BRIEF REPORT

Accumulated Childhood Trauma and Symptom Complexity

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The relationship between accumulated exposure to different types of traumatic events (cumulative trauma) in childhood and the total number of different types of symptomatology reported (symptom complexity) in adulthood was examined in a sample of 2,453 female university students. There was a linear relationship between the number of trauma types experienced by participants before 18 and symptom complexity. This effect remained even when controlling for specific traumatic events, suggesting a generalized effect of cumulative trauma.

A watershed event in professional understanding of psychological trauma was the codification of posttraumatic stress disorder (PTSD) in the third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-III*; American Psychiatric Association, 1980). Criteria for PTSD require that specific symptoms arise in the context of exposure to a specific traumatic event. In support of this specific-trauma perspective, a large number of studies report an increased likelihood of developing PTSD following discrete traumatic events such as rape, physical assault, motor vehicle accident, or natural disaster (Briere, 2004).

Although the effects of specific traumas are well established, many individuals in clinical and research settings have experienced more than one major traumatic event in their lives (Breslau, Chilcoat, Kessler, Peterson, & Lucia, 1999). Of these, some report symptomatology that appears to reflect the combined effects of these multiple experiences, as opposed to solely their last or most severe trauma exposure. For example, a growing research literature indicates that the lifetime number of different traumas experienced by an individual predicts the severity of his or her symptoms in a number of different areas, including posttraumatic stress, dissociation, anxiety, depression, anger, and somatic complaints (e.g., Cloitre, Cohen, Edelman, & Han, 2001; Follette, Polusny, Bechtle, & Naugle, 1996).

The studies described above are noteworthy for their specific focus on symptom severity, i.e., the likelihood that any given symptom will be endorsed to a greater extent among those reporting greater numbers of traumas. However, the cumulative trauma literature offers little information on whether, in fact, adults with histories of multiple traumas actually experience more different kinds of symptoms simultaneously (i.e., have more complex clinical presentations) than those exposed to fewer traumas. This distinction is important because some clinicians (e.g., Herman, 1992; van der Kolk, Roth, Pelcovitz, Sunday, & Spinazzola, 2005) report that a history of multiple interpersonal traumas, especially those occurring earlier in life, can result in a multisymptom clinical presentation—a proposition that can only be tested if the actual number of different, comorbid symptom types per person are tabulated.

We tested three hypotheses regarding trauma complexity in this study: (1) After controlling for potentially relevant demographics (age and race), there would be a linear association between cumulative childhood trauma exposure and extent of symptom complexity; (2) child abuse (e.g., physical or sexual maltreatment) would be associated with more symptom complexity than other forms of childhood trauma; and (3) cumulative childhood trauma exposure would predict symptom complexity even when

controlling for those significant individual traumas identified in the evaluation of Hypothesis 2.

METHOD

Participants

Two thousand four hundred ninety-six women in their second year of university were recruited from six college campuses in the Washington, DC, area for a descriptive, cross-sectional study of trauma exposure and associated symptomatology. Protocols were approved by the Institutional Review Board at each participating college. Mailing lists of all second-year women students who were age 24 or younger, and who were taking at least 9 credit hours, were provided by the registrars at each institution. Two successive years of sophomore women were invited to participate.

Altogether, 10,722 questionnaires were mailed with an overall response rate of 24%. A low response rate during the first year (17%) was improved by adding a cover letter with a brief summary of study procedures and including a dollar bill. These modifications increased the response rate during the second year to 32%. Seventy questionnaires were not used because participants fell outside the targeted age range of 18–24 years, and 43 had missing values on at least one symptom scale. Other analyses of this dataset, and the results of a subsequent interview phase of the study, have been published elsewhere (e.g., Green et al., 2000; Kaltman, Krupnick, Stockton, Hooper, & Green, 2005).

Of the 2,453 participants, the average age was 19.4 years ($SD = 1.1$). The majority of the women were Caucasian (63.8%), with small proportions of African American (18.6%), Asian American (3.8%), and Latina (8.9%) women. Over 95% of the women were single/never married; 3.5% were living with a significant other.

Measures

Each student completed a survey that included the Stressful Life Events Screening Questionnaire (SLESQ; Goodman, Cocoran, Turner, Yuan, & Green, 1998), the Trauma Symptom Inventory (TSI; Briere, 1995), and a demographics questionnaire.

The SLESQ screens for a history of 13 stressor events often associated with PTSD. Reliability and validity of the SLESQ have been shown to be adequate (Goodman et al., 1998). Given the relative youth of this sample, only childhood traumatic events identified by the SLESQ were considered in this study.

The TSI is a 100-item test of the impacts of traumatic events. It has 10 clinical scales: anxious arousal, depression, anger-irritability, intrusive experiences, defensive avoidance, dissociation, sexual concerns, dysfunctional sexual behavior, impaired self reference, and tension reduction behavior. These scales are internally consistent (Briere, 1995), and exhibit validity in empirical studies (e.g., McDevitt-Murphy, Weathers, & Adkins, 2005). The

TSI scores were dichotomized according to whether each scale was clinically elevated (i.e., at least 1.5 standard deviations above the norm for a given participant's sex and age group, per the TSI manual). A count of the number of these elevations was used to form an omnibus measure of symptom complexity, i.e., the number of different symptom clusters simultaneously reported in the clinical range by each participant.

Data Analysis

Evaluation of the dependent variable used in the current analyses, i.e., total number of clinically elevated TSI scores per participant, revealed a significant skew (1.1). To improve this distribution for parametric analyses, this variable was reflexed and transformed to its inverse. The resultant skew was reduced to 0.2. This transformed variable was used in subsequent analyses, although the statistical results were generally equivalent regardless of whether the transformed or original variable was used. The primary effect of the transformation was to yield slightly smaller effects.

Because of the relatively large number of variables examined in this study, and therefore the potential for significant experiment error-rate inflation, the minimal acceptable p value for statistical significance was set at .001.

RESULTS

Endorsements of the SLESQ revealed a range of childhood trauma experiences in university women. Of 12 potential trauma types, 1,079 participants (44.0%) reported no childhood traumas, whereas 678 (27.6%) reported one type, 367 (15.0%) two types, 185 (7.5%) three types, 81 (3.3%) four types, 33 (1.3%) five types of trauma, 21 (0.9%) six types, and 9 (0.3%) seven or eight types. The frequencies of each type of trauma experienced by this sample are presented in Table 1.

Hypothesis 1 was tested with a 2 (race) × 7 (number of trauma types) ANCOVA, using age as a covariate, and total number of clinically elevated TSI scales as the dependent variable. Although race, age, and the interaction of race and number of trauma types were unrelated to the number of simultaneously elevated TSI scores, a significant effect was found for number of trauma types, $F(7, 2400) = 13.79$, $p < .001$. Post hoc polynomial analysis revealed a linear, positive relationship between number of trauma types and extent of symptom complexity ($p < .001$), but no higher order (e.g., quadratic or cubic) trends. See Table 2 for (nontransformed) TSI means as a function of number of trauma types.

Hypothesis 2 was evaluated by multiple regression analysis, predicting the total number of clinically elevated TSI scales based on age and different types of trauma exposure. As presented in Table 3, child rape and child physical abuse predicted symptom complexity, followed by threats with a weapon, attempted rape,

Table 1. Frequency of Various Types of Childhood Traumatic Events ($N = 2,453$)

Event	n	%
Rape	203	8.3
Attempted rape	198	8.1
Other sexual contact	366	14.7
Physical abuse	369	15.0
Physical assault (other than physical abuse)	321	13.1
Threat of violence	127	5.2
Witness to trauma	311	12.7
Life-threatening illness	171	7.0
Life-threatening accident	236	9.6
Robbery or mugging with weapon	51	2.1
Other life-threatening event	64	2.6
Traumatic bereavement	235	9.6

Table 3. Multiple Regression Analysis of Specific Types of Childhood Trauma Exposure, Age, and Total Number of Clinically Elevated Trauma Symptom Inventory Scales ($N = 2,453$)

Predictor	B
Rape	.12*
Attempted rape	.08*
Other sexual contact	.09*
Child physical abuse	.12*
Child physical assault (other than child physical abuse)	.04
Child threatened with weapon	.07*
Child witness to trauma	.06
Child life-threatening illness	.03
Child life-threatening accident	.02
Child robbery or mugging with a weapon	.00
Child other life-threatening event	.06
Child traumatic bereavement	.03
Age	.04

*$p < .01$.

and other childhood sexual contact, $R = .32$, $F(13, 2439) = 22.00$, $p < .001$.

To test Hypothesis 3, effects of each of the five significant childhood traumas identified in the test of Hypothesis 2, as well as cumulative number of childhood traumas, were examined by simultaneous multiple regression. Cumulative trauma exposure was associated with symptom complexity ($\beta = .17$, $p < .001$) even when exposure to childhood rape, physical abuse, threats with a weapon, attempted rape, and other childhood sexual contact were taken into account, $R = .32$, $F(6, 2446) = 45.96$, $p < .001$. Of these other variables, only childhood rape and physical abuse remained significant predictors ($\beta = .06$, $p < .001$, and $\beta = .08$, $p < .001$, respectively) once cumulative trauma was taken into account.

Table 2. Number of Childhood Traumatic Events Types and Total Number of Clinically Elevated Trauma Symptom Inventory (TSI) Scales ($N = 2,453$)

Number of traumas	n	Number of clinically elevated TSI scales	
		M	SD
0	1079	1.0	1.8
1	678	1.7	2.4
2	367	2.2	2.5
3	185	3.0	2.9
4	81	3.2	3.1
5	33	3.9	3.0
6	21	4.0	3.1
7–8	9	5.6	3.7

DISCUSSION

The current study suggests a linear relationship between (a) cumulative childhood trauma, as measured by the total number of different types of childhood traumatic events experienced by university women, and (b) symptom complexity, as indexed by the total number of simultaneously elevated TSI scales. This relationship remained significant even when controlling for individual traumas that also increase symptom complexity. Multiple traumas may lead to multiple symptoms when the specific effects of various trauma exposures summate over time. However, the finding for accumulated trauma also suggests a role for the general experience of repeated traumas per se, above-and-beyond specific trauma exposures.

Additional analysis indicated that although cumulative trauma appears to increase symptom complexity, childhood rape and physical abuse were also unique predictors. Various studies indicate that child abuse can have severe and diverse psychological impacts (Briere, 2004). In addition, child abuse is known to increase the likelihood of later trauma exposure (Classen, Palesh, & Aggarwal, 2005), which may have its own long-term impacts. These various outcomes and risk factors may persist and elaborate over time, leading to a wider range of symptoms in adulthood.

Because the response rate of this study (24%) was lower than what is considered optimal for a questionnaire-based study and was limited to university women, the current findings should not be used to establish population prevalence rates for the various traumas in this study, nor may they necessarily generalize to men or other demographic groups. In addition, the sole use of two self-report measures may have capitalized on method

variance, potentially increasing the correlation between variables. Finally, the cross-sectional nature of this study precludes definitive cause-and-effect conclusions: not only may multiple traumas produce multiple symptoms, but also highly symptomatic individuals may be more vulnerable to trauma exposure (Orcutt, Cooper, & Garcia, 2005). Nevertheless, the current findings suggest that even in a sample of presumably higher-functioning women, multiple trauma exposure is not uncommon and is associated with relatively complex symptomatology.

REFERENCES

American Psychiatric Association. (1980). Diagnostic and statistical manual of mental disorders (3rd ed.). Washington, DC: Author.

Breslau, N., Chilcoat, H. D., Kessler, R. C., Peterson, E. L., & Lucia, V. C. (1999). Vulnerability to assaultive violence: Further specification of the sex difference in post-traumatic stress disorder. Psychological Medicine, 29, 813–821.

Briere, J. (1995). Trauma Symptom Inventory professional manual. Odessa, FL: Psychological Assessment Resources.

Briere, J. (2004). Psychological assessment of adult posttraumatic states: Phenomenology, diagnosis, and measurement (2nd ed.). Washington, DC: American Psychological Association.

Classen, C. C., Palesh, O. G., & Aggarwal, R. (2005). Sexual revictimization: A review of the empirical literature. Trauma, Violence, and Abuse, 6, 103–129.

Cloitre, M., Cohen, L. R., Edelman, R. E., & Han, H. (2001). Posttraumatic stress disorder and extent of trauma exposure as correlates of medical problems and perceived health among women with childhood abuse. Women and Health, 34, 1–17.

Follette, V. M., Polusny, M. A., Bechtle, A. E., & Naugle, A. E. (1996). Cumulative trauma: The impact of child sexual abuse, adult sexual assault, and spouse abuse. Journal of Traumatic Stress, 9, 25–35.

Goodman, L. A., Cocoran, C. B., Turner, K., Yuan, N. P., & Green, B. L. (1998). Assessing traumatic event exposure: General issues and preliminary findings for the Stressful Life Events Screening Questionnaire. Journal of Traumatic Stress, 11, 521–542.

Green, B. L., Goodman, L. A., Krupnick, J. L., Corcoran, C. B., Petty, R. M., Stockton, P., et al. (2000). Outcomes of single versus multiple trauma exposure in a screening sample. Journal of Traumatic Stress, 13, 271–286.

Herman, J. L. (1992). Complex PTSD: A syndrome in survivors of prolonged and repeated trauma. Journal of Traumatic Stress, 5, 377–391.

Kaltman, S., Krupnick, J., Stockton, P., Hooper, L., & Green, B. L. (2005). The psychological impact of types of sexual trauma among college women. Journal of Traumatic Stress, 18, 547–555.

McDevitt-Murphy, M. E., Weathers, F. W., & Adkins, J. W. (2005). The use of the Trauma Symptom Inventory in the assessment of PTSD symptoms. Journal of Traumatic Stress, 18, 63–67.

Orcutt, H. K., Cooper, M. L., & Garcia, M. (2005). Use of sexual intercourse to reduce negative affect as a prospective mediator of sexual revictimization. Journal of Traumatic Stress, 18, 729–739.

van der Kolk, B. A., Roth, S. H., Pelcovitz, D., Sunday, S., & Spinazzola, J. (2005). Disorders of extreme stress: The empirical foundation of a complex adaptation to trauma. Journal of Traumatic Stress, 18, 389–399.