Article

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Tonic Immobility in Childhood Sexual Abuse Survivors and Its Relationship to Posttraumatic Stress Symptomatology

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Past research has shown that 37% to 52% of sexual assault survivors report experiencing a set of peritraumatic responses, which include gross motor inhibition, analgesia, and fixed or unfocused staring. This response set closely resembles a set of unconditioned responses, collectively known as Tonic Immobility (TI). This study examined TI among childhood sexual abuse (CSA) survivors and its relation to PTSD symptomatology. Participants were 131 female college undergraduates who completed questionnaires assessing sexual abuse history, TI, and PTSD symptom severity. Results showed that TI partially mediated the relation between peritraumatic fear and overall PTSD symptom severity and completely mediated the relation between fear and the PTSD reexperiencing symptoms. Although peritraumatic fear is associated with TI, the mediation findings provide evidence for the notion that these responses are separate from one another. These results suggest that TI during CSA may play an important role in the subsequent PTSD symptomatology in adulthood.

Keywords: *sexual abuse; Hx of child abuse; mental health and violence*

Although past research has focused on the roles of peritraumatic dissociation and fear in the development of posttraumatic stress disorder (PTSD; Ozer, Best, Lipsey, & Weiss, 2003; Rizvi, Kaysen, Gutner, Griffin,

& Resick, 2008), research has also shown that another set of peritraumatic responses may be related to posttraumatic symptomatology. This response set, known as tonic immobility (TI), consists of profound but reversible physical immobility and muscular rigidity; sympathetic and parasympathetic responses; intermittent periods of eye closure; fixed, unfocused gaze or stare; Parkinsonian-like tremors in the extremities; suppressed vocal behavior; analgesia; and waxy flexibility (Gallup & Rager, 1996). TI is thought to be the ultimate response in a series of defense reflexes (i.e., freezing, flight, fight, TI) observed among many animal species that are elicited by circumstances involving imminent mortal danger where escape is impossible (Fanselow, 1994; Gallup & Rager, 1996; Marx, Forsyth, Gallup, Lexington, & Fusé, 2008; Ratner, 1967).

Although fear is regarded as an essential component for the induction of TI (Gallup, 1977), it is not sufficient for TI elicitation. Among animals, TI can only be elicited under conditions in which both restraint and fear occur. Researchers have suggested that TI-like responses occur in about one third to one half of sexual assault and childhood sexual abuse (CSA) survivors (e.g., Fusé, Forsyth, Marx, Gallup, & Weaver, 2007; Galliano, Noble, Travis, & Puechl, 1993; Heidt, Marx, & Forsyth, 2005) and that these TI-like responses may be a byproduct of intense fear and perceived inescapability experienced by the individual. Furthermore, TI has been shown to significantly correlate with psychological difficulties, including depression, anxiety, and PTSD symptom severity (e.g., Heidt et al., 2005).

More recently, Bovin, Jager-Hyman, Marx, Gold, and Sloan (2008) suggested that, as the antecedents of TI have been shown to be related to PTSD, TI may mediate the relationship between peritraumatic emotional and cognitive responses and PTSD symptom severity. In a preliminary test of this hypothesis, the authors found that TI partially mediated the relationship between peritraumatic fear and PTSD among a sample of adult sexual assault survivors, and that it completely mediated the relationship between perceived inescapability and PTSD symptom severity. Furthermore, on examination of individual symptom clusters, the results showed that TI completely mediated the relationship between peritraumatic fear and the reexperiencing symptom cluster of PTSD, while partially mediating the relationship between peritraumatic fear and the avoidance/numbing symptom cluster. Together, these findings suggest that TI may be the mechanism through which peritraumatic fear serves as a risk factor for increased overall PTSD symptom severity as well as for specific PTSD symptom clusters.

In this study, we further examined the extent and nature of the relationship between PTSD symptom severity and TI among another sample of

trauma survivors, namely, CSA survivors. Consistent with the results of Bovin et al. (2008) as well as with other research showing that other peritraumatic experiences (e.g., dissociation) that are associated with TI significantly predict each of the PTSD symptom clusters (Birmes et al., 2003; O'Toole, Marshall, Schureck, & Dobson, 1999), we hypothesized that TI would mediate the relationship between peritraumatic fear and PTSD symptom severity. In addition, we planned to explore the extent to which TI mediated the relations between fear and each of the three PTSD symptom clusters (reexperiencing, avoidance/numbing, and hyperarousal). Based on Bovin et al.'s results with survivors of adult sexual trauma, we hypothesized that TI would completely mediate the relationship between fear and reexperiencing and partially mediate between fear and avoidance/numbing symptom clusters.

Method

Participants

Potential participants were recruited through posted notices and announcements. Participants were a subset of individuals from a larger study investigating risk for sexual victimization. Our subsample included 131 female college undergraduates at an urban university in the United States, who endorsed experiencing at least one sexual assault during childhood, defined as sexual aggression or victimization occurring at age 13 or younger. Fifty-four participants (41%) endorsed experiencing sexual assault in childhood only, and 77 participants (59%) reported victimization in both childhood and adulthood. The high rate of revictimization is not surprising given CSA survivors are twice as likely to be revictimized in adulthood (for review, see Messman-Moore & Long, 2003). Participants ranged in age from 20 to 45 years ($M = 24.00$, $SD = 4.30$). The ethnic breakdown of the sample was 40% White, 38% African American, 11% Asian, 5% Hispanic, and 6% endorsing Mixed/Other.

Procedure

After obtaining informed consent at an initial lab session, participants were given questionnaires assessing sexual assault history, TI, and PTSD symptom severity. Subsequently, participants were debriefed about the study and its goals and were provided with referrals for psychological services. The protocol and informed consent form were approved by the university's Institutional Review Board.

Measures

PTSD symptomatology was assessed using the Posttraumatic Diagnostic Scale (PDS; Foa, 1996). The PDS is a 49-item self-report questionnaire that assesses for the presence and severity of PTSD. Respondents report on PTSD symptomatology experienced within the last month. Strong internal consistency and 2-week test–retest reliability has been shown for PTSD diagnoses obtained via the PDS as well as symptom severity (Foa, Cashman, Jaycox, & Perry, 1997). The validity of PTSD diagnoses obtained via the PDS has been examined by comparison with the Structured Clinical Interview for *DSM-III-R*–posttraumatic stress disorder (SCID-PTSD) module (Spitzer, Williams, Gibbon, & First, 1990) and has been shown to have a strong kappa of 0.65, with 82% agreement between the two measures (Foa et al., 1997). Symptom severity scores are calculated by summing responses to the items, with a possible range of 0 to 51. Severity scores below 10 are considered mild, 10 to 20 moderate, 21 to 35 moderate to severe, and above 35 is severe (Foa, 1996). In addition to the total severity score, the PDS provides scores for the reexperiencing, avoidance/numbing, and hyperarousal symptom clusters.

Both peritraumatic fear and TI were assessed using the Tonic Immobility Scale–Child Form (TIS-C; Forsyth, Marx, Heidt, Fusé, & Gallup, 2000). The TIS-C is a two-part, 30-item questionnaire developed to assess the degree to which an individual experiences various aspects of the TI response during an episode of CSA. The TIS-C questions are anchored to the most recent episode of CSA recalled. An exploratory factor analysis (EFA) of the items in Part 1 of the TIS within a sample of female undergraduate sexual assault survivors (Fusé et al., 2007, please see for psychometric properties of the TIS) yielded a two-factor solution, accounting for 67.26% of the variance. These two independent factors were a TI factor (7 items; 43.75% of the variance) and a Peritraumatic Fear factor (3 items; 23.51% of the variance). An example of a fear item is "Rate the extent to which you feared for your life or felt as though you were going to die," which is scored using a Likert-type scale ranging from 0 (*absolutely no fear for my life*) to 6 (*extreme fear for my life*). An example of a TI item is "Rate the degree to which you were unable to move even though not retrained," scored using a Likert-type scale ranging from 0 (*could move freely*) to 6 (*could not move at all*). Responses to items in the fear factor were summed to provide a total peritraumatic fear score, and responses to items in the TI factor were summed to provide a total TI score for the analyses.

An abbreviated version of the Life Experiences Questionnaire (LEQ; Long, 1999) was used to assess the presence and severity of CSA. The LEQ includes items designed to assess various aspects of CSA experiences, including the nature and severity of victimization, duration of abuse, relationship to perpetrator, and disclosure of abuse. CSA experiences were assessed with a series of eight yes/no questions, ranging from someone exposing himself to completed forcible sexual intercourse. Messman-Moore and Long (2000) have shown strong internal consistency (Cronbach $\alpha = .89$) and 2-week test–retest reliability with kappas ranging from 0.39 (items regarding severity of force) to 1.0 (duration of abuse) for the LEQ. Participants' CSA severity was determined by their responses to the LEQ and then assigned to either a sexual contact, attempted rape, or completed rape group. Each participant was included in only one category; those who endorsed multiple CSA experiences were included in the most severe category endorsed.

Data Analyses

Following recommendations by MacKinnon, Lockwood, and Williams (2004), a nonparametric, resampling approach (bootstrapping procedure; see Preacher & Hayes, 2004b) was used to test the indirect (i.e., mediator) effect of TI. We used a bootstrap procedure because this test does not assume normality in the distribution of the indirect effect and standard error, unlike other common procedures (e.g., the Sobel test; Sobel, 1982). The bootstrapping method performs better across varying sample sizes and effect sizes (MacKinnon et al., 2004), and it provides an estimate of the indirect effect and calculates a confidence interval (CI) for the point estimate (Mallinckrodt, Abraham, Wei, & Russell, 2006). The SPSS macros created by Preacher and Hayes (2004b, in press) were used to test mediation, programmed to 3,000 bootstrap resamples.

Results

Preliminary Analyses

Scores on the peritraumatic fear scale ranged from 0 to 17, with a mean score of 8.09 ($SD = 3.90$). Participant's mean score on the TI scale was 19.56 ($SD = 8.43$) and ranged from 2 to 42. The mean PDS total score was 11.06 ($SD = 10.80$), corresponding to the low end of the moderate score

Table 1
Correlational Relationships Between Fear, TI, and the Four Outcome Measures

Variable	2	3	4	5	6
1. Fear	.51***	.33***	.27**	.37***	.27**
2. TI	—	.33***	.35***	.30***	.27**
3. PDS total		—	.89***	.92***	.93***
4. Reexperiencing			—	.74***	.73***
5. Avoidance/numbing				—	.77***
6. Hyperarousal					—

Note: TI = tonic immobility; PDS total = total posttraumatic stress disorder score as assessed by the Posttraumatic Diagnostic Scale; reexperiencing = reexperiencing symptoms as assessed by the Posttraumatic Diagnostic Scale; avoidance/numbing = avoidance and numbing symptoms as assessed by the Posttraumatic Diagnostic Scale; hyperarousal = hyperarousal symptoms as assessed by the Posttraumatic Diagnostic Scale. N ranged from 120 to 127.
$^{**}p < .01$. $^{***}p < .001$.

range. Scores on the PDS ranged from 0 (no PTSD) to 43 (severe). For the PTSD symptom clusters, the mean reexperiencing score was 3.21 ($SD = 3.31$), avoidance/numbing score was 4.34 ($SD = 4.62$), and hyperarousal score was 3.51 ($SD = 3.88$). Bivariate correlations were conducted to examine the associations among these seven variables; all variables were significantly correlated (all $ps < .01$; see Table 1). By all indicators, the predictors in this study showed no evidence of multicollinearity. Specifically, the bivariate correlation between fear and TI was less .8 (Lewis-Beck, 1980), all variance inflation factors were below 100, and all tolerance statistics were greater than .01 (Afifi, Clark, & May, 2004).

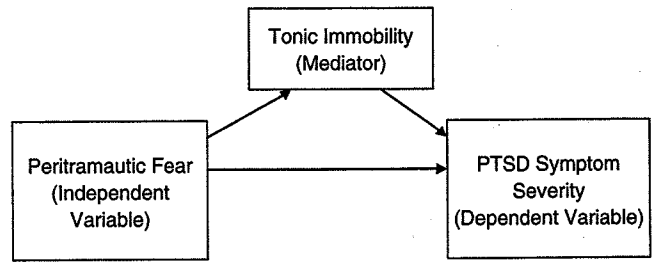
All 131 participants were classified into groups based on their reported CSA experience(s); participants who endorsed multiple CSA experiences were included in the most serious CSA group. Half ($n = 66$) of the participants were included in the sexual contact group, 31% reported experiencing attempted rape ($n = 41$), and 18% reported experiencing completed rape ($n = 24$). One-way ANOVAs were conducted to examine whether these groups differed on their PTSD severity, fear, or TI scale scores. No significant differences in fear or TI were found between these groups, $F(2, 126) = 1.70$, $p = .19$, and $F(2, 125) = 1.07$, $p = .35$, respectively. However, the PTSD severity by group ANOVA was significant, $F(2, 124) = 6.08$, $p < .01$. The completed rape group ($M = 15.57$, $SD = 11.96$) and the attempted rape group ($M = 13.52$, $SD = 11.48$) had significantly higher PDS scores than the sexual contact group ($M = 7.97$, $SD = 9.02$). As PTSD symptom severity

was our primary outcome measure, we collapsed the attempted and completed rape groups into one group, creating a dichotomous CSA severity variable (attempted and completed rape vs. sexual contact) for use as a covariate in future analyses.

Mediation Analyses

In accordance with Baron and Kenny's (1986) requirement for mediation, the results of the regression analyses suggest that TI partially mediates the relationship between fear and PDS total scores and completely mediates the relationship between fear and reexperiencing scale scores. See Figure 1 for a depiction of the first mediation model in our study. The traditional Step 1 from the Baron and Kenny approach is supported given that peritraumatic fear significantly predicted the PTSD outcome measures (see Table 2, Step 1). Step 2 is also supported as the predictor variable that significantly predicted the mediator, as peritraumatic fear positively predicted TI, $F(1, 125) = 44.06$, $p < .001$. When the mediator, TI, was included in the analyses, the predictive value of fear was reduced for all outcome variables (see Table 2, Step 3). Results showed that TI partially mediated the relationship between peritraumatic fear and PTSD, the model was significant, $F(2, 119) = 9.87$, $p < .001$, and both peritraumatic fear and TI continued to significantly predict PTSD severity. These findings suggest that peritraumatic fear and TI have related, yet distinct, pathways to the prediction of overall PTSD symptom severity. In contrast, TI fully mediated the relationship between peritraumatic fear and reexperiencing, as fear no longer was a significant predictor of reexperiencing when TI was included as a predictor. These results indicate that it is primarily through TI that fear predicts reexperiencing, and although this indicates a complete mediation, it is important to note that the residual coefficient for the prediction of reexperiencing by peritraumatic fear remains greater than 0 ($\beta = .11$). For the avoidance/number symptom cluster, neither peritraumatic fear nor TI predicted at the $p < .05$ level when entered together as predictors. TI did not mediate the relationship between peritraumatic fear and the hyperarousal symptom cluster, as only fear significantly predicted this outcome variable. We used a nonparametric resampling method to derive the 95% CI for the indirect effect of the fear through TI on the PTSD outcome measures, using the SPSS Macro provided by Preacher and Hayes (2004a), which is similar to the forth and last step of the Baron and Kenny method. For fear predicting PDS total scores, the true indirect effect was estimated to lie between .035 and .635 with a 95% CI. For fear predicting reexperiencing, the true indirect

Figure 1
Mediation Model



effect was estimated to lie between .034 and .227 with a 95% CI. Because zero is not within the 95% CI, we can conclude that the indirect effect is significantly different from zero at $p < .05$ (two-tailed). As expected from the Baron and Kenny (1986) approach, the bootstrapping approach confirmed that the indirect effect did not significantly differ from zero in the analyses including TI mediating the relationship between fear and the avoidance/numbing and hyperarousal symptom clusters.

To address the possibility that TI is merely a proxy for the severity of sexual assault, as has been suggested (Zoellner, 2008), we reran the mediation analyses, entering CSA severity as a covariate. Table 3, Step 1 displays the results for peritraumatic fear predicting the outcome variables while controlling for CSA severity. In all cases, peritraumatic fear remains a significant predictor but its predictive value was somewhat reduced. For Step 3, when CSA severity was included in the analyses, results suggested that TI completely mediated the relationship between peritraumatic fear and PTSD, as TI continued to significantly predict PTSD severity, but peritraumatic fear did not. Results of the mediation analyses for the PTSD symptom clusters remained unchanged while controlling for CSA severity, with the exception of the reduction in predictive power for both peritraumatic fear and TI in all cases (see Table 3, Step 3).[1] Using a method that allows covariates to be included in the mediation analysis (Preacher & Hayes, in press), we generated in the mediational analysis estimates for the true indirect effect of the mediator variable. For fear predicting PDS total, the true indirect effect was estimated to lie between .050 to .616 with a 95% CI. For fear predicting reexperiencing, the true indirect effect was estimated to lie between .036 and .220 with a 95% CI. Again, because zero is not in the

Table 2
Standardized Multiple Regressions of PTSD Symptom Severity on Fear and on Fear and TI

	Step 1				Step 3			
	PDS Total	Reexperiencing	Avoidance/ Numbing	Hyperarousal	PDS Total	Reexperiencing	Avoidance/ Numbing	Hyperarousal
Fear (β)	.33***	.27**	.27**	.37***	.22*	.11	.19†	.30**
TI (β)	—	—	—	—	.21*	.29**	.17	.14
Adjusted R^2	.10***	.06***	.07***	.13***	.13***	.12***	.08***	.14***

Note: PTSD = posttraumatic stress disorder; TI = tonic immobility; PDS total = total PTSD score as assessed by the Posttraumatic Diagnostic Scale; reexperiencing = reexperiencing symptoms as assessed by the Posttraumatic Diagnostic Scale; avoidance/numbing = avoidance and numbing symptoms as assessed by the Posttraumatic Diagnostic Scale; hyperarousal = hyperarousal symptoms as assessed by the Posttraumatic Diagnostic Scale. $N = 120$.
†$p < .1$. *$p < .05$. **$p < .01$. ***$p < .001$.

Table 3
Standardized Multiple Regressions of PTSD Symptom Severity on Fear and on Fear and TI, With CSA Assault Severity Included as a Covariate

	Step 1				Step 3			
	PDS Total	Reexperiencing	Avoidance/ Numbing	Hyperarousal	PDS Total	Reexperiencing	Avoidance/ Numbing	Hyperarousal
CSA Assault Severity (β)	.29***	.30***	.27**	.22*	.28***	.29***	.27**	.22*
Fear (β)	.29***	.22*	.23**	.34***	.19†	.08	.15	.27**
TI (β)	—	—	—	—	.19*	.27**	.15	.13
Adjusted R^2	.18***	.14***	.13***	.17***	.20***	.19***	.15***	.18***

Note: PTSD = posttraumatic stress disorder; TI = tonic immobility; CSA = childhood sexual abuse; PDS total = total PTSD score as assessed by the Posttraumatic Diagnostic Scale; reexperiencing = reexperiencing symptoms as assessed by the Posttraumatic Diagnostic Scale; avoidance/numbing = avoidance and numbing symptoms as assessed by the Posttraumatic Diagnostic Scale; hyperarousal = hyperarousal symptoms as assessed by the Posttraumatic Diagnostic Scale. $N = 120$.
†$p < .1$. *$p < .05$. **$p < .01$. ***$p < .001$.

95% CI, we can conclude that the indirect effect is significantly different from zero at $p < .05$ (two-tailed). The bootstrapping approach confirmed that the indirect effect did not significantly differ from zero in the analyses including TI mediating the relationship between fear and the avoidance/numbing and hyperarousal symptom clusters.

Discussion

Results from this study suggest that TI may be an important risk factor for PTSD symptomatology in individuals who have experienced CSA. Specifically, results showed that TI partially mediated the relationship between peritraumatic fear and PTSD symptom severity and completely mediated this relationship even when analyses controlled for CSA severity. Although TI did not mediate the relationship between peritraumatic fear and avoidance/numbing and hyperarousal symptoms, it completely mediated the relationship between fear and the reexperiencing symptoms.

These results both corroborate and extend previous research on the prevalence and effects of TI during CSA. Specifically, these results build on Heidt et al.'s (2005) work linking CSA and TI. This study showed that women who reportedly experienced TI during a CSA episode displayed greater PTSD symptomatology than women who did not experience TI during a CSA episode. In concert with previous findings, our results suggest that TI may be an important risk factor for specific PTSD symptom clusters. In addition, our results complement those from Bovin et al.'s (2008) study on survivors of adult sexual assault. Although the two samples focus on different trauma types, results across the two studies show similar associations between TI, peritraumatic fear, and postassault PTSD symptomatology.

TI's unique relationship to PTSD reexperiencing symptoms suggests that TI may be a critical factor in the development of these specific symptoms. One possible explanation for this specific relationship, posited by Marx et al. (2008), is that the gross motor inhibition or "freezing/paralysis" associated with TI promotes feelings of self-blame and guilt because of being unable to prevent the attack (e.g., Metzger, 1976). These feelings in turn may lead to rumination and/or intrusive thoughts about the traumatic episode (Metzger, 1976; Mezey & Taylor, 1988; Suarez & Gallup, 1979). Others have suggested that the freezing that occurs during TI may itself promote the emergence of PTSD and other posttraumatic sequelae (e.g., Levine, 1997; Ogden & Minton, 2002). Specifically, these authors suggest

that the TI response thwarts other more active and adaptive defensive responses from occurring during and after trauma. These failed responses, along with the inability to modulate arousal, can be sources of distressing bodily experiences and ultimately lead to trauma symptoms.

Interestingly, we failed to find a relationship between TI and the hyperarousal and avoidance/numbing clusters. Although the relationship between TI and dissociation is not yet clearly defined, recent studies have demonstrated an association with these two peritraumatic responses (Fusé et al., 2007; Heidt et al., 2005). TI may result in a pattern of suppressed autonomic arousal to trauma-related stimuli, which has been associated with the experience of dissociation during a trauma (e.g., Griffin, Resick, & Mechanic, 1997; Lanius, Williamson, & Boksman, 2002), and may result in this null finding. Furthermore, that lack of independent association between TI and avoidance/numbing symptoms may indicate that TI is less related to this cluster of PTSD symptoms and that the reexperiencing symptom cluster is the primary driver of the partial mediation between fear and overall symptom severity by TI.

In previous studies, nearly half of individuals who experienced TI during rape described the TI as extremely frightening (Fusé et al., 2007). Although peritraumatic fear is inextricably part of the experience of TI, as it is theorized as one of two antecedents to the experience, these two constructs are not synonymous. Our analyses showed that both peritraumatic fear and TI individually predict PTSD symptom severity when entered simultaneously into the model. This is consistent with previous research that has shown that although there is a relationship between fear and TI they are independently related to PTSD outcomes (Heidt et al., 2005; Marx et al., 2008).

In sum, these results demonstrate that TI is unique to peritraumatic fear as a predictor of PTSD symptoms in survivors of CSA, years after the assault. TI is not simply a measure of fear but inevitably related to it. In addition, though no clear ties between the severity of assault experienced by CSA survivors and TI were indicated, these factors are both significant predictors of later PTSD symptomatology. This study adds credibility to the construct of TI and indicates the importance of further work investigating the TI construct, the impact it has on trauma victims, and its place in the growing literature on different types of peritraumatic experiences.

Although the results of this study are promising, there are substantial limitations to overcome in future work. All participants were college women, and as such may be unrepresentative of CSA survivors as a whole.

Future research should work to include a representative sample in studies of TI as well as include those who have experienced different types of trauma. Examining age of the CSA as well as treatment received following the assault are important aspects to include in future research on TI and its relationship to peritraumatic fear and PTSD. Furthermore, the retrospective nature of this study precluded us from determining the exact relationship between TI and PTSD. Prospective studies will be important to confirm the results from this retrospective study and should allow for a better understanding of the relationship between assault and TI as well as the temporal facets and age-sensitive impact on the subsequent relationship between TI and PTSD. Furthermore, self-reports of peritraumatic fear and the experience of TI were assessed at the same time as PTSD symptom measures, which may have influenced memories of the event(s) (see Briere, 1997). Another limitation of this study is that the TIS-C is a relatively new measure and requires further psychometric evaluation. Although the TIS-C was designed to assess features of TI, it is likely that this measure will undergo further modification as we learn more about the sequelae of TI in humans.

Notwithstanding the limitations of this study, these results suggest that TI may be an important construct in understanding psychological distress in victims of CSA. Research on TI, how and when it occurs, the effects it has on the victims' subjective experience, and its implications on psychological symptoms years after the traumatic experience is still in its infancy. The results of this study suggest that TI may be an important construct in both the assessment and outcome of CSA, and further research into this phenomenon may be paramount to our understanding of the effects of sexual abuse. With continued research, the construct of TI will become better defined. Subsequent acknowledgment and understanding of the TI response may lead to an increased capacity for abuse survivors to feel more comfortable disclosing aspects of their experience and may also foster a more supportive environment that is sensitive to this dimension of trauma response and its consequences. Furthermore, it is important to understand the impact that TI may have specifically on reexperiencing symptoms, and how this may impact that trajectory of psychopathology associated with CSA. Further research on this relationship may provide important information for therapists working with sexual abuse survivors, leading to the inclusion of TI assessment as part of their clinical practice, and the recognition that this response is common, associated with negative outcomes, and likely will impact outcomes in those seeking professional help for their sexual abuse-related difficulties.

Note

1. We conducted the mediation analyses with revictimization status as a covariate. Peritraumatic fear continued to predict all posttraumatic stress disorder (PTSD) outcome variables in Step 1 of the analyses. However, when TI was included as a predictor, peritraumatic fear no longer significantly predicted PTSD symptom severity or the reexperiencing and avoidance/numbing symptom clusters. Although TI fully mediated the relationships between peritraumatic fear and these outcome variables, it did not significantly reduce the direct effect of peritraumatic fear on the hyperarousal symptom cluster.

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