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BRIEF REPORT

Trauma Centrality and PTSD Symptom Severity in Adult Survivors of Childhood Sexual Abuse

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Theorists have posited that regarding a trauma as central to one's identity leads to greater posttraumatic stress disorder (PTSD) symptom severity. To test this hypothesis, we administered the Centrality of Events Scale (CES) to women reporting a history of childhood sexual abuse (N = 102). The CES scores were correlated with PTSD symptom severity, depression severity, and self-esteem. In addition, we conducted a principal component analysis (PCA) to evaluate factors underlying the CES. The PCA yielded 3 factors reflecting (a) the centrality and integration of the trauma, (b) whether the event is regarded as a turning point in one's life story, and (c) whether the event is a reference point for expectations about the future. Each factor was associated with PTSD symptom severity.

Accessible, vivid, and affectively intense memories structure our autobiographical narratives, inform our sense of self, and act as reference points for our expectations and attributions in everyday life. Increasingly, researchers are using Berntsen and Rubin's (2006) Centrality of Events Scale (CES) to examine the impact of regarding a trauma as a central aspect of one's identity. The CES scores for traumatic or highly aversive events are positively associated with posttraumatic stress disorder (PTSD) symptom severity among undergraduates (e.g., Berntsen & Rubin, 2006, 2007; Robinaugh & McNally, 2010) and combat veterans (Brown, Antonius, Kramer, Root, & Hirst, 2010).

Although CES items load onto a single centrality-of-event factor (Berntsen & Rubin, 2006), Berntsen and Rubin developed the scale to assess three presumably distinct constructs. The first denotes the extent to which one regards an event as a turning point in one's life story. The second denotes the extent to which the event is central to one's identity. Although these constructs are rooted in the autobiographical memory literature (e.g., Pillemer, 1998), they are also relevant to several theories of PTSD. In particular, cognitive theorists have highlighted the etiological importance of negative trauma-related self-appraisals (Brewin & Holmes, 2003). These self-appraisals (e.g., "I have permanently changed for the worse."; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999) resemble items on the CES (e.g., "This event permanently changed my life."). Accordingly, a positive association between these constructs and PTSD severity is consistent with both cognitive (e.g., Ehlers & Clark, 2000) and mnemonic (Rubin, Berntsen, & Bohni, 2008) models of PTSD (for further discussion of appraisals and centrality, see Lancaster, Rodriguez, & Weston, 2011). The third construct concerns the extent to which the event acts as a reference point structuring the organization of autobiographical memory. Berntsen and Rubin (2006) have argued that integrating a trauma with other autobiographical memories heightens accessibility of the trauma memory thereby promoting both voluntary and involuntary retrieval and worsening PTSD. These researchers cite the positive association between CES scores and PTSD as evidence that greater integration is associated with greater PTSD (Berntsen & Rubin, 2007). However, items addressing the identity and turning point constructs may drive this association rather than those addressing the integration of the trauma with other autobiographical memories. Accordingly, there is a need to examine the association between each CES construct and posttraumatic distress.

In this study, we tested whether greater CES scores would be associated with greater psychological distress and poorer self-esteem in women reporting a history of childhood sexual abuse (CSA). Furthermore, we tested whether CES scores would remain associated with PTSD symptom severity after we controlled for depression severity, self-esteem, and two risk factors for PTSD: intelligence (McNally & Shin, 1995) and dissociation (Ozer, Best, Lipsey, & Weiss, 2003). Finally, we conducted a principal component analysis (PCA) and tested whether the resultant CES components were each associated with psychological distress.

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Table 1. Means, Internal Consistency, and Pearson Product-Moment Correlations

Measure	*M*	α	1	2	3	4	5	6	7	8
1. CES: Total Score	3.48	.94	–	.63***	.56***	.54***	.69***	.47***	−.45***	.49***
2. CES: Factor 1	–	–		–	.00	.00	.34**	.29**	−.32**	.29**
3. CES: Factor 2	–	–			–	.00	.25*	.18	−.25*	.07
4. CES: Factor 3	–	–				–	.63***	.30**	−.20*	.48***
5. PCL	43.74	.94					–	.64***	−.47***	.71***
6. BDI	17.79	.92						–	−.71***	.54***
7. RSS	18.90	.90							–	−.47***
8. DES	22.82	.95								–

Note. Due to missing data, $N = 93$ to 102. CES = Centrality of Events; PCL = Posttraumatic stress disorder Checklist; BDI = Beck Depression Inventory; RSS = Rosenberg Self-esteem Scale; DES = Dissociative Experiences Scale.
$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

METHOD

Participants

The subjects were women who reported a history of CSA ($N = 102$) who responded to our advertisement for a study on risk and resilience. Fifty-two percent were Caucasian. The mean age was 42.5 years ($SD = 12.1$). A phone screen confirmed that each woman had experienced at least one episode of sexual abuse prior to age 17 involving physical contact (e.g., fondling, oral-genital contact) with a perpetrator who was at least 5 years older than the victim. The Institutional Review Board of Harvard University approved the protocol and consent form. Participants provided written informed consent.

Measures

The Centrality of Events Scale (CES; Berntsen & Rubin, 2006) is a 20-item questionnaire with items rated on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). Participants rated items in reference to the CSA. Following Berntsen and Rubin, we calculated the CES score as the mean of all items. We administered the Posttraumatic Checklist–Civilian Version (PCL; Weathers, Litz, Huska, & Keane, 1994) and Beck Depression Inventory-II (BDI; Beck, Steer, & Brown, 1996) to assess symptom severity of PTSD and depression, respectively. For the PCL, participants rated each item in reference to the CSA. We administered the Rosenberg Self-Esteem Scale (RSS; Rosenberg, 1965) to assess self-esteem. To assess intelligence, we administered the Shipley Institute for Living Scale (Zachary, 1991) and converted each subject's score into its estimated WAIS-R equivalent. Finally, we administered the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986) to assess dissociation.

Table 2. Linear Regression Estimating Posttraumatic Stress Disorder Symptom Severity

Variable	B	*SE*	β	sr^2
Age	−0.05	0.09	−.04	<.01
WAIS-R Intelligence	−0.03	0.07	−.03	<.01
Dissociative Experiences Scale	0.33***	0.08	.35	.06
Rosenberg Self-Esteem	0.38	0.21	.15	.02
Depression severity	0.51***	0.13	.36	.08
Centrality of Events: Total score	6.79***	1.16	.43	.12

Note. Due to missing data, $n = 92$, $F(6, 85) = 34.74$, $p < .001$, $R^2 = .71$. WAIS-R = Wechsler Adult Intelligence Scale–Revised.
$^{***}p < .001$.

RESULTS

We calculated product-moment correlations among the CES, PCL, BDI, RSS, and DES scores (Table 1). The CES scores were positively associated with each variable. We next conducted a simultaneous multiple linear regression analysis to determine if CES scores were associated with PCL scores after we controlled statistically for age, intelligence, and BDI, RSS, and DES scores (see Table 2). The CES continued to predict PCL scores ($\beta = .43$, $p < .001$).

To examine the factors underlying the CES, we performed an iterated principal component analysis (PCA) with varimax rotation.[1] The PCA produced four factors with eigenvalues exceeding the Kaiser criterion (9.88, 1.54, 1.16, and 1.04; Kaiser, 1960). The inflexion point of the scree plot (Cattell, 1966) occurred at the third eigenvalue. Accordingly, we evaluated both a 3-factor and

[1] The PCA using direct oblimin rotation produced a 3-factor solution highly similar to the one resulting from the PCA with varimax rotation. In this analysis, Factor 1 was associated with both Factor 2 ($r = -.41$) and Factor 3 ($r = -.54$). Factor 2 was associated with Factor 3 ($r = .46$).

Table 3. Factor Loadings From Principal Component Analysis of Centrality of Events Scale

CES item	Factor 1	Factor 2	Factor 3
8. This event tells a lot about who I am.	**.72**	.19	.10
2. I automatically see connections and similarities between this event and experiences in my present life.	**.70**	.15	.35
7. I believe that people who haven't experienced this type of event think differently than I do.	**.69**	.34	.04
11. I believe that people who haven't experienced this type of event, have a different way of looking upon themselves than I have.	**.68**	.29	.08
9. I often see connections and similarities between this event and my current relationships with other people.	**.66**	.08	.42
6. This event has become a reference point for the way I understand myself and the world.	**.55**	.40	.24
4. This event can be seen as a symbol or mark of important themes in my life.	**.52**	.37	.21
14. If I were to weave a carpet of my life, this event would be in the middle with threads going out to many other experiences.	**.47**	.37	.36
18. This event was a turning point in my life.	.13	**.77**	.35
19. If this event had not happened to me, I would be a different person today.	.21	**.74**	.31
16. This event permanently changed my life.	.35	**.71**	.34
5. This event is making my life different from the life of most other people.	.39	**.66**	.15
3. I feel that this event has become part of my identity.	.50	**.65**	.21
10. I feel that this event has become a central part of my life story.	.45	**.56**	.28
20. When I reflect upon my future, I often think back to this event.	.15	.25	**.88**
17. I often think about the effects this event will have on my future.	.16	.32	**.80**
15. My life story can be divided into two main chapters: one is before and one is after this event happened.	.13	.42	**.66**
12. This event has colored the way I think and feel about other experiences.	.57	.30	**.59**
1. This event has become a reference point for the way I understand new experiences.	.18	.15	**.58**
13. This event has become a reference point for the way I look upon my future.	.58	.17	**.58**

Note. $N = 102$. CES = Centrality of Events Scale. Items are grouped by proposed factor assignment and listed by factor loading size in descending order. The highest factor loading for each item appears in bold.

4-factor solution. Relative to the 4-factor solution, the 3-factor solution produced a more clearly interpretable pattern of findings. In the 3-factor rotated solution (see Table 3), Factors 1, 2, and 3 accounted for 23.49%, 19.96%, and 19.42% of the variance in CES items, respectively. Finally, we calculated the product-moment correlations between the three factors and RSS, PCL, and BDI scores (Table 1). Each factor was associated with PCL scores.

DISCUSSION

Researchers have reported a positive association between CES scores and PTSD symptom severity in undergraduate students and combat veterans (Berntsen & Rubin, 2006; Brown et al., 2010). In this study, we extended these findings to women reporting a history of childhood sexual abuse. The CES scores were positively

associated with PTSD and depression symptom severity and negatively associated with self-esteem. The association between CES scores and PTSD remained significant after we controlled statistically for depression severity, self-esteem, age, intelligence, and dissociation.

The PCA revealed that the CES contains three factors that closely, though not precisely, reflect the constructs that Berntsen and Rubin (2006) designed it to address. Factor 1 contained items tapping both centrality to identity and the integration with other memories. This factor was positively associated with PTSD symptom severity, implying that greater integration contributes to greater severity of PTSD. Factor 2 contained items addressing whether one considers the event a turning point in one's life (i.e., having been changed by the event); it, too, was positively associated with PTSD severity. Factor 3 predominately contained items addressing the extent to which victims view the future through the lens of the traumatic event. Interestingly, this factor exhibited a notably greater association with PTSD symptom severity than did the Centrality and Turning Point factors, suggesting that holding a traumatic event as central to one's future may be more psychologically toxic than appraising the event as a key to one's current identity.

Our study has limitations. The data are cross-sectional, precluding determination of causality. In addition, although our sample size exceeded the minimum recommended subject-to-item ratio (Gorusch, 1983, p. 332), it was modest for exploratory factor analysis (Comfrey & Lee, 1992). Furthermore, several items loaded highly on multiple factors. Given previous findings that CES items load onto a single factor (Berntsen & Rubin, 2006), these limitations suggest some caution may be warranted in interpreting our PCA results.

Several PTSD models (e.g., Ehlers & Clark, 2000; Herman, 1992) hold that a failure to integrate a trauma with other autobiographical memories contributes to greater PTSD. However, the PTSD field lacks a consensus definition of what it means to integrate a trauma into one's autobiographical memory. We interpreted integration as the extent to which victims perceive connections between the trauma and other autobiographical memories. By this definition, greater integration was associated with greater PTSD symptom severity. The implications of our results for alternative conceptualizations of integration are unclear.

Individuals who appraise a traumatic event as a turning point in their life story, a central part of their identity, and a reference point for generating expectations about the future exhibit greater psychological distress. Our results suggest that individuals who appraise a traumatic event as a reference point for their future may be especially at risk for PTSD.

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