., coerced sexual activity), and/or psychological abuse by a current or former intimate partner (Breiding et al. 2015). In the current sample, reported psychological abuse involved threats to the women's life or their physical safety, thus meeting Criterion A for a traumatic event (APA 2013). Three women were excluded from the present study because their abuse did not satisfy the definition of IPV (Breiding et al. 2015), which was examined using the Domestic Violence Interview (DVI; Beck et al. 2011). Seventy-three participants were excluded because they were still involved in an on-going romantic relationship or currently living with the abuser. Given the focus on PTSD symptoms, we restricted the sample to participants who were not involved in on-going IPV. Next, for the same reason, we excluded an additional 33 women as the elapsed time from their most recent abusive IPV exposure and the assessment was less than 1 month. Data of twenty participants who showed psychotic symptoms ($n=10$), evidence of cognitive impairment ($n=5$), or inconsistent reporting ($n=5$) were also excluded. Cognitive impairment was assessed using the Montreal Cognitive Assessment (MoCA; Nasreddine et al. 2005). Inconsistent reporting was gauged by the clinical interviewer, based on the participant providing conflicting accounts of non-IPV life events or symptoms during administration of semi-structured clinical interviews. The final sample of 257 participants, after removing one multivariate outlier (see below), ranged in age from 18 to 75 years ($M=36.75$, $SD=12.33$). The average time from the end of participant's most recent abusive relationship to assessment was 42.68 months (ranging from 1 to 480 months; $SD=66.29$). The current sample also directly experienced on average 3.71 ($SD=2.31$) non-IPV related traumatic events (e.g., childhood abuse, motor vehicle accidents) as evaluated by the Life Events Checklist (LEC; Gray et al. 2004). Table 1 shows other sample characteristics, including race, educational background, annual income, types of IPV experienced, and percent of participants meeting *DSM-IV* PTSD diagnosis.

Table 1 Sample demographics

	n	%
Type of intimate partner violence experienced		
Psychological, physical, and sexual abuse	118	45.9
Physical and psychological abuse	93	36.2
Sexual and psychological abuse	17	6.6
Sexual and physical	2	0.8
Psychological abuse only	23	8.9
Sexual abuse only	1	0.4
Physical abuse only	3	1.2
Met *DSM-IV* PTSD diagnosis	55	21.4
Race		
Caucasian	121	47.1
African American	99	38.5
Hispanic	9	3.5
Asian	3	1.2
Other	19	7.4
Declined to respond	6	2.3
Education		
High school or below	28	10.9
Some college	122	47.5
2- or 4-year college degree	62	24.2
Attended or completed graduate training	41	15.9
Declined to respond	4	1.5
Household income		
Below $10,000	52	20.2
$10,000–$20,000	63	24.5
$20,000–$30,000	28	10.9
$30,000–$50,000	41	16
$50,000–$70,000	23	8.9
Over $70,000	22	8.6
Declined to respond	28	10.9

Measures

Peritraumatic Perceptions of Fear and Life Threat

The DVI was used to assess the woman's emotional responses during her experiences of IPV. This semi-structured interview was developed by Beck et al. (2011) and administered by trained interviewers. Participants were asked to rate their emotional reactions during the worst period of abuse, using the following questions which were included in the current study as indicators of the peritraumatic perceptions of fear/life threat latent variable: "How fearful or afraid did you feel?" (Fear-1), "How much danger did you feel you were in?" (Fear-2), and "How certain were you that you were going to die?" (Fear-3). Ratings ranged from 0 (*not at all*) to 100 (*extremely*). This interview was also used to determine whether the abuse satisfied the definition of IPV, as described above (Breiding et al. 2015). Participants were asked to report when their most recent abusive relationship ended; the interval between this date and the date of the assessment was calculated to determine elapsed time since IPV exposure.

Guilt Appraisals and Guilt Distress

The Trauma-Related Guilt Inventory (TRGI; Kubany et al. 1996) contains 32 items and three subscales: global guilt, guilt appraisals, and guilt distress. The guilt appraisals (e.g., "I was responsible for what happened") and guilt distress (e.g., "What happened causes me emotional pain") subscales were used in this study, in keeping with Kubany and colleagues' (1995) conceptualization of trauma-related guilt as involving interrelating negative cognitive and affective elements. Participants rated items on a scale from 1 (*not at all true*) to 5 (*extremely true*), anchoring ratings to their IPV experiences. Empirical evidence provides support for the TRGI's factor structure and convergent validity (Kubany et al. 1996). The scale demonstrates good internal consistency and test–retest reliability, with $\alpha = .86$–$.90$ and $r = .73$–$.86$, respectively (Kubany et al. 1996). In this sample, internal consistency was good for the guilt distress ($\alpha = .88$) and acceptable for the guilt appraisals ($\alpha = .78$) subscales.

Shame

The Internalized Shame Scale is a 30-item self-report measure consisting of the shame and self-esteem subscales (ISS; Cook 1994/2001; del Rosario and White 2006). This study used the 24-item shame subscale (e.g., "I feel myself as being very small and insignificant"). Ratings for items range from 0 (*never*) to 4 (*almost always*). The shame subscale has evidenced support for its validity (see Cook 1994/2001). This subscale has been shown to be unidimensional and have good test–retest reliability ($r = .84$) and excellent internal consistency ($\alpha = .95$; Cook 1994/2001, 1996; del Rosario and White 2006). Internal consistency was excellent for the shame subscale in the current sample ($\alpha = .97$).

Negative Thoughts About the Self and Self-Blame

The Posttraumatic Cognitions Inventory is a self-report measure that has 36 items and three subscales: negative thoughts about the self, negative thoughts about the world, and self-blame (PTCI; Foa et al. 1999). Participants rated items on a scale from 1 (*totally disagree*) to 7 (*totally agree*) and anchored responses to their IPV experiences. The current study included the negative thoughts about the self (e.g., "I am a weak person") and self-blame (e.g., "The abuse occurred because of the way I acted") subscales. The PTCI has support for its convergent validity with other scales measuring trauma-related appraisals and has been shown to discriminate between those with and without PTSD (e.g., Foa et al. 1999; van Emmerik et al. 2006). Both the negative thoughts about the self and self-blame subscales demonstrate good internal consistency ($\alpha = .97$ and $\alpha = .86$, respectively; Foa et al. 1999). In this sample, internal consistency was $\alpha = .95$ and $\alpha = .80$ for the negative thoughts about the self and self-blame subscales, respectively.

IPV-Related PTSD Symptoms

The 17-item Clinician-Administered PTSD Scale for *DSM-IV* was used to assess the frequency and intensity of PTSD symptoms in the past month (CAPS-IV; Blake et al. 1990). As previously noted, the present study examined four symptom clusters: re-experiencing, avoidance, numbing, and hyperarousal, in keeping with Blain et al. (2013). Items were rated on a scale from 0 (*not at all*) to 4 (*nearly every day*) for frequency and from 0 (*no distress*) to 4 (*extreme distress*) for intensity. The frequency and intensity ratings were summed to compute a total severity score for each symptom cluster. If participants indicated that they experienced non-IPV traumas (as assessed with the LEC; Gray et al. 2004), the CAPS was re-administered anchoring to these specific traumatic events. Only the cluster severity scores related to participants' IPV experiences were used in the current study. IPV-related CAPS scores were typically higher than those anchored to other traumatic events. The CAPS has evidenced convergent validity as well as good reliability for the total score, with alphas ranging from .87 to .94 (Weathers et al. 2001). In the current sample, internal consistency of the re-experiencing, avoidance, numbing, and hyperarousal subscales was $\alpha = .80$, .76, .81, and .83, respectively. Assessments were conducted by trained clinicians and were recorded. Approximately 23% of interviews ($n = 60$) in this study were randomly selected and rated by

an independent clinician to assess interdiagnostician agreement. In this sample, the intraclass correlation coefficient was .98, .93, .75, and .90 for the re-experiencing, avoidance, numbing, and hyperarousal subscales, respectively, which suggests adequate to excellent inter-rater reliability.

Additional Traumatic Events

The experience of non-IPV traumatic events was evaluated using the Life Events Checklist (LEC; Gray et al. 2004), a self-report inventory of 17 categories of potentially traumatic events (e.g., natural disaster, sexual assault; Gray et al. 2004). The LEC has shown good temporal stability and convergent validity (Gray et al. 2004). As a control variable in this study, other traumatic events that did not occur within the context of IPV which the woman had directly experienced were computed.

Procedure

Procedures were approved by the university's institutional review board. After obtaining informed consent, participants were administered several interviews, including the DVI and CAPS-IV. Participants also completed a battery of measures, which included the TRGI, ISS, PTCI, and LEC. Following the assessment, participants were given feedback regarding their evaluation and provided individualized treatment recommendations and referrals, as warranted.

Data Analytic Approach

Analyses were conducted in Mplus software (version 7.4) using a structural equation modeling (SEM) approach, relying on maximum likelihood estimation with robust standard errors to adjust for non-normality in the data (Kline 2011). Kline's (2011) two-step procedure was followed. First, the measurement component (step 1) tested the associations between the indicators and their corresponding latent variables. After evaluating fit statistics, modification indices were used for model respecification to improve model fit, based on theoretical grounds. Next, the significance and magnitude of factor loadings were examined to determine whether the indicators adequately measured the hypothesized latent variables. Negative thoughts about the self (PTCI Self), self-blame (PTCI Self-blame), shame (ISS Shame), guilt appraisals (TRGI Guilt Appraisals), and guilt distress (TRGI Guilt Distress) were modeled as indicators of the latent variable depicting posttraumatic self-conscious appraisals/emotions. The measurement component also modeled peritraumatic perceptions of fear/life threat as a latent variable measured by Fear-1, Fear-2, and Fear-3. Finally, PTSD symptom clusters of re-experiencing [Reex], avoidance [Avoid], numbing [Numb], and hyperarousal [Hypr] were modeled as one-indicator latent variables. Because each symptom cluster had only one indicator, their error variance was fixed to one minus the corresponding reliability coefficient in order to identify the model and to account for some of the measurement error (Kline 2011). In the second step, the structural component assessed the associations of peritraumatic perceptions of fear/life threat and posttraumatic self-conscious appraisals/emotions with PTSD symptom clusters. To partial out the potential influences of elapsed time since the most recent abusive relationship (Time) and number of additional traumas (Non-IPV Traumas), paths were specified from these variables to each PTSD symptom cluster.

Model fit was assessed with the following fit indices: the χ^2 goodness-of-fit test, comparative fit index (CFI; Bentler 1990), Tucker–Lewis index (TLI; Tucker and Lewis 1973), root mean square error of approximation (RMSEA; Hu and Bentler 1999), and the standardized root mean square residual (SRMR; Hu and Bentler 1999). A non-significant Chi square indicates that the variance–covariance matrix of the estimated model does not differ significantly from that of the sample. CFI and TLI values in the range of .90–.95 are considered acceptable fit and values > .95 are suggestive of good fit (Bentler 1990; Hu and Bentler 1999). RMSEA values ≤ .05 are regarded as good fit, values between .05 and .08 indicate reasonable fit, and values ≥ .10 suggest poor fit (Browne and Cudeck 1993). SRMR values < .08 are indicative of reasonably good fit (Hu and Bentler 1999). In interpreting this model, standardized regression coefficients of .10, .30, and .50 correspond with small, medium, and large effects, respectively (Kline 2011).

Results

Data Screening and Preparation

Bivariate correlations and descriptive statistics for model variables are presented in Table 2. Data were screened for skew and kurtosis following guidelines from Kline (2011) and screened for outliers using guidelines from Tabachnick and Fidell (2012). Eight cases were identified as univariate outliers (Z-score > 3.29) on Fear-1, three on Numb, and six on Time. A separate analysis was conducted in which the potential influence of these outliers was reduced by trimming these scores to one unit above or below the next most extreme score in the distribution. There were no differences in results, thus, the current paper reports findings with original scores. One multivariate outlier was found and data from this participant were deleted prior to analyses. Skew and kurtosis for all variables were within acceptable levels, except for Time. As noted, the use of maximum likelihood estimation with robust standard errors is appropriate

Table 2 Correlations and descriptive statistics for model variables

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	M^a	SD^a	Range[a]	N
1	ISS shame	–														45.76	24.84	0–95	181
2	PTCI self	.82***	–													3.16	1.41	1–6.62	178
3	PTCI self-blame	.58***	.65***	–												3.52	1.59	1–7	179
4	TRGI guilt distress	.53***	.61***	.40***	–											2.69	.94	.5–4	178
5	TRGI guilt appraisals	.53***	.45***	.54***	.40***	–										1.92	.85	0–3.94	175
6	Fear-1	.09	.16**	.08	.22**	−.04	–									83.51	25.02	0–100	257
7	Fear-2	.00	.08	.00	.16*	−.08	.62***	–								80.32	29.71	0–100	257
8	Fear-3	.10	.19**	.04	.26***	.01	.44***	.56***	–							58.65	41.29	0–100	256
9	Reex	.28***	.39***	.19**	.46***	.16	.19**	.16*	.21**	–						12.00	7.75	0–31	208
10	Hypr	.32***	.43***	.28***	.43***	.24**	.19**	.16*	.21**	.65***	–					10.02	7.63	0–28	208
11	Avoid	.18**	.24***	.09	.27***	.18*	.20**	.18*	.19**	.55***	.51***	–				4.84	4.11	0–14	208
12	Numb	.37***	.41***	.25***	.24**	.27**	.17**	.16**	.14*	.41***	.53***	.42***	–			5.61	6.34	0–31	208
13	Time	−.10	−.10	−.12	−.13	−.16*	.05	.10*	.01	−.22***	−.25***	−.24***	−.13**	–		42.68	66.29	1–480	256
14	Non-IPV traumas	.19**	.16*	.02	.11	.12	−.06	.02	.14*	.13	.16*	.08	.03	.06	–	3.71	2.31	0–11	244

Reex = Clinician-Administered PTSD Scale (CAPS) Re-experiencing cluster; Avoid = CAPS Avoidance cluster; Numb = CAPS Numbing cluster; Hypr = CAPS Hyperarousal cluster; Fear-1 = Domestic Violence Interview (DVI) item "How fearful or afraid did you feel?"; Fear-2 = DVI item "How much danger did you feel you were in?"; Fear-3 = DVI item "How certain were you that you were going to die?"; PTCI Self = Posttraumatic Cognitions Inventory (PTCI) Negative Thought about the Self subscale; PTCI Self-blame = PTCI Self-Blame subscale; ISS Shame = Internalized Shame Scale Shame subscale; TRGI Guilt Distress = Trauma-Related Guilt Inventory Guilt (TRGI) Distress subscale; TRGI Guilt Appraisals = TRGI Guilt Cognitions subscale; Time = Time since most recent abusive relationship; Non-IPV Traumas = Additional Traumas measured by the Life Events Checklist. Correlations calculated following adjustment for relative variances

*$p < .05$; **$p < .01$; ***$p < .001$

[a]Values prior to adjustment for relative variances

for non-normal data (Kline 2011), permitting inclusion of Time as an untransformed variable. Due to the ratio of the largest to smallest variance being greater than 10, the variance–covariance matrix for these data was considered ill scaled (Kline 2011). As such, Reex, Avoid, Numb, Hypr, Fear-1, Fear-2, Fear-3, ISS Shame, PTCI Self-blame, PTCI Self, TRGI Guilt Distress, TRGI Guilt Appraisals, Time, and Non-IPV Traumas were rescaled by means of multiplication with a constant (Kline 2011).

Measurement Model

The initial measurement model provided reasonable fit to the data, $\chi^2(43) = 96.87$, $p < .001$; CFI = .94; TLI = .91; RMSEA = .07 [90% CI .05–.09]; SRMR = .06. The Chi square statistic was significant; however, following recommendations from Brown (2006), we relied on other reported fit indices more heavily when assessing model fit. Modification indices suggested several changes that could improve model fit. Three modification indices were added based on theoretical grounds. Specifically, the error covariance of guilt appraisals with negative beliefs about the self, self-blame, and shame were allowed to be freely estimated in the respecified model. Fit indices for the respecified measurement model showed an improved fit over the initial model, $\chi^2(40) = 63.21$, $p = .011$; CFI = .98; TLI = .96; RMSEA = .05 [90% CI .02–.07]; SRMR = .05. Results from the Chi-Square Difference Test for MLR using Satorra–Bentler Scaled Chi-Square (Satorra 2000) indicated that the improvement in fit was statistically significant, $\Delta\chi^2(3) = 33.66$, $p < .001$, thus, the respecified model was retained. Factor loadings of the indicators of hypothesized latent variables were then examined. The significance and magnitude of standardized loadings (all .60 or above, $p < .001$) suggested that the indicators of peritraumatic perceptions of fear/life threat and posttraumatic negative self-conscious appraisals/emotions adequately measured their corresponding latent variables. Standardized factor loadings from the final model are shown in Fig. 1.

Final Model with Measurement and Structural Components

Analyses revealed acceptable model fit statistics for the structural model, $\chi^2(52) = 79.38$, $p = .009$; CFI = .97; TLI = .95; RMSEA = .05 [90% CI .02–.06]; SRMR = .05. Unstandardized and standardized estimates for significant paths are presented in Fig. 1. The model explained 28, 20, 25, and 33% of the variance in re-experiencing, avoidance, numbing, and hyperarousal symptom severity, respectively.

Posttraumatic self-conscious appraisals/emotions showed significant associations with re-experiencing ($b = .49$, $p < .001$), avoidance ($b = .18$, $p = .010$), numbing ($b = .49$, $p < .001$), and hyperarousal ($b = .41$, $p < .001$) symptoms. Similarly, peritraumatic perceptions of fear/life threat showed significant associations with re-experiencing ($b = .37$, $p = .003$), avoidance ($b = .27$, $p = .010$), numbing ($b = .23$, $p = .017$), and hyperarousal ($b = .27$, $p = .005$) symptoms.

Discussion

The purpose of the present study was to examine the relative associations of peritraumatic perceptions of fear/life threat and posttraumatic negative self-conscious appraisals/emotions with specific PTSD symptom clusters, based on a four-factor *DSM-IV* PTSD model. To help bridge gaps in the existing literature, we investigated the utility of considering posttraumatic negative self-conscious appraisals and emotions (i.e., negative beliefs about the self, self-blame, guilt, and shame) as a latent construct in association with PTSD symptoms. Significant associations emerged between posttraumatic negative self-conscious appraisals/emotions and re-experiencing, avoidance, numbing, and hyperarousal symptom clusters, consistent with hypotheses. Contrary to predictions, however, peritraumatic perceptions of fear and life threat were also significantly associated with each of the four symptom clusters.

Findings from the present study demonstrate that peritraumatic perceptions of fear/life threat and posttraumatic negative self-conscious appraisals/emotions are independently associated with PTSD symptoms, although effect sizes for the latter tended to be more robust. Differences between these results and those of Halligan et al. (2003) may be attributed to the chronic nature of IPV in our sample and hence, the protracted experience of peritraumatic perceptions of fear/life threat. The current results are in line with Ozer et al.'s (2003) meta-analysis and fear-based models of PTSD (e.g., Foa and Kozak 1986). Importantly, changes to the diagnostic classification and criteria for PTSD in the *DSM-5* were based on findings from empirical studies highlighting an array of other negative appraisals and emotions in PTSD in addition to fear/anxiety (for a review, see Miller et al. 2014). In line with these revisions, results from the present study further support expanding the conceptualization of PTSD beyond fear/anxiety to also involve posttraumatic negative self-conscious appraisals and emotions, as a whole construct. As the field advances in our investigation of processes that undergird the development and maintenance of PTSD symptoms, these findings suggest concurrent attention to fear-based processes occurring at the time of trauma exposure as well as negative self-conscious appraisals and emotions that develop following the traumatic event (Ehlers and Clark 2000; Foa and Kozak 1986; Lee et al. 2001).

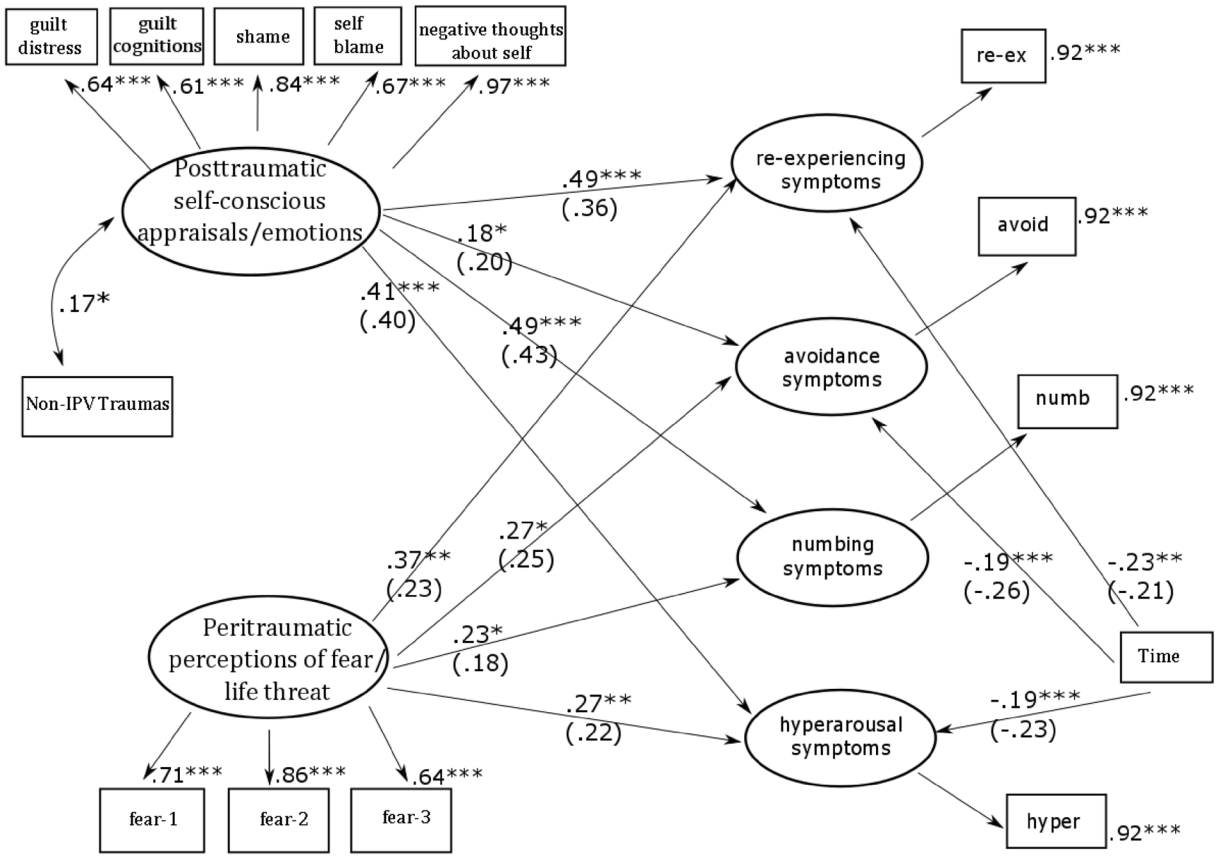

Fig. 1 Structural equation modeling examining the associations of peritraumatic perceptions of fear/life threat and posttraumatic self-conscious appraisals/emotions with specific PTSD symptom clusters. Standardized factor loadings are presented. Unstandardized and standardized (in parentheses) estimates are listed for significant paths. For simplicity of presentation, the covariances/correlations among the PTSD symptom clusters were significant at $p < .001$, but are not displayed. The error covariances between guilt appraisals and negative beliefs about the self and self-blame were also significant at $p < .05$, but are not displayed. Covariance/correlations among all independent variables were modeled, but displayed only if significant. *$p < .05$; **$p < .01$; ***$p < .001$

The current findings did not support differential associations of peritraumatic perceptions of fear/life threat or posttraumatic negative self-conscious appraisals/emotions with specific PTSD symptom clusters. Dewey et al. (2014) found a nonsignificant association between peritraumatic fear and the hyperarousal symptom cluster among a sample of undergraduate students. However, the protracted experience of peritraumatic perceptions of fear/life threat among IPV survivors may have contributed to differences in findings between Dewey et al. (2014) and the current study. Additionally, although in Blain et al. (2013) negative beliefs about one's self and self-blame did not correlate with avoidance or hyperarousal symptoms, it is important to note that the examination of posttraumatic negative self-conscious appraisals and emotions as a latent construct in the current study may have resulted in more robust associations with specific PTSD symptom clusters. Differences in trauma characteristics and analytical approaches between these and the present study should be considered when comparing results.

The current study is the first to consider posttraumatic dysfunctional beliefs about the self, self-blame, guilt, and shame as a latent construct in association with PTSD symptoms. These appraisals and emotions have been shown to be highly interrelated and commonly co-occur following a traumatic event (e.g., Beck et al. 2011, 2015; Blum 2008). Consequently, examining posttraumatic negative self-conscious appraisals and emotions simultaneously as separate independent variables may not accurately reflect their relationship with PTSD symptoms, as illustrated in counterintuitive findings regarding guilt and shame (e.g., Leskela et al. 2002; Pineles et al. 2006; Vásquez et al. 2012) which likely reflect a statistical suppression effect. The current results revealed that the factor loadings for negative beliefs about the self, self-blame, guilt, and shame were comparable (all .60 or above, $p < .001$) and in the same direction; the latent

construct of posttraumatic negative self-conscious appraisals and emotions, in turn, was associated with each cluster of PTSD symptoms. Thus, contrary to past research that examined each construct individually (e.g., Leskela et al. 2002; Vásquez et al. 2012), these findings illustrated instead that each of the appraisals and emotions has a significant positive association with PTSD symptoms, consistent with available models of PTSD (e.g., Ehlers and Clark 2000; Kubany et al. 1995; Lee et al. 2001). The current findings therefore suggest that consideration of posttraumatic negative self-conscious appraisals and emotions as a latent construct rather than as separate concurrent independent variables in association with PTSD symptoms is a methodological advantage. Future research on PTSD may benefit from utilizing this approach.

Theoretical accounts suggest that both peritraumatic perceptions of fear/life threat and posttraumatic self-conscious appraisals/emotions influence PTSD symptoms through interference with processing of the trauma memory. Ehlers and Clark (2000) propose that PTSD involves a trauma memory that is not well elaborated and poorly incorporated with other autobiographical memories. Peritraumatic perceptions of fear/life threat are thought to generalize to maintain ongoing perceptions about the dangerousness of the world, which in turn, motivate the use of various cognitive/behavioral strategies as an attempt to control the perceived external threat (e.g., Ehlers and Clark 2000; Foa and Cahill 2001; Zoellner et al. 2014). Likewise, painful thoughts and feelings of self-blame, negative beliefs about the self, shame, and guilt (i.e., internal threat) associated with the traumatic event also may encourage the individual to avoid any thoughts of the trauma via similar strategies (e.g., Ehlers and Clark 2000; Lee et al. 2001). Reliance on these strategies, in turn, interferes with elaboration of the trauma memory, and in a feed-forward loop, these processes prevent changes in dysfunctional fear- and self-related appraisals and emotions (Ehlers and Clark 2000). Future research is needed to test these hypothesized mechanisms with appropriate longitudinal designs.

The results have important clinical implications. Our finding of a significant association between peritraumatic perceptions of fear/life threat and PTSD symptoms is consistent with the extant literature on the role of associative learning in PTSD and exposure-based interventions for the disorder (e.g., Foa and Kozak 1986). Additionally, the present findings suggest that approaches to treatment for PTSD address posttraumatic negative self-conscious appraisals and emotions, particularly following extended interpersonal trauma such as IPV. To date, treatment studies that expressly target IPV samples are small in number. Kubany et al. (2004) and Beck et al. (2016) both examined the impact of Cognitive Trauma Therapy for Battered Women (CTT-BW; Kubany et al. 2004) with this population. CTT-BW includes interventions that address fear (via exposure) and guilt (via cognitive restructuring). Both of these studies noted significant decreases in negative thoughts about the world (e.g., "The world is a dangerous place"), dysfunctional self-conscious appraisals and emotions, and PTSD symptoms following treatment, although neither study included a measure of fear. Beyond exposure-based interventions, a recent laboratory study may shed insight into the impact of cognitive reappraisal training focused on perceptions of threat for survivors who have experienced protracted interpersonal trauma. Nickerson and colleagues (2017) examined the impact of cognitive reappraisals versus emotional suppression in 76 refugees and asylum-seekers; measures included self-reported negative affect, heart rate, and intrusive memories of images depicting trauma-related scenes. Results suggested that cognitive reappraisal led to less frequent and intense intrusive memories in the 2 days following the laboratory session among participants high in PTSD symptoms, relative to emotional suppression. No between-condition effects were noted for negative affect or heart rate, suggesting that cognitive reappraisal did not differentially impact these response domains. Additional laboratory work such as this is needed to investigate whether cognitive reappraisal targeting negative self-conscious thoughts and emotions can affect PTSD symptoms, which could help to dismantle the impact of specific interventions for PTSD on specific domains, including perceived fear/life threat and negative self-conscious appraisals and emotions.

It is important to note that the current study has several limitations. First, although current theoretical models suggest that peritraumatic perceptions of fear/life threat and posttraumatic self-conscious appraisals/emotions can both influence PTSD symptoms (Ehlers and Clark 2000; Foa and Kozak 1986), the current study does not permit causal conclusions, as the data are cross sectional. Relatedly, the retrospective nature of our assessment of peritraumatic perceptions of fear/life threat in this study renders it difficult to determine how accurately the participants were able to recall their emotions at the time of trauma exposure. Second, the DVI is not a psychometrically validated measure. Future research would benefit from a validated instrument measuring peritraumatic fear (e.g., Trauma Emotion Questionnaire; Vernon 2009). Third, this sample was comprised only of female survivors of IPV. It will be important to examine this model among men and survivors of other types of trauma to ensure generalizability of findings. As well, only 21.4% of the sample was diagnosed with PTSD, suggesting that the majority of participants had subthreshold levels of symptoms; different patterns of associations among these constructs may be observed in individuals with a PTSD diagnosis. Lastly, the present study did not consider other

constructs shown to be associated with PTSD symptoms (e.g., dissociation, social support); future research should expand the working model to include additional constructs.

This study helps advance understanding of cognitive and emotional factors that are associated with PTSD symptoms. Peritraumatic perceptions of fear/life threat and posttraumatic negative self-conscious appraisals/emotions both emerged as having significant associations with re-experiencing, avoidance, numbing, and hyperarousal symptoms in a sample of women who had experienced IPV. Much more work is needed to understand the complex link between trauma and PTSD, including examination of the mechanisms by which peritraumatic perceptions of fear/life threat and posttraumatic self-conscious appraisals/emotions contribute to the variance in PTSD symptoms. As the field moves toward a more thorough understanding of PTSD following traumatic experiences, a more refined understanding of underlying psychological processes which feed PTSD can ultimately drive improvement of prevention and early intervention efforts.

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Compliance with Ethical Standards

Conflict of Interest Han N. Tran and J. Gayle Beck declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Animal Rights This article does not contain any studies with animals performed by any of the authors.

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