Past Trauma and Current Stress and Coping: Toward a General Model

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ABSTRACT

Studies find trauma to both sensitize and steel its victims to subsequent stress, but results are specific to certain populations, traumas, or indices of stress and coping. Here, a general population sample ($N = 255$) completed comprehensive measures of trauma, stress, and coping to suggest a general model of their relationships. Regressions showed childhood—but not lifetime—trauma linked to avoidant coping and greater stress, indicating a partial mediation model. Structural equation modeling (SEM) verified that childhood trauma predicted adult stress both directly and through avoidance. Limitations of present methods, and suggestions for continuing the development of a general trauma-coping-stress model, are discussed.

A number of studies have linked trauma exposure to later stress experiences, but with differing results. Many researchers report debilitating aftereffects, such that trauma victims are susceptible to ensuing stressful events, and consequently likely to succumb to stress-related pathology later in life (see Taylor, Way, & Seeman, 2011–2011, for review). Others report a fortifying effect of trauma, such that its victims are braced against subsequent problems, and hence resistant to later pathogenic stress (see Linley & Joseph, 2004, for review). However, these studies differ widely in their methodologies, each being specific to a certain population, type of trauma, or stress measure. This makes it difficult to generalize across studies to discern the overall relationship of trauma to stress, positive or negative, much less the mechanism underlying this relationship. The present study replicates previous ones, but in a general population, across a spectrum of traumas, with an exhaustive measure of stress. In addition, it explores one possible explanatory mechanism: the role of intermediary coping strategies.

Trauma

Trauma has been defined as negative life conditions and situations that threaten a person's physical or psychological well-being (Turner, Wheaton, & Lloyd, 1995). There are disagreements about the definitional boundaries of trauma (Lieberman, 2004), but even non–life-threatening events and indirect

exposure can be considered traumatic (American Psychiatric Association, 2013). By that definition, the prevalence of trauma exposure is staggering, with estimates as high as 80% of the general population (Breslau, 2009), and 61% of children and adolescents (Briggs et al., 2012).

Many studies have documented the dire sequelae of traumatic experiences, including increased risk for psychiatric problems (see McLaughlin, Conron, Koenen, & Gilman, 2010) and physical illnesses (see Taylor et al., 2011). But other studies indicate positive outcomes, including increased resilience (Bonanno, 2004) and adversarial growth (Linley & Joseph, 2004). And the prevalence of such benefits is not trivial, being reported by 50–100% of participants (Linley & Joseph, 2004).

It is likely that trauma has both negative and positive consequences, perhaps even within the same person. Why, then, do so many studies report evidence for one outcome or the other? It is argued here that this could be due to their differing methodologies. First, studies tend to focus on specific population sub-groups, demarcated by gender (Flanagan, Jaquier, Overstreet, Swan, & Sullivan, 2014), age (Bal, Crombez, Van Oost, & De Bourdeaudhuij, 2003a), or other characteristics (Hooberman, Rosenfeld, Rasmussen, & Keller, 2010). Beyond stymying generalization, this practice could affect a study's results. For example, women report more benefits of trauma exposure than do men (Tedeschi & Calhoun, 1996), so heavily female samples would increase the likelihood of positive outcomes. Second, studies tend to focus on different traumas. There have been variations in the *type* of trauma, from divorce (Sandler, Tein, & West, 1996) to torture (Hooberman et al., 2010). But there is evidence that different trauma types yield different outcomes, some negative and some positive (Kira et al., 2012). There have been variations in the *number* of traumas, from single incidents (Smid et al., 2012) to complex experiences (Courtois, 2004). But there is evidence that the number of exposures affects the likelihood of positive or negative results (Seery, Holman, & Silver, 2010). And there have been variations in the *timing* of trauma, with some studies focused on childhood (Leitenberg, Gibson, & Novy, 2004) and others on adult occurrences (Cole & Lynn, 2010). But there is evidence that childhood adversity is particularly likely to have negative and enduring effects (Taylor et al., 2011).

That so much trauma research has been specific to population niches and trauma definitions has prompted calls for more heterogeneous samples (McLaughlin et al., 2010) and for more exhaustive trauma measures (Turner & Lloyd, 1995). The present study heeded these calls, in hopes of circumventing methods effects, and discerning the overall impact of trauma.

Stress

Trauma can produce "a wide range of symptom clusters in addition to classic posttraumatic stress disorder" (Briere & Spinazzola, 2005, p. 402). To fully

inventory the negatives of trauma exposure, then, is an assessment challenge. For this reason, it makes sense that stress is used as an outcome index (Taylor et al., 2011): Stress is a precursor to many disorders, and thus serves as a simple proxy for a spectrum of pathologies.

Stress theories (e.g., Hobfoll, 1989; Lazarus & Folkman, 1984; McEwen, 2000; Selye, 1956) agree that people exposed to traumatic life events will experience stress, but also stipulate that not every person so exposed will get sick. Selye (1956) first proposed that stress responses are triggered by "adaptational demands" that perturb homeostasis. Such demands are said to produce distress, but not necessarily dysfunction—for if there are adequate resources to counter the demands, then homeostasis is reestablished. It is only when resources are overwhelmed that a person becomes vulnerable to pathology and even death. More recent stress theories focus on different systems, both physiological (McEwen, 2000) and psychological (Hobfoll, 1989; Lazarus & Folkman, 1984), but retain the same basic mechanism. That is, they too see dysfunction arising from two intersecting processes: (a) exposure to demands, coupled with (b) inability to meet those demands (Cohen, Kessler, & Gordon, 1995). This state has been labeled "stress overload" to differentiate it from more transitory and benign states of stress (Amirkhan, 2012).

Unfortunately, most trauma studies depart from theory by assessing stress outcomes either with measures of (a) demanding events (e.g., McLaughlin et al., 2010), or (b) resistive resources (e.g., Cole & Lynn, 2010). Furthermore, failing to assess the totality of stress overload could have biased their findings. Studies using life events checklists might overestimate the negative sequelae of trauma because they fail to consider resources. That is, not every person scoring high on these measures will actually get sick, owing to adequate resources; and studies using measures of resources (such as social support or hardiness; Linley & Joseph, 2004) might overestimate positive outcomes because they ignore demands. Not every person scoring high in these measures will escape pathology, owing to an overwhelming onslaught of life events. In short, variations in stress measurement, and a general failure to assess stress overload, could also explain the differing findings regarding the valence of trauma aftereffects.

Trauma and stress

If trauma evokes stress, and stress can produce illness, it seems that posttraumatic pathology should be apparent fairly quickly. But evidence shows that early adversity can produce stress and illness decades later (Raposo, Mackenzie, Henriksen, & Afifi, 2013). One explanation for this extended timeline is offered by the "stress sensitization hypothesis," which proposes that current stress is not a direct reaction to long-past trauma, but rather an overreaction to recent demands owing to that history (Hammen, Henry, & Daley, 2000). Large-scale

epidemiological investigations (Breslau et al., 1999; McLaughlin et al., 2010) and comprehensive literature reviews (Pratchett & Yahuda, 2011; Taylor et al., 2011) have provided evidence to support the sensitization hypothesis.

But, again, there is counter-evidence. One prospective study reported that adult victims of a fireworks disaster did exhibit sensitization, but it dissipated within four years (Smid et al., 2012). This indicates a fairly rapid return to normative stress reactions. Other studies have even reported stress *desensitization* among trauma victims, finding that "among those exposed to equally high levels of recent events, more prior experience with life stress can represent an advantage over those without such experience" (Turner & Lloyd, 1995, p. 371).

So stress sensitization or desensitization could also explain negative versus positive trauma outcomes. But the evidence is not clear as to which process— if either—dominates. It is argued here that clarity might be achieved by considering intermediary factors in the causal chain linking trauma to stress. Coping has been implicated as one such factor (Bal et al., 2003a, 2003b; Cole & Lynn, 2010; Flanagan et al., 2014; Hooberman et al., 2010; Leitenberg, Gibson, & Novy, 2004), with the idea that some strategies exacerbate stress (and increase the likelihood of negative outcomes) and others dampen stress (increasing the likelihood of positive outcomes). In fact, the differential efficacy of coping strategies has been demonstrated in the trauma context: In children of divorce, emotional strategies (e.g., avoiding and seeking support) were found to heighten distress, while cognitive ones (e.g., problem-solving) had palliative effects (Sandler et al., 1994). In victims of torture (Hooberman et al., 2010), violence (Flanagan et al., 2014), and sexual abuse (Bal, Van Oost, De Bourdeaudhuij, & Crombez, 2003b), avoidant coping exacerbated symptoms. One consistent finding, then, is that avoidance is a counterproductive way to cope with trauma itself.

There is also evidence that trauma predisposes people toward avoidant ways of coping with *subsequent* problems. One such study found that women with histories of childhood abuse were "particularly at-risk of relying on maladaptive disengagement coping strategies to deal with various new stressors later in life" (Leitenberg et al., 2004, p. 181). If avoidance is indeed a coping response elicited by trauma, it could play a mediating role in the trauma-to-stress chain—implying that every trauma victim would experience sensitization to subsequent problems. On the other hand, if strategies predate the trauma experience, coping could play a moderating role in the chain. This means that trauma would sensitize avoiders, but perhaps fortify problem-solvers, to later problems. To further complicate matters, there is evidence that certain coping strategies act as mediators and others as moderators (Sandler et al., 1994). In any case, it seems imperative that efforts to construct a general model of trauma-stress relationships consider coping as an intermediary, and do so by examining multiple strategies.

The current study

The present study sought to expand previous findings using a more general population, a broader definition of trauma, a complete index of pathogenic stress, and an inventory of fundamental coping strategies. In this way, it was hoped that the constraints of prior studies could be overcome, and a glimpse of the overall trauma-to-stress relationship would be afforded. This would constitute one step toward building a general understanding of how early trauma influences later stress levels, and determining whether coping is an intermediary mechanism.

Two research questions guided this study: (a) Is there a significant correlation between trauma history and current stress overload, and if so, is it positive (suggesting stress sensitization) or negative (suggesting desensitization); and (b) are any coping strategies correlated with trauma history and if so, are these mediators or moderators of current overload?

Methods

This study used a nonprobability sample, survey methods, and a cross-sectional design. Heeding prior directives, the sample was drawn from community sites offering maximum diversity (per McLaughlin et al., 2010), and the survey utilized thorough and sound measures (per Briere & Spinazzola, 2005). These methods were approved by the university's institutional review board.

Participants

Of 300 persons recruited, 255 (85%) completed surveys in sufficient detail for analysis.

Measures

Measures were selected not only for their psychometric strength, but also to avoid item overlap (i.e., similarities that might produce spurious correlations).

Lifetime trauma
To assess trauma history, the Lifetime Trauma Checklist (LTC: Turner & Lloyd, 1995) was chosen. A checklist of 20 traumatic events, the LTC includes both direct and indirect experiences, from both childhood (e.g., "Your parents get a divorce") and adulthood (e.g., "A spouse, child or other loved one died"). Respondents indicate whether or not they have experienced each event by means of "yes" = 2 or "no" = 1 options. Responses are summed, yielding totals of 20 to 40, with higher scores indicating higher doses of trauma. The authors report agreement between LTCs taken one year apart (*kappa* > .60), indicating

adequate test–retest reliability. Construct validity is shown in the correspondence between frequencies of traumas reported on the LTC and known prevalence rates.

Childhood trauma

The first eight items on the LTC are preceded by instructions that ask about "some things that may have happened to you while you were a child or teenager, before you moved out of the house," and thus pertain exclusively to early experience. Responses to these items were summed to form a separate child trauma score, with values from 8 to 16.

Current coping

To assess use of avoidant and other coping strategies in the prior month, the Coping Strategy Indicator (CSI; Amirkhan, 1990) was used. This measure was empirically constructed to assess three fundamental types of coping that emerge consistently in general population studies. Its 33 items yield subscale scores for Avoidance (e.g., "slept more than usual"), Problem Solving (e.g., "formed a plan of action in your mind"), and Seeking Social Support (e.g., "sought reassurance from those who know you best"). Respondents are instructed to choose a recent problem in their lives, and then indicate the extent to which they used each of the 33 responses by means of a 3-point scale ("not at all" = 1, "a little" = 2, or "a lot" = 3). Responses are summed for each subscale separately, so scores range from 11 to 33, with higher values indicating greater use of that strategy. The internal consistency of these subscales is good (α ranging from .84 to .93), as is test–retest reliability (r averaging .82 across one- to two-month intervals). Validity has been demonstrated in terms of convergence with other measures of coping, personality, and pathology (Amirkhan, 1990), and in terms of the prediction of actual coping choices made in both laboratory and real-world settings (Amirkhan, 1994).

Current stress

To assess current levels of pathogenic stress, the Stress Overload Scale (SOS; Amirkhan, 2012) was used. The SOS was empirically derived in general population studies to capture the two theoretical components of stress: 12 items reflect Event Load (EL), the buildup of demands (e.g., "felt swamped by your responsibilities"); another 12 reflect Personal Vulnerability (PV), or the perceived inadequacy of resources (e.g., "felt powerless"). There are also six filler items and other devices to dissuade response biases. Each item is preceded by instructions regarding the time window ("IN THE PAST WEEK, have you felt … "), and followed with 5-point response scales anchored at "not at all" = 1 and "a lot" = 5. Typically, the EL and PV subscales are summed to provide a single score, with values ranging from 24 to 120. These scores have demonstrated good internal consistency (α = .94) and adequate test–retest reliability

($r = .75$ over one week). They have also shown validity, both in terms of convergence with other measures of stress and personality, and the prediction of pathological reactions to laboratory and real-world stressors (Amirkhan, 2012; Amirkhan, Urizar, & Clark, 2015).

Procedure

Efforts were made to sample the full range of general population characteristics. From culturally diverse Southern California counties, two recruitment sites—a county courthouse ($n = 114$) and a city aquarium ($n = 111$)—were selected on the basis of their likelihood of yielding a broad spectrum of demographics and stress levels. On multiple weekdays in the early morning at the courthouse, and on several weekends at midday at the aquarium, convenience samples were drawn from persons meeting selection criteria of being over 18 and fluent in English. After signing informed consent forms, participants received survey packets containing the LTC, CSI, and SOS measures in counterbalanced orders. With multiple safeguards to ensure privacy and anonymity, they completed surveys on site, depositing packets into locked collection boxes.

Results

Descriptive statistics

Sample characteristics

The sample proved demographically diverse. Ages ranged from 18 to 85, with an average of 37.9 years. Gender groups (50% male, 47% females) and ethnic groups (7% African-American, 12% Asian, 44% Caucasian, 24% Latino) were well represented. In terms of socioeconomic indicators, there was a wide range of education levels (25% high school, 41% some college, 17% college degree, 13% advanced degree) and income brackets (23% under $25 K, 32% $25–59 K, 22% $60–100 K, 15% over $100 K). These proportions closely approximated U.S. Census figures for the region, with only one discrepancy: The sample was somewhat better educated than the surrounding population ($\chi^2[3] = 8.54$, $p < .05$).

The sample evidenced a high degree of trauma exposure. In terms of lifetime incidence, 95% reported at least one event, with 8% experiencing 10 or more ($Md = 5$). In regard to childhood trauma, 78% indicated at least one, and 2% reported 5 or more events ($Md = 2$).

Scale characteristics

All study measures exhibited good variability of response, with large standard deviations and ranges (see Table 1). There were no ceiling or basement effects

Table 1. Descriptive statistics and correlations for study measures.

Variable	M	SD	R	α	LTC Child	LTC Life	CSI PS	CSI SS	CSI AV	SOS Total
					Demographics					
Age	37.93	14.89	18–85		−.14	.10	.08	−.06	−.20*	.14
Gender					−.03	.07	.05	.14	.05	−.01
Education					−.25*	−.20*	.06	.05	−.25*	−.09
Income					−.29*	−.21*	.00	.02	−.24*	−.11
					Trauma (LTC)					
Child	10.04	1.85	8–16	.76			−.02	.09	.30*	.36*
Lifetime	25.99	4.06	20–39	.80	.78*		.03	.09	.30*	.32*
					Coping (CSI)					
Problem-solving (PS)	26.25	4.96	11–33	.87	−.02	.03				−.01
Seeking support (SS)	23.13	5.54	11–33	.89	.09	.09	.09			.04
Avoidance (AV)	20.29	5.06	11–33	.82	.30*	.30*	.01	.04		.45*
					Stress overload (SOS)					
Personal vulnerability	29.03	12.47	12–58	.94	.36*	.31*	−.03	−.03	.50*	.92*
Event load	37.80	12.05	12–60	.92	.30*	.30*	.02	.10	.35*	.92*
Total	66.64	22.39	24–116	.95	.36*	.32*	−.01	.04	.45*	

*p < .01.

to compromise correlational analyses. In addition, all measures proved to be internally reliable.

Tests of research questions

First, zero-order coefficients were used (a) to indicate the significance and direction of relationships among the main study variables (trauma, stress and coping), and (b) to identify potential confounds of these relationships. Next, a series of regression analyses were used (a) to determine which among the trauma and coping variables explained the most variance in stress scores, after controlling for confounds and competing predictors, and (b) to examine the possible intermediary role of coping. Finally, structural equation modeling (SEM) was used to identify which among several possible path models suggested by the preceding analyses best fit the data.

Correlations

Table 1 shows zero-order correlations among all study measures, using a conservative significance level ($\alpha = .01$) owing to the number of tests. Significant associations were found among the main measures, with Child and Lifetime trauma scores relating positively to SOS scores, and to Avoidance (but not Problem Solving or Seeking Support) scores. To determine if there were potential confounds, correlations between the demographic items and the main measures were also examined. These showed Education and Income to relate to Child and Lifetime trauma and to Avoidance, but not to SOS scores. Thus, it would be necessary to control these demographics in tests of trauma-coping links, but not in tests of stress outcomes.

Regression analyses

Hierarchical regression was used to verify the relationships found among Trauma and Avoidance and SOS scores, and to suggest whether a mediation or moderation model better described these relationships. For either model, there is a required temporal sequence in which Trauma precedes Avoidance (Kraemer, Kiernan, Essex, & Kupfer, 2008). Although administered simultaneously, the study measures imposed time windows that correspond to this sequence, assessing trauma history dating back to childhood and coping within the last month.

For the mediation model, there are also requirements that Trauma and Avoidance scores correlate, and that Avoidance has a main effect on SOS scores (Kraemer et al., 2008). To verify a Trauma-Avoidance correlation beyond confounding demographics, three regression equations were compared. For each, Avoidance was the DV; the first used only Education and Income as IVs, the second used these demographics plus Child Trauma, and the third used the demographics and Child Trauma plus Lifetime Trauma. The second equation was found to explain significantly more variance than the first ($\Delta R^2 = .074$, $F[1, 208] = 18.04$, $p < .0001$), indicating that Child Trauma related to Avoidance over and above the influence of confounds. But the third equation did not improve on the second ($\Delta R^2 = .004$, $F[1, 207] = 1.03$, $p = .31$), indicating that Lifetime Trauma added no further explanatory power. To confirm the effect of Avoidance on the SOS, a second set of equations was compared. These had SOS scores as the DV, with the first using Avoidance as the sole IV, the second using Avoidance plus Child Trauma, and the third using Avoidance and Child Trauma plus Lifetime Trauma. The first equation confirmed the main effect of Avoidance ($R^2 = .227$, $F[1, 226] = 66.30$, $p < .0001$). Comparing the second to the first equation showed that Child Trauma added explanatory power ($\Delta R^2 = .046$, $F[1, 2225] = 14.32$, $p < .0001$). But comparing the second and third equation showed no further improvement ($\Delta R^2 = .007$, $F[1, 2224] = 2.05$, $p = .15$), indicating that postchildhood trauma exposure added nothing more to the explanation of current SOS scores. To insure that Avoidance effect was not due to its collinearity with Child Trauma, two more equations were compared. With the SOS again as the DV, the first used Child Trauma alone as the IV, the second used Child Trauma plus Avoidance. The first equation showed the Child Trauma effect ($R^2 = .135$, $F[1, 226] = 35.20$, $p < .0001$), and comparing it to the second equation verified that Avoidance had an independent effect ($\Delta R^2 = .138$, $F[1, 225] = 42.81$, $p < .0001$). In sum, results satisfied the criteria for a model in which Avoidance mediates the effects of Child Trauma on present-day SOS scores, but also showed that Child Trauma had a direct effect on those scores.

For a moderation model, there is an additional requirement of an interaction between the predictors (Kraemer et al., 2008). Avoidance and Child Trauma were used as predictors, but Lifetime Trauma was not because it
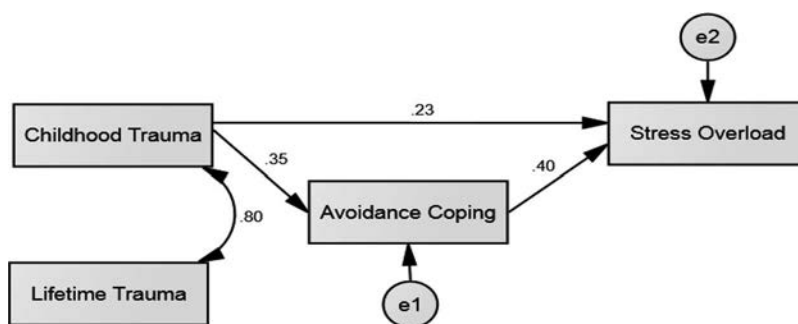
Figure 1. Structural equation model showing the partial mediation effect (coefficients are standardized, all $ps < .0001$).

had added no predictive power in the previous analyses. Using SOS scores as the DV, two equations were formed, one with Child Trauma and Avoidance as IVs, the second with these plus the Child Trauma X Avoidance interaction. Comparing the equations showed the interaction term to add no explanatory power to that of the main effects ($\Delta R^2 = .009$, $F[1, 224] = 2.78$, $p = .10$). This indicates the unlikelihood of a model in which Avoidance moderates the relationship between Child Trauma and current SOS levels.

SEM analyses
Path analyses were used to confirm the fit of a mediation model to the study data, and to indicate which variation of the model offered the best fit. Six models were tested, using either Child or Lifetime Trauma as predictors, with either direct paths or mediated paths to the SOS, and for the latter, with either full or partial mediation by Avoidance. All variables were centered prior to testing using AMOS software, and modification indices were used to remove or add pathways to achieve maximal fit. The model with a partially mediated path between Child Trauma and the SOS (see Figure 1) proved best, fitting the data extremely well ($X^2[2] = 2.66$, $p = .265$, $GFI = .994$, $RMSEA = .038$). Once again, Child—but not Adult—trauma was found to relate to current SOS levels, both directly and indirectly through Avoidance.

Discussion

The present study replicated prior investigations into the relationship between past trauma and current stress, but did so in broader context (i.e., a more general population, a wider spectrum of traumas, and more complete assessments of stress and coping). It was hoped that this would provide an indication of the overall relationship, beyond the specifics of method or measurement. The finding was one of a positive—rather than zero or negative—relationship between early trauma and present-day levels of pathogenic stress. The indication, therefore, favored the literature showing deleterious effects of

trauma, such as stress sensitization and stress-related pathology. This result did not preclude the possibility of positive outcomes, such as stress resilience and posttraumatic growth. However, it does suggest that, in general, the detriments of trauma exposure outweigh the benefits.

That childhood trauma, specifically, was found to predict current stress mirrors prior findings that childhood adversity is particularly likely to produce adult stress and pathology (McLaughlin et al., 2010; Taylor et al., 2011). However, the finding that postchildhood traumas added no additional predictive power is at odds with an assumption in the literature that "more adversity predicts worse outcomes" (Seery et al., 2010, p. 1025). This discrepancy may indicate the strength of the general-model approach, which promises to provide greater insight into the nature of fundamental relationships. In fact, a study using many aspects of this approach has already challenged the notion of a linear relationship, finding that both very little and very great trauma exposure maximized distress and dysfunction (Seery et al., 2010).

Current findings add to the trauma literature in regard to the role of coping. Avoidance has been already shown to be a maladaptive strategy for coping with trauma, and has even been shown to partially mediate between childhood trauma and its immediate sequelae (Sandler et al., 1994). But here, evidence supported a model in which avoidance was a partial mediator of childhood trauma and levels of pathogenic stress in adulthood—a model that has only been suggested in previous studies (Bal et al., 2003b). Children favor avoidance as a coping strategy (Amirkhan & Auyeung, 2007), and present findings suggest that early trauma experiences reinforce this tendency so that it persists into adulthood, where it proves a counterproductive way of dealing with problems. But current evidence contradicts prior findings that nonavoidant strategies have positive effects, such as support-seeking ameliorating symptoms in adolescents dealing with life-threatening events (Bal et al., 2003a). Note, however, that another study examining younger children and a nonfatal event found seeking support to exacerbate symptoms (Sandler et al., 1994). Because the general-model approach looks across person- and trauma-specific effects, such positives and negatives cancel out, likely explaining the nonfindings for support-seeking and problem-solving here. Again, a strength of this approach is that it provides a less cluttered view of essential processes; that avoidance survived such cancellation speaks to its particular importance in the trauma context.

Another strength of the general model is that, in revealing the dynamics that apply to most people in most traumas, it helps target interventions. Current treatments for trauma are lengthy, ranging from a minimum of six months to a maximum of decades (Courtois, 2004). By underscoring the essential role of coping in the chain linking past trauma to current stress, present results suggest that short-term behavioral interventions, aimed at optimizing coping responses, might provide more immediate relief. Moreover, they indicate that extinguishing avoidant responses, rather than

reinforcing support-seeking or problem-solving responses, would be the most fruitful therapeutic focus for the most trauma survivors.

Before making such recommendations, some caveats must be noted. This study addressed the limitations of prior investigations, yet had several of its own. First, although the measures were worded to invoke a timeline in which past trauma preceded current stress and coping, the cross-sectional design prohibited any firm conclusions about the direction of causality. To establish a general trauma-to-stress model, prospective studies will be needed to confirm the sequencing of effects. Second, although using a more complete index of pathogenic stress, it was assumed that this was the only necessary outcome measure, and that positive outcomes would be reflected in negative relationships with this measure. It may well be that trauma produces both stress overload and growth, and these outcomes are not mutually exclusive. Future studies would do well to incorporate indices of positive aftereffects that are orthogonal to measures of stress. Finally, although reflecting the surrounding community, the current sample did not capture the least-educated segment—and education proved important, being associated with both trauma and avoidance. A larger concern is that the sample represented only the local general population, and was small relative to the scale of epidemiological investigations (e.g., Raposo et al., 2013). To ensure the generality of the model, studies utilizing probability-sampling techniques across a multiplicity of geographical regions are necessary.

In sum, the present study represents one step in the many that will be needed to build a general model of trauma, coping, and stress. It is believed that such a model will justify the effort: It promises theoretical value, in mapping the sequence of effects and specifying the underlying mechanisms, and practical value, in directing interventions toward the most probable benefits for the greatest number of trauma survivors.

Notes on contributors

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