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Research paper

Coping strategies as mediators in relation to resilience and posttraumatic stress disorder

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ABSTRACT

Background: Resilience has been shown to protect against the development of posttraumatic stress disorder (PTSD) in the aftermath of trauma. However, it remains unclear how coping strategies influence resilience and PTSD development in the acute aftermath of trauma. The current prospective, longitudinal study investigated the relationship between resilience, coping strategies, and the development of chronic PTSD symptoms.

Methods: A sample of patients was recruited from an emergency department following a Criterion A trauma. Follow-up assessments were completed at 1-, 3-, and 6-months post-trauma to assess PTSD symptom development (N = 164). RESULTS: Resilience at 1-month positively correlated with the majority of active coping strategies (all $p < .05$) and negatively correlated with the majority of avoidant coping strategies (all $p < .05$), as well as future PTSD symptoms ($p < .001$). Additionally, all avoidant coping strategies, including social withdrawal, positively correlated with future PTSD symptoms (all $p < .01$). After controlling for demographic and clinical variables, social withdrawal at 3-months fully mediated the relationship between resilience at 1-month and PTSD symptoms at 6-months.

Limitations: Limitations include participant drop out and the conceptual overlap between avoidant coping and PTSD.

Conclusions: These data suggest that resilience and social withdrawal may be possible therapeutic targets for mitigating the development of chronic PTSD in the aftermath of trauma.

Resilience is the capacity to thrive in the face of adversity. There is no universally accepted definition of resilience, and resilience is conceptualized in different ways: as a trait in which one experiences mild, short-lived distress following trauma (Bonanno, 2004); as good outcomes and competency following adverse events (Masten, 2001); or as a process that involves positive adaptation to adversity (Luthar et al., 2000; Meredith et al., 2011). A limitation of the first definition is that it frames resilience as a static trait, which does not allow for an individual's resilience to grow after facing adversity or to collapse when confronting chronic stress (Meredith et al., 2011). Interpreting resilience as adaptive functioning or competency based on observable behavioral indicators can also be problematic because of the arbitrary categorization of individuals as high or low functioning (Wald et al., 2006). In contrast, conceptualizing resilience as the capacity to recover from adverse events and as a dynamic process allows for it to vary with personal characteristics (e.g., age, sex, culture), as well as an individual's past life experiences and current life circumstances (Connor and Davidson, 2003). Resilience as a dynamic process is malleable over time, in which one can adapt and experience stressful situations (Meredith et al., 2011). This definition of resilience was adopted for the current paper, as it permits one to measure an individual's resilient characteristics across time and predict their response to adversity and trauma.

High levels of resilience are a key protective factor against adverse outcomes, such as posttraumatic stress disorder (PTSD). Numerous cross-sectional studies have shown that resilient individuals are less likely to develop PTSD symptoms following a traumatic event (Lee et al., 2014; Tugade and Fredrickson, 2004; Wrenn et al., 2011). However, longitudinal designs offer advantages in examining the role of resilience as a predictor in the development of PTSD symptoms after trauma exposure. One of the few prior studies to prospectively measure resilience and PTSD found that lower resilience measured at either 1–2 weeks or 5–6 weeks post-trauma predicted increased PTSD symptom severity at 5–6 weeks and 3-months post-trauma (Daniels et al., 2012).

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Contrary to these results, low resilience was not predictive of increased PTSD at 3-months post-trauma in another study (Powers et al., 2014). The equivocal nature of these findings could be due to the two studies measuring resilience at different time points, using different measures to diagnose PTSD (structured clinical interview that assessed symptom frequency and intensity versus four-item PTSD screen that categorized patients as either symptomatic or asymptomatic), and the different participant characteristics, as the Daniels et al. subjects were younger, more likely to be female, and more likely experienced a motor vehicle collision. These divergent findings indicate that more prospective, longitudinal studies of resilience are necessary to understand the capacity of resilience as a predictor of future PTSD symptoms in the aftermath of trauma.

Resilience has been associated with other protective factors, particularly coping skills, in the context of adverse events (Reich et al., 2010). Coping is defined as an individual's use of behavioral and cognitive strategies to modify adverse aspects of their environment, as well as minimize or escape internal threats induced by stress or trauma (Gil, 2005; Weinberg et al., 2014). Coping can be categorized into active and avoidant strategies. Active coping reflects attempts to change perceptions of the stressor or qualities of the stressor (e.g., problem solving and cognitive restructuring). In contrast, avoidant coping involves actions and thought processes used to escape direct confrontation with the stressor (e.g., wishful thinking and social withdrawal) (Wu et al., 2013). Resilient individuals have been found to employ greater amounts of active coping (Feder et al., 2009; Li and Nishikawa, 2012) and social support-seeking behaviors (Wu et al., 2013). Despite being closely related and used interchangeably, there is growing consensus that resilience and coping are conceptually distinct constructs (Campbell-Sills et al., 2006; Major et al., 1998), such that “resilience influences how an event is appraised, whereas coping refers to the strategies employed following the appraisal of a stressful encounter” (Fletcher and Sarkar, 2013). Furthermore, resilience is a set of protective factors (e.g. close relationships with family and community, optimistic outlook, embracing challenges) that allows an individual to have a positive response to adverse events, while coping strategies may yield either positive or negative results (Connor and Davidson, 2003; Meredith et al., 2011). For the current study, we focused on coping strategies rather than coping styles given the evidence that coping strategies mediate the relationship between resilience and outcomes (Major et al., 1998), in contrast to coping styles which may function instead “as a resilient protective factor that moderate components of the stress process” (Campbell-Sills et al., 2006).

Coping strategies influence PTSD development. Avoidant coping is linked to increased PTSD symptom development following trauma (Gil, 2005; Hooberman et al., 2010), possibly “because denying the severity of a problem and trying not to think about it may lead to more recurrent and intrusive recollections of the trauma” (Tiet et al., 2006). The relationship between active coping strategies and PTSD has been equivocal (Alim et al., 2008; Gil, 2005; Najdowski and Ullman, 2009; Wright et al., 2007). Given the strong relationship between resilience and coping, resilience may influence coping strategy selection, which may in turn impact the development of PTSD symptoms. To our knowledge, no one has investigated whether coping strategies mediate the relationship between resilience and PTSD symptom development in a longitudinal, prospective study. Thus, we investigated the role of resilience and coping strategies measured 1-month post-trauma and 3-months post-trauma, respectively, in the development of PTSD symptoms 6-months post-trauma. We measured resilience, coping, and PTSD symptoms at separate time points in order to establish temporal precedence for a prospective mediation model (Cole and Maxwell, 2003). We hypothesized that individuals with high levels of resilience at 1-month post-trauma would be more likely to use active coping strategies, less likely to employ avoidant coping strategies, and less likely to develop PTSD symptoms at 6-months following trauma exposure. We also hypothesized that 3-month coping strategies would mediate the relationship between resilience at 1-month post-trauma and PTSD severity at 6-months post-trauma.

1. Methods

1.1. Procedures

Participants were recruited in the Emergency Department of an inner city level-1 trauma center (offering comprehensive service to patients) and provided informed consent. Patients were included in the study if they were between the ages of 18 and 65, were English-speaking, were alert and oriented, and endorsed criterion A trauma (experienced, witnessed, or were confronted with an event that involved actual or threatened death or serious injury, or a threat to the physical integrity of the patient or others) consistent with the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric & American Psychiatric, 2000). Exclusion criteria included recent or current suicidality, active psychosis, or significant substance use during screening (determined by a positive toxicology report found in electronic medical chart). An initial assessment was completed at the Emergency Department within a few hours of the trauma. Follow-up assessments of measures (described below) were completed in person at 1-month, 3-months, and 6-months post-trauma. Assessors trained by clinical psychologists to administer measures outlined below completed all study assessments. Inter-rater reliability was 97%. All study procedures were reviewed and approved by the Emory Institutional Review Board and the Grady Hospital Research Oversight Committee.

1.2. Measures

The Standardized Trauma Interview was administered at baseline in the Emergency Department to gather information about demographic variables and characteristics of the index trauma, such as the extent of injuries sustained, subjective experience of hopelessness and helplessness during the traumatic event, and patient-rated severity of trauma with a scale of 1 (not life-threatening) to 5 (near-death experience) (Rothbaum et al., 1992). The STI is a semi-structured interview modified from the Standardized Assault Interview (SAI; Rothbaum et al., 1992) that has been used previously (Rothbaum et al., 2006).

Resilience was measured at 1-month post-trauma with the Connor-Davidson Resilience Scale (CD-RISC; Connor and Davidson, 2003). The CD-RISC is a 25-item scale that assesses one's ability to cope with adversity and stress during the past month (e.g. able to adapt to change, have close and secure relationships, belief one can deal with whatever comes and having control of one's life). Items are rated on a 5-point Likert scale ranging from not true at all to true nearly all the time. CD-RISC scores can change with time, clinical improvement, and treatment, and the scale has adequate internal consistency, test-retest reliability, and convergent and divergent validity (Connor and Davidson, 2003). Total CD-RISC scores representative of resilience were utilized for this study (Cronbach's $\alpha = .90$).

Coping strategies were assessed at 3-months post-trauma using the Coping Strategies Inventory (CSI; Tobin et al., 1989), which has strong psychometric properties (Cook and Heppner, 1997; Tobin et al., 1989). The CSI is a 72-item self-report measure that assesses coping thoughts and behaviors tied to a specific event (in this case, the occurrence of a Criterion A trauma for which individuals where enrolled in study). Respondents are asked to indicate to what extent they used each particular coping response using a 5-item Likert rating scale, ranging from none to very much. Eight primary scales are included in the CSI including Problem Solving, Cognitive Restructuring, Social Support, Expressing Emotions, Problem Avoidance, Wishful Thinking, Self-Criticism, and Social Withdrawal. Seven of the eight CSI scales had Cronbach's α values above .70, except for problem avoidance ($\alpha = .64$).

PTSD symptoms were assessed at 6-months post-trauma with the PTSD Symptom Scale (Foa et al., 1993). The PSS is a semi-structured