Coping, Peritraumatic Reactions, Negative Life Events, and Posttraumatic Stress Disorder Symptoms: A Prospective Study of Adolescent Girls

Carlye Smith-MacKenzie

Mount Saint Vincent University

Abstract

The purpose of this study was to identify the prevalence of High- and Low- magnitude Negative Life Events (NLEs) among adolescent girls, and to investigate the role of coping and Peritraumatic Reactions (PTRs) in relation to PTSD symptoms. Participants (N = 211) completed self report scales at five intervals over a period of two years (grades 9 through 11). Trait coping was assessed both at the beginning and end of the 2-year data collection period. At the end of this period, history of negative life events was assessed; participants then selected the event that they perceived as the most negative (MN-NLE) during this period and completed questionnaires about PTRs, coping with the event (state coping), and post-event symptomology (PTSD symptoms). It was hypothesized that: (1) that the relationship between PTRs, post-event state coping, and PTSD symptoms would be moderated by whether the event was a High- or a Low-magnitude stressor; (2) that PTSD symptoms would be related to PTRs and post-event state coping, and that these relationships would be moderated by pre-event or trait coping styles; (3) that post-NLE state coping would mediate the relationship between PTRs and PTSD symptoms; and (4) that exposure to high levels of adversity during the high school years (Adolescent Adversity) would have a negative effect on trait coping (i.e., decreased use of positive coping and increased use of negative coping). Findings of the present study offered support for each hypothesis: (1) event magnitude moderated the relationship between PTRs and PTSD; (2) baseline trait coping (Positive coping; Externalizing coping) moderated the relationship between PTRs and PTSD; (3) State coping (Internalizing coping, Externalizing coping, and Distancing coping) mediated the relationship

between PTRs and PTSD; and (4) Adolescent Adversity predicted changes in Trait Externalizing scoping between baseline at the 2-year follow-up. Results are discussed in terms of PTSD theoretical and clinical issues.

Coping, Peritraumatic Reactions, Negative Life Events, and Posttraumatic Stress Disorder Symptoms: A Prospective Study of Adolescent Girls

Although traumatic events were once considered rare for children and adolescents, recent research has highlighted that serious negative life events are not uncommon, including those events identified by the Diagnostic and Statistical Manual – Fourth Edition, Text Revision (DSM-IV-TR; American Psychiatric Association, 2000) Criterion A for Posttraumatic Stress Disorder (PTSD) as having the potential to trigger the disorder (Keane, 1996; Lewis & Frydenberg, 2002; Perry & Azad, 1999; Saigh 1996). Based upon a large representative epidemiological survey, Costello, Erkanli, Fairbank, and Angold (2002) found that by the age of 16, one-quarter of youth had experienced a minimum of one high magnitude Negative Life Event (NLE). High magnitude NLEs were defined as those stressors acknowledged by DSM-IV-TR as potential antecedents to the development of PTSD. An even greater number of youth, one third, had experienced a low magnitude event (e.g., moving house, changing schools, break-up with significant other) within the preceding three months (Costello et al., 2002). Another study using a modified version of the Clinician-Administered PTSD Scale for Children and Adolescents (CAPS-C; Nader, Kriegler, Blake, Pynoos, Newman, & Weathers, 1996) found that 42% of adolescents experienced at least one stressful event (i.e., those traumatic events presented in the modified Clinician-Administered PTSD Scale for Children) before the age of 21 (Bal, Crombez, Van Oost, & Debourdeaudhuij, 2003). The most commonly reported events included a serious accident, sexual abuse, the death of a loved one, and a serious disease (Bal et al., 2003). Given the prevalence of both high and low

magnitude NLEs during adolescence, it is important to study how these events affect youth and identify factors that may mediate or moderate the impact of these events.

This study involves a prospective investigation of the role of coping and Peritraumatic Reactions (PTRs) in relation to PTSD symptoms. The purpose of this study was to identify the prevalence of high and low magnitude NLEs among adolescent girls, and to investigate the role of coping and PTRs in relation to PTSD symptoms. Research has found that coping is an important link between adolescent stress and psychological symptoms (Compas et al., 1993; Kraaij et al., 2003). Due to the unpredictability of traumatic events, the vast majority of research in the area of PTSD symptoms following NLEs is retrospective. What has not been examined is a possible link between Pre-Event Trait coping style and Post-Event State coping in relation to PTSD symptoms. The prospective nature of this data enabled us to examine the potential moderating role of pre-event Trait Coping style, in addition to the mediating role of post-NLE State Coping in the relationship between NLEs and PTSD symptoms. It was anticipated that one's general coping style (Trait Coping) would affect how one copes with a NLE. In turn, State Coping (coping with the stressor) would mediate the relationship between event-related stress and event-related symptoms.

Though there is an increasing amount of research examining the links between PTRs and PTSD symptoms (Bernat et al., 1998; Frieze & Bookwala, 1996; Maercker, Bauducel, & Schützwohl, 2000), this area is still relatively unexplored. PTRs are an individual's immediate cognitive, physical, and emotional responses to a NLE. PTRs can be thought of as the individual's immediate coping to trauma, or how they cope in the moment. This study examined the potential

mediating role of PTRs in the relationship between NLEs and PTSD symptoms anticipating that PTRs would significantly predict post NLE symptomology.

Impact of NLEs

Research has demonstrated that NLEs in childhood and adolescence are associated with a broad range of physical and psychological effects (Braun-Lewensohn, Celestin-Westreich, Celestin, Verleye, Verté, & Ponjaert-Kristoffersen, 2009; Compas, 1987; Perry & Azad, 1999; Tedeschi, & Calhoun, 1996), and are considered key etiological factors for a number of disorders such as Posttraumatic Stress Disorder, Dissociative Identity Disorders, and Adjustment Reactions (Grant & Compas, 2003; Braun-Lewensohn et al., 2009; Perry & Azad, 1999; Rutter, 1996). Nonetheless, not all youth exposed to serious NLEs show significant mental health effects (Hizli, Taskintuna, Isikli, Kilic, & Zileli, 2009; Perry & Azat, 1999), with reactions varying from relatively little impact, to serious and chronic psychopathology (Hizli et al., 2009; Saigh, Green, & Korol, 1996; Perry & Azad, 1999; Saigh, 1996).

Though a number of psychological reactions and disorders are associated with NLEs and stress, PTSD is the disorder most clearly linked with these experiences (American Psychiatric Association, 2000). Indeed, one of the necessary diagnostic criteria (Criterion A) for PTSD in the DSM-IV-TR is exposure to a serious or high magnitude NLE. PTSD symptomatology reflects three primary psychological reactions to serious NLEs – reexperiencing of the event through intrusive memories and flashbacks, avoidance of stimuli linked with the NLE (e.g., people, places, things, circumstances that remind them of the NLE), and hyperarousal in response to reminders of the event and to stress in general (American Psychiatric Association, 2000).

PTSD symptoms by definition have been linked with high magnitude NLEs; however, there is mounting evidence to suggest that those events identified by the DSM-IV as "extreme stressors" are not a comprehensive list of all events that may potentially trigger PTSD in children, and that the quantification of NLEs is extremely complex **(**Costello et al., 2002; Fletcher, 2003). Other life events not defined by the DSM-IV as high magnitude events may lead to PTSD types of symptoms. For example, marital disruption, getting in trouble with the law, collapse of an adoption arrangement, the death of a loved one, miscarriage, a spouse's affair, and poisoning have been shown to induce PTSD though they do not meet the DSM-IV-TR criteria for stressor severity (Hezler, Robins, & McEvoy, 1987; March, 1992). In fact, one study found that common events including money problems, household illness and injury were more likely to result in PTSD symptoms than the exposure to a natural disaster (Solomon & Canino, 1990). In addition, though media exposure to a traumatic event is not identified as an "extreme stressor" by the DSM-IV-TR, one study found a positive correlation between children's exposure to media surrounding the September 11th terrorist attacks in the United States and PTSD symptoms (Saylor, Cowart, Lipovsky, Jackson, & Finch, 2003).

Research is increasingly demonstrating that it is the impact of the NLE on the individual rather than objective factors related to the NLE that determine event magnitude (March, 1992). Subjective factors such as perception of threat to life, perceived potential for physical violence, the experience of extreme fear, and the feeling of helplessness have been shown to explain why similar events are experienced differently by different individuals in terms of traumatic impact, and why events not defined as "extreme stressors' by the DSM-IV-TR have the potential to induce

PTSD (March, 1992). Because the need to identify event magnitude was recognized, subsequent analysis were completed to categorize events as either High- or Low- magnitude.

PTRs

The prefix "post" in PTSD has misled many to believe that its onset is delayed, when in fact it is an immediate reaction to trauma (Lazarus, 1999). In recent years, PTRs, that is an individual's immediate emotional and physical reaction during the trauma, have begun to receive attention as having bearing on post NLE coping and as potential predictors of PTSD following NLEs (Bernat et al.,1998; Frieze & Bookwala, 1996; Maercker, Bauducel, & Schützwohl, 2000; Roemer, Orsillo, Borkovec, & Litz, 1998). An individual's PTRs are dependent on factors related to the trauma itself, as well as the coping processes initiated at that time (Lazarus, 1999). Research has found that PTRs are strong predictors of PTSD symptomology following NLEs (Bernat et al., 1998; Frieze & Bookwala, 1996; Maercker et al., 2000).

A number of factors have been identified as risk factors for the development of PTSD following a serious NLE, including the severity of the event, emotional reactions to the event (e.g., PTRs), exposure to previous, concurrent, and/or ongoing serious NLEs and stressors, premorbid adjustment, coping style and post-event coping, and family and community supports (Hizli et al., 2009; Keane, 1996; Keppel-Benson, Ollendick, & Benson, 2002; Tremblay, Hébert, & Piché, 1999). Indeed, individual and family characteristics have been found to have a greater influence on the development of PTSD than factors related to the NLE itself (Bowman, 1999; Lazarus, 1999; March, 1992; Wolfe, 2007). For example, in one study examining PTSD symptoms in children and adolescents following an earthquake, it was found that participants' subjective negative

perceptions of the earthquake were more predictive of PTSD symptoms 4 years after the disaster than factors related to the earthquake itself (e.g., damage caused by the earthquake, loss of family members, etc.; Hizli et al., 2009). In addition, a meta-analysis concluded that subjective factors (e.g., perceived threat to life) accounted for twice as much of the psychological distress as did objective factors (e.g., physical injury) after experiencing violence (Weaver & Clum, 1995).

One question that has been raised in the field of traumatic stress research is, "When does a stressor become a traumatic stressor?" (Keane, 1996). Research suggests that it is the individual's subjective appraisal of the event (e.g., perceived threat to life) that determines whether a NLE is traumatic or stressful, not the objective characteristics of the event itself (e.g., physical injury; Berton & Stabb, 1996; Bowman, 1999; Creamer, McFarlane & Burgess, 2005; Jeavons, Greenwood & Horne, 2000; March, 1992). For example, Jeavons, Greenwood and Horne (2000) found that in predicting PTSD following motor vehicle accidents, the individual's perception of self-injury proved to be a more significant predictor of PTSD than doctor ratings of injury or the number of days spent in hospital. Previous experience of trauma, subjective appraisal of threat to life, and PTRs to the NLE have been found to be more predictive of PTSD than objective factors, including severity of the trauma, type of traumatic event, and the nature and severity of injuries (Bernat, Ronefeldt, Calhoun, & Arias, 1998; Jeavons et al., 2000; Stallard, Velleman, & Baldwin, 1998). Indeed, what is considered a traumatic or high magnitude NLE by some may be perceived as a low magnitude NLE for another. How an individual reacts both during (PTR) and after the event (posttraumatic coping) plays an important role in whether a NLE is perceived as high or low magnitude.

Peritraumatic dissociation, defined as the "subjective feeling of emotional numbness, detachment from others, reduced responsiveness to one's surroundings, depersonalization, and derealisation at the time of the traumatic event", is the PTR that has received the most attention (Breh & Seidler, 2007, pp. 57). It has been proposed that dissociation in response to trauma occurs when the biological "fight or flight" response has been overwhelmed, and with no option for physical escape, the individual escapes psychologically (Kaplow, Dodge, Amaya-Jackson, & Saxe, 2005; Gershuny, Cloitre, & Otto, 2001). Dissociation is a complete and total withdrawal, and allows the individual to block out the intolerable event while it is occurring, and later pretend that it did not happen (Breh & Seidler, 2007). It has been suggested that such withdrawal disallows the processing of emotions, cognitions and memories related to the event, increasing the likelihood of developing PTSD (Kaplow et al., 2005; Breh & Seidler, 2007). Both peritraumatic and posttraumatic dissociation have been associated with the development of PTSD following NLEs (Arias & Pape, 1999; Breh & Seidler, 2007; Ehlers & Clark, 2000). Some studies have shown peritraumatic dissociation to be a better predictor of PTSD symptomology than trauma severity (Shalev, Peri, Canetti, & Schreiber, 1996). Research on child survivors of sexual abuse has shown peritraumatic dissociation to be a significant predictor of PTSD (Kaplow et al., 2005).

Other emotional and physical PTRs, though they have received less attention than dissociation, have been identified as significant predictors of PTSD following a NLE in adolescents (Bernat et al., 1998). Strong reactions of distress, anxiety, arousal, panic, fear, internalizing (e.g., withdrawing, crying, worrying), externalizing (e.g., yelling, swearing, aggressive behaviors toward others), helplessness, emotional numbing, negative emotions,

perception of low control, and subjective appraisal of threat to life during trauma have been associated with PTSD symptomology (Bernat et al., 1998; Gershuny et al., 2001; Kaplow et al., 2005; Maercker et al., 2000; March, 1992; Olff, Langeland, & Gersons, 2005; Roemer et al., 1998; Stallard et al., 1998). For example, one study found that both peritraumatic fear and perceived threat of death contributed significantly to the development of PTSD in children following motor vehicle accidents (Stallard et al., 1998). These findings are consistent with research by Pfefferbaum and colleagues (2002), who found PTRs including fear, nervousness, feeling helpless, and somatic responses such as increased heart rate and trembling or shaking, were the strongest predictor of PTSD responses in children following the Oklahoma City bombing in 1995. In this study, PTRs were more predictive than physical exposure to the event, relationship to victims, media exposure, and lingering safety concerns or worry following the event (Pfefferbaum et al., 2002). Similarly, Bernat and colleagues (1998) found PTRs such as negative emotional reactions and panic were more predictive of PTSD symptomology than objective factors of the stressor or individual vulnerabilities in a non-clinical sample of college students.

Coping

Individual differences in coping appear to play a particularly important role in mediating the link between NLEs and mental health outcomes (Braun-Lewensohn et al., 2009; Compas, 1987; Lazarus, 1999). Lazarus and Folkman (1984), defined coping as "constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141). Such efforts may include the acceptance, avoidance, or minimization of a perceived stressor (Compas, 1987). According to

Lazarus and Folkman (1984), coping can be divided into two subtypes according to where an individual focuses his energies. Problem-focused coping strategies are those attempts by the individual to alter the stressor in some way, while emotion-focused strategies attempt to control negative emotional reactions to the stressor (Lazarus & Folkman, 1984). Roth and Cohen (1986), also divided coping into two subtypes. According to Roth and Cohen, coping strategies differ depending on whether they are oriented toward (approach-focused coping) or away from (avoidance coping) the stressor. Causey and Dubow (1992), conceptualized coping in a manner that incorporated both perspectives, yielding five types of coping: Internalizing (e.g., withdrawing, crying, worrying), Externalizing (e.g., yelling, swearing, aggressive behaviors toward others), Distancing (e.g., ignoring the event, attempting to forget the event), Seeking Social Support (e.g., talking with family or friends, seeking advice, seeking help), and Problem Solving (e.g., thinking of different ways to solve the problem, making changes so things will work out, attempting to understand the situation; Causey & Dubow, 1992).

In general, approach- or problem-focused coping strategies, including seeking social support and problem solving, are thought to protect the adolescent from possible adverse effects of negative life events, and have been shown to be related to positive functioning and better adjustment (Gil & Caspi, 2006; Braun-Lewensohn et al., 2009). Reliance on avoidance and emotion-focused coping strategies, including distancing, internalizing and externalizing, has been shown to be related to increased distress and poorer adjustment including depression, anxiety, and PTSD (Braun-Lewhenson et al., 2009; Causey & Dubow, 1992; Gil & Caspi, 2006; Herman-

Stahl, Stemmler, & Petersen, 1995; Krause, Kaltman, Goodman, & Dutton, 2008; Steiner, Erickson, Hernandez, & Pavelski, 2002; Tremblay, et al., 1999).

However, coping is multidimensional and context-dependent, with the effectiveness of any coping strategy varying according to the situation (Lewis & Frydenberg, 2002; Steiner et al., 2002). For example, avoidant coping strategies appear to be beneficial in the short term, as appropriate use of certain avoidant coping strategies may diminish stress and allow the individual to gather the resources necessary to deal with a stressor. However, long-term use of such strategies may prevent the individual from confronting and eventually resolving their problems and thus lead to adjustment difficulties (Herman-Stahl et al., 1995**;** Lazarus & Folkman, 1984; Roth & Cohen, 1986).

There is evidence to support the hypothesis that the contextual effectiveness of approach and avoidant coping strategies is dependent on the perceived controllability of the situation (Roth & Cohen, 1986). It has been proposed that approach coping is more effective in situations that are controllable, allowing the individual to gain some control, whereas avoidant coping is more effective in uncontrollable or emotionally overwhelming situations (Roth & Cohen, 1986; Lazarus & Folkman, 1984; Schwarzer & Schwarzer, 1996; Steiner et al., 2002). Effective coping is dependent on flexibility in the use of coping strategies (Compas, 1987; Tremblay et al., 1999). According to Lazarus (1999), "The efficacy of any coping strategy depends on its continuing fit with the situational demands and opportunities provided by the environmental conditions being faced as well as the outcome criteria employed to evaluate it" (p. 122). In an ideal coping situation

both avoidant and approach strategies would be activated in order to balance the costs and benefits of each (Roth & Cohen, 1986).

It has been suggested that some effective coping strategies (i.e., seeking social support, problem solving) develop during childhood and remain consistent into adulthood (Hampel & Peterman, 2005). Though coping might be considered trait-like, coping tendencies may change over time or due to experience. The experiencing of NLEs could potentially impact future coping. If a NLE were to have negative consequences such as reducing one's sense of self efficacy or of trust in others, it may then be less likely that positive coping strategies (i.e., problem solving, seeking social support) will be utilized in the future. Unfortunately, there is a lack of research examining whether the experiencing of NLEs has the potential to affect an individual's everyday coping style.

In the literature there is some debate as to whether individuals habitually engage in trait coping styles or whether they employ episodic state coping strategies when faced with NLEs (Schwarzer & Schwarzer, 1996). Research has shown that an individual's preferred coping style, or trait coping style, shows some temporal and situational consistency (Kohn, 1996; Lazarus, 1999; Schwarzer & Schwarzer, 1996). Such dispositional approaches to coping show stability over time and situational influences (Epstein & Meier, 1989; Lazarus, 1999; Schwarzer & Schwarzer, 1996). For example, the coping strategies employed by adolescents to cope with everyday hassles have been found to be highly predictive of their coping response to later life stressors (Boekaerts, 1996). There is also evidence to support that an individual will change his or her coping strategy to adapt to a specific stressor (Carver, Scheier, & Weintraub,1989; Folkman, 1992; Schwarzer &

Schwarzer, 1996). Such contextual approaches, or state coping strategies, vary adaptively and change over time (Lazarus, 1999). Lazarus (1999) has suggested that individuals engage in both trait and state coping, as some strategies are linked to personality whereas others are contextual.

Coping as a Mediator and Moderator of the Impact of NLEs

Several studies have demonstrated coping as having a mediating effect between NLEs and psychological sequelae (Bal, Van Oost, Bourdeaudhuij, & Crombez, 2003; Kaplow et al., 2005; Hizli et al., 2009; Holeva, Tarrier, & Wells, 2001; Stallard et al., 1998); that is, the coping strategies used in response to a stressor have been linked with behavioural and emotional aftermath. Mediator variables explain all or part of the relationship between an independent (e.g., NLE) and dependent variable (e.g., stress-related emotional sequelae; Baron & Kenny, 1986). Further, it is possible that coping style plays a moderating role in understanding the linkages between NLEs and mental health outcome. In contrast to mediating variables, which occur subsequently or contemporaneously with the independent variable, moderating variables precede the independent variable and influence the strength and/or direction of the relationship between the independent and dependent variables (e.g., socioeconomic status, age, gender, ethnicity, etc.; Baron & Kenny, 1986). In this case, it is possible that premorbid coping style acts as a moderator with regard to a number of issues related to NLEs, including risk of NLEs, coping in response to the NLE, and resulting psychological sequelae (Gil, 2005).

Not surprisingly, the majority of studies that investigated the mediating effects of coping and NLEs were retrospective in nature, as it is difficult to predict who will experience a NLE. Retrospective research on this topic is fraught with a number of methodological issues including

the possibility of recall errors and biases (Roemer, et al., 1998). For example, it has been suggested that individuals with elevated stress responses recall more traumatic events and/or peritraumatic symptoms than individuals without such responses (Bernat et al., 1998). Research has also questioned the accuracy of recalled coping efforts (Armeli, Gunthert, & Cohen, 2001). There are also concerns regarding the interpretation of retrospective research in this area (Dunmore et al., 1999). For example, it has been suggested that subjective appraisals of NLEs influence coping, making it difficult to determine whether it is the subjective appraisal of the NLE that affects outcomes or the coping (Breslau, Chilcoat, Kessler, & Davis, 1999; Olff et al., 2005; Roemer et al., 1998) . Prospective studies are needed to identify premorbid coping style, link premorbid coping style with post NLE coping and subjective appraisals of NLEs, and link both with mental health outcomes following NLEs. Furthermore, prospective studies provide an opportunity to examine whether NLEs have an effect on coping style, which in turn may help identify the mechanisms that influence long-term effects of NLEs.

To date, only one study has prospectively investigated the link between premorbid coping, a NLE, and mental health outcomes. Gil (2005) was originally intending to identify predictors of academic achievement in university students. However, when a terrorist explosion took place near the university two weeks after the first evaluation, the focus of the study changed, and Gil (2005) conducted a prospective study examining the role of coping style in predicting PTSD. Prior to the terrorist bombing, the students' coping style for daily hassles (trait coping) was measured, and one month following the attack their trauma-focused coping style (state coping) was measured. These measures were then used to predict PTSD 6 months after the attack. Using the Multidimensional

Coping Inventory (COPE; Carver, Scheier, & Weintraub, 1989), Gil (2005) divided coping into three categories: problem-focused (active coping, planning, suppression of competing activities, restraint coping, and seeking instrumental social support), emotion-focused coping (seeking emotional social support, positive reinterpretation, acceptance, denial and turning to religion), and avoidance coping styles (venting emotions, behavioural disengagement, and mental disengagement). Gil (2005) found that 6 months after the explosion, PTSD was predicted by high levels of the trait avoidance coping style, trait emotion-focused coping style, state avoidance coping, and low state problem-focused coping. Trait problem-focused and state emotion-focused styles did not predict PTSD.

Conclusion

Adolescence is a time of transition with multiple challenges and in many cases youth must cope with a number of high and low magnitude stressors. Individual differences in pre-morbid coping, NLE appraisals, PTRs, and post-event coping have important implications for post-NLE mental health adjustment and in shaping the ways individuals cope with subsequent NLEs (Braun-Lewensohn et al., 2009; Herman-Stahl et al., 1995; Steiner et al., 2002). Understanding the relationship between NLEs, coping, and negative psychological sequelae will enable the identification of those children and adolescents who might be vulnerable to such negative effects, and help identify post-event reactions that foster positive adaptation, as well as those associated with negative outcomes.

The Present Study

- It was anticipated that the relationship between PTRs, post-event coping, and PTSD symptoms would be moderated by whether the event was a high- or a low-magnitude stressor. In this case, subsequent analyses would use event magnitude as a covariate.
- Based on Gil (2005), it was anticipated that PTSD symptoms would be related to PTRs and post-event coping, and that these relationships would be moderated by pre-event coping styles.
- It was anticipated that the relationship between PTRs and PTSD would be mediated by post-NLE coping.
- It was anticipated that exposure to high levels of adversity during the high school years would have a negative effect on coping (i.e., decreased use of positive coping and increased use of negative coping).

Method

Participants

Participants were drawn from a larger sample of 807 adolescent girls who participated in an evaluation of the Resourceful Adolescent Program (RAP), a universal delivery primary prevention program developed to reduce rates of depression in adolescents, conducted through the Child and Adolescent Centre at London Health Sciences Centre. The study from which this data was drawn was described in Wolfe, Dozois, Fisman, and DePace (2008). The RAP was implemented in 18 public and Catholic schools in Southwestern Ontario, Canada, over a three-year period between 2002 and 2004 as part of the grade 9 Health and Physical Education curriculum.

Schools within each board provided a sampling of rural and urban geographical regions, representing diverse socioeconomic districts. Within schools, classes were randomized to receive the RAP or serve as controls based on a coin toss. Controlled classrooms received regular grade 9 Health and Physical Education (Healthy Active Living Education, or HALE), which included similar objectives for effective coping, but did not have a specific method for reaching these objectives. Students in the RAP classrooms received the program conducted by RAP psychology staff in conjunction with grade 9 Health and Physical Education staff. Upon initiation of the program, students and their parents were asked to participate in an evaluation of the RAP. Participation in the evaluation involved five assessments: pre-test (one to three weeks prior to the start of the program), post-test (one to three weeks following program completion), and three follow-up assessments, which were conducted at 6-month intervals (6-, 12-, and 18-month follow-up), ending in grade 11. Each youth assessment included nine questionnaires assessing a number of issues relevant to adolescent depression, including cognitive style, conflict with parents, social supports, and self-concept. Parents' questionnaires provided an overview of mental health and behavioral adjustment, and a questionnaire about parent-child conflict.

From this sample, participants were recruited for a 24-month follow-up assessment (see recruitment procedures below). Of the 807 participants in the original RAP sample, 211 participated in the 24-month post-intervention assessment; of those, 47.7% attended Catholic public schools and 53.3% attended Non-Catholic public schools, and 66.3% attended urban schools and 33.7% attended rural schools. Hollingshead scores ranged from 0 to 67, (X = 44.07, SD = 12.60), reflecting a spectrum of SES backgrounds with a normal distribution.

To determine the representativeness of the sample, comparisons were made between participants and nonparticipants. Chi-square analysis revealed no differences in participation rates between Catholic and Non-Catholic Public schools [χ^2 (1, N=807) = 2.24, p = .13], nor were there differences in participation between urban and rural schools [χ^2 (1, N=807) = 1.78, *p* = .18, *ns*]. Socioeconomic data was available for 75.3% of the total sample. Hollingshead SES data was available for 607 of the original sample. ANOVA revealed no difference between participants and nonparticipants for SES (*F* (1,606) = .11, *ns*.

Because coping was a key variable for the study, differences between participants and non-participants was examined on the five subscales of the Self Report Coping Scale (Seeking Social Support, Problem Solving, Internalizing, Externalizing, and Distancing). ANOVAs revealed those who participated had significantly higher baseline Problem Solving scores (F (1, 798) = 5.97, p < .05) and lower baseline Externalizing scores (F (1, 798) = 6.45, p < .05).

Chi-square analyses were also conducted to determine whether there were differences in participation due to cohort (six cohorts reflecting fall and spring classes across 3 years). Initial analyses revealed a pattern reflecting higher participation for those in the first (fall year 1), second (spring year 1), and fifth (fall year 3) cohorts. As a result two groups were formed, High Participation and Low Participation cohorts. Chi-squares were used to examine demographic differences in these samples, which revealed that the High Participation group was characterized by higher rates of participation from Catholic than Non-Catholic Public schools [χ^2 (1, N=807) = 167.17, *p* < .001], and from rural than urban schools [χ^2 (1, N=807) = 20.58, *p* < .001]. However, high participation schools did not different on SES.

Procedure

Participant Recruitment Strategies

Six months after completing their final RAP evaluation follow–up assessment (18-months post-intervention follow-up), participants were contacted to participate in a 24-month post-intervention assessment for additional follow-up research examining the relationship between NLEs and mental health outcomes. Unlike the previous RAP student assessments, which were conducted in school, student questionnaire packages were sent to the participants' homes (parents did not participate in this portion of the study). Packages included the same questionnaires used for the RAP evaluation in addition to a questionnaire package for the present study, a letter inviting them to participate, consent forms requiring participant and parental signatures, and a self-addressed, stamped return envelope. The time required to complete the two sets of questionnaires was between 45 and 90 minutes.

In order to increase response rates, several strategies suggested by Dillman (2000) were implemented. The materials were colorful and laid out in booklet format. Included with the questionnaire packages was a small package of candy, and those who returned their questionnaires received a gift certificate equivalent to the value of $10.00 (movie pass, Tim Horton's, shopping mall). Within two weeks of receiving their packages, students received a phone call to remind them of the study, and to answer questions about the research and/or questionnaires. Finally, four to six weeks after questionnaire packages were delivered, colorful postcards were sent to those participants who had not yet returned their questionnaires, reminding them of the study.

Sample Characteristics

To assess the representativeness of the 24-month sample, efforts were made to identify variables associated with participation in the 24-month follow-up assessment. Using Chi-squares, those who participated in the 24-month follow-up were compared to those who did not participate with regard to rural/urban status and whether their school was Catholic or public. In addition, t-tests were used to compare participant and non-participant SES and prior history of NLEs.

Previous preliminary analyses indicated that RAP effects were no longer evident at the 18-month follow-up. Thus, it was anticipated that there would be no effect of RAP status (RAP v. Control group) for the analyses involved with the present study. Nonetheless, analyses were conducted with the current sample to evaluate whether participation in the RAP had an impact on any of the key variables. If so, RAP status would be used as a covariate in subsequent analyses, as appropriate.

Measures

Children's Impact of Traumatic Events Scale – II (CITES-II; Wolfe, 2004). The CITES-II was developed as a self-report measure to assess PTSD and related concepts, including: history of NLEs, PTSD symptoms, recollections of PTRs, attributions about NLEs, perceptions of social support, and life changes associated with traumatic events. The CITES-II was adapted for the present study to assess the effects of NLEs with a representative population of high school students. To do this, students were asked to identify NLEs experienced both prior to and after entering high school, identify their MN- NLE during the past two years (since entering high school), and answer questions with regard to the identified NLE. For the present study, the CITES-II was used to determine history of NLEs, the MN-NLE experienced in the last two years,

recollection of PTRs associated with the MN-NLE, PTSD symptomology, and event-related coping strategies. The CITES-II also measures attributions about the NLE, perceptions of social support, and life changes associated with the NLE, but these were not relevant to the current study. Research has demonstrated that the CITES-II has adequate psychometric properties including internal consistency, and concurrent, convergent, discriminant, and construct validity (Wolfe & Birt, 1997).

The Negative Life Events Checklist of the CITES-II was used to assess history of NLEs. The checklist included 24 events, some which were clearly identifiable as High- magnitude and associated with the development of PTSD (e.g., serious injury, sexual abuse; in line with definitions used by Costello et al., 2002), others that were clearly identifiable as Low- magnitude events not necessarily linked with the development of PTSD but typically considered stressful (e.g., breakup with romantic partner, changing schools), and others that were not easily identifiable as either High- or Low- magnitude (e.g., death of a grandparent that may have been expected). Because the need to identify event magnitude was recognized, subsequent analysis were completed to categorize events as either High- or Low- magnitude.

Participants were instructed to indicate the occurrence of recent NLEs (within the last two years) and past NLEs (more than two years prior to the assessment), and select from events experienced in the preceding two years the event that they perceived as the most negative. The remaining four sections of the CITES-II were completed in reference to this MN- NLE. This assured that participants had sufficient memory of the event to answer all questions, and allowed

for longitudinal analyses between baseline Grade 9 assessments and the Grade 11 NLE assessment.

The Negative Life Events Checklist was used to create a variable describing the adversity experienced by each participant during their high school years. The Adolescent Adversity score was calculated by (a) assigning a score of 2 points to High- magnitude events, (b) assigning a score of 1 point to Low- magnitude events, and (c) summing the allotted scores for NLEs occurring within the High School timeframe. The validity of the Adolescent Adversity score was examined by correlations with PTR variables, and PTSD variables (see below).

PTRs Scale: Originally a separate questionnaire (Children's Peritraumatic Experiences Questionnaire; Wolfe & Birt, 2005), the PTR Scales have now been integrated into the CITES-II. Psychometric analyses of the CPEQ revealed five factors: Extreme Reactions; Fear/Anxiety; Dissociation; Negative Affect; and Guilt/Blame. Past psychometric evaluations supported the scale factor structure, and strong Cronbach's Alpha values revealed good internal consistencies for all scales with the exception of Guilt/Self Blame (Wolfe & Birt, 2004b). The Extreme Reactions scale reflected extraordinary types of reactions to NLEs (e.g., thoughts that one might die, feeling like one might faint), and the Fear/Anxiety scale reflected more typical fear/anxiety reactions to NLEs (e.g., feeling scared, feeling nervous); both were closely linked with PTSD symptoms.

PTSD Symptoms Scales: The CITES-II assesses PTSD symptoms in three domains according to DSM-IV symptomology: Re-experiencing, Avoidance, and Hyperarousal. Items are rated on a 3-point scale: True, Somewhat/Sometimes True, and Very Often True. Scores are derived for each domain, and a total score is obtained. Past factor analytic studies have supported

the scale's factor structure, demonstrated internal consistency, and provided evidence for concurrent, convergent, discriminant, and construct validity (Chaffin, et al., 1997; Crouch, Smith Ezzel, & Saunders, 1999; Wolfe & Birt, 2003; Wolfe, Gentile, Michienzi, & Sas, (1991). For the present analyses the PTSD Total score was used.

Self-Report Coping Scale (SRCS) (Causey & Dubow, 1992). The SRCS is a multifaceted, self-report, 34-item, Likert-type coping measure for children based on Roth and Cohen's (1986) approach/avoidance model of coping. The SRCS assesses five types of coping: Internalizing, Externalizing, Distancing, Seeking Social Support, and Problem Solving. Seeking Social Support and Problem Solving reflect positive coping, whereas the Internalizing, Externalizing, and Distancing reflect ineffective coping. The SRCS asks respondents to indicate how often they use each of the coping strategies when addressing a particular type of stressor, with responses ranging from 1 for "never" to 5 for "always." This measure assesses coping in two distinct situations with established norms: having an argument with a friend, and receiving a bad grade. In addition to completing the SRCS for these two situations, participants were asked to complete the questionnaire while considering their MN-NLE within the last two years (as described in the NLE checklist). Coping reactions to the *Bad Grade* and *Argument with a Friend* situations might be considered "trait" coping because these represent coping reactions to typical daily incidents; coping reactions to the *MN-NLE situation* might be considered "state" coping as they represent coping with a particularly challenging situation. For the present study, the *Argument with a Friend* form was used for two reasons: First, a greater percentage of participants had completed

this version as compared to the *Bad Grade* form, Second, the *Argument with a Friend* seemed more relevant to the high school population.

Causey and Dubow (1992) originally validated the SRCS with a school-age population, having reported evidence of internal consistency, test-retest reliability, and construct validity. Wolfe et al. (2004), evaluated the psychometric properties of the SRCS with a subset of the present sample of adolescent girls, finding support for the scale's structure and internal consistency on all five of the SRCS scales (α = .68-.78). In addition, research has demonstrated adequate internal consistencies and meaningful relationships to coping with other situations (e.g., bad grade, argument with a friend), and the level of trauma experienced with regard to identified NLEs (Wolfe & Birt, 2003).

Results

Analysis of Missing Data

Preliminary analyses were conducted to identify errors in data entry (e.g., examined item means, standard deviations, and ranges). Missing data was identified and assessed for pattern and amount. Although most cases had full data for the trait coping measures (1.4% missing for baseline trait coping and 6.2% missing for 24-month follow-up trait coping). Due to errors in completing the NLE questionnaires, 1.4% to 14.2% of cases were missing for NLE variables (See Table 1). Rather than exclude all participants with missing data on one or more variables (i.e., exclude participants listwise in subsequent analysis), it was decided that subsequent regression analyses should use pairwise inclusion, thereby only removing participants from analyses where

their data was incomplete. The use of pairwise inclusion allowed us to maximize the number of cases included in the analyses without imputing missing data for the NLE variables.

Reliability of the Self-Report Coping Scale and Selection of Dependent Variables

Psychometric data for the current adolescent population was examined using the initial baseline data set for the control sample, and included internal consistency, test-retest reliability, and construct validity (See Table 2). The SRCS was used to assess participants' coping strategies for everyday situations (trait coping), as well as coping strategies used in respect to the participants' MN-NLE in the previous two years (state coping). In order to limit the number of analyses conducted, correlation patterns were examined amongst the SRCS scores to determine whether some scales could be amalgamated. Significantly strong correlations between the Seeking Social Support and the Problem Solving scales at Baseline ($r = .58$, $p < .01$) and following MN-NLEs ($r = .44$ $p < .01$) supported the creation of an amalgamated scale that was labelled SRCS Positive Coping. Correlations among the Internalizing, Externalizing, and Distancing Coping scales were not substantial at Baseline ($r = .22$ to $.49$, $p < .01$) or following MN-NLEs ($r = .06$ to $.54$, $p < .01$), and thus were not amalgamated, and were each used in the analyses (See Table 1). These coping variable categories are similar to those used by Gil (2005) despite use of a different questionnaire.

Reliability and validity of the CITES-II PTRs Scale and Selection of Dependent Variables

Measurement of NLE severity is a complex issue fraught with challenges. A principle components analysis with Varimax rotation was conducted for the PTRs scale to identify scales for subsequent analyses and further validate the factors identified by Wolfe and Birt (2004b). It was

anticipated that a similar factor structure would emerge, revealing five factors: Extreme Reactions, Fear/Anxiety, Negative Affect, Dissociation, and Self Blame/Guilt. Because the previous principal component structure was not fully supported, additional principal component analyses were conducted until a suitable solution was developed.

Based upon previous analyses of an earlier version of the scale (Wolfe, et al., 2004b), the initial analysis was restricted to five components. Upon examination of those results, a second analysis was conducted that restricted outcomes to four components that were labelled: Dissociation, Guilt, Anger, and Fear/Anxiety. Table 3 summarizes the items per component, Eigenvalues across the four components, and alpha values for the resulting scales. Based upon these results, four scales were identified with the addition of a one-item scale. Upon examination, the Dissociation component appeared to contain items that represented multiple but related concepts. A second principle component analysis was conducted with items from the Dissociation component, with output restricted to three components. Based upon content, the three components were identified and labelled Dissociation, Physiological Reactions, and Perceptions of Danger. Table 4 summarizes the items per component, Eigenvalues, and alpha values for the resulting scales and for a Total PTR score. Correlations were conducted between PTRs subscale and PTR Total scores and the Total PTSD scores to evaluate construct validity (i.e., PTRs expected to be positively correlated with PTSD symptoms). As anticipated, Total PTSD scores were significantly correlated with each of the six PTR subscales and the PTR Total score (r = .31 to .69, p < .01). To reduce the number of analyses, Total scores for PTR and PTSD were used in subsequent analyses. However, additional analyses were conducted with the subscales to assure that different patterns

did not emerge based upon different subscale scores; these results were not reported in this paper as they were entirely consistent with the analyses that used PTR and PTSD Total scores.

Designation of Events to High or Low Magnitude, and Calculation of Adolescent Adversity Scores

Past research (Costello et al., 2002; Fletcher, 2003; March, 1992) has identified difficulties quantifying the magnitude of NLEs based on event characteristics. Thus, efforts were made to validate identification of events as High- or Low- magnitude and to determine whether such designations were important in subsequent analyses. It was anticipated that some events would have higher PTR Perceptions of Danger scores, and thus support identification of those events as High- magnitude. Scores were converted to *z*-scores to allow for comparisons across different events. As can be seen in Table 5, an examination of the distribution of this scale identified a clear difference in Perception of Danger ratings linked with some events typically considered "High-Magnitude" (e.g., assaults, serious injuries). Those events with a mean *z* score greater than or equal to .45 were identified as High-Magnitude events. High-Magnitude events were weighted as 2, while those with a mean *z* score below .45 were identified as Low-Magnitude events and weighted as 1 (See Table 5 for average Perception of Danger scores for those items endorsed). These numbers were then summed to derive a Adolescent Adversity score.

To validate the Adolescent Adversity variable, correlations were made with PTRs scales (Perception of Danger, Dissociation, Physiological Response, Anger, Fear, Guilt, and Total PTRs). As expected, Adolescent Adversity was significantly correlated with PTRs subscale and Total scores (See Table 6). To further validate the Adolescent Adversity scores, correlations were calculated with PTSD scores (Re-experiencing, Hyperarousal, Avoidance, Total PTSD

symptoms). As expected, correlations were significant between all of the PTSD scales and Adolescent Adversity (See Table 7).

Types of Trauma Experienced

Table 8 describes the frequency of NLEs endorsed as occurring before and after high school, the percentage of participants who selected the event as their MN-NLE, and the percentage of those who experienced the event after entering high school that selected it as their MN-NLE. The most commonly experienced NLEs both prior to and after entering high school included the death of a close friend/ extended family member, breakup with boyfriend/girlfriend, and serious argument with close friend/ family member. Least experienced events included Environmental disaster, kidnapped/held captive, physically hurt/beaten, and sexually abused/sexually assaulted/ raped.

Of those events experienced after entering high school, some were highly likely to be selected as the MN-NLE (i.e., 50% or more who experienced the event selected it as their MN-NLE). These included Death of a Close Family Member, Death of a Friend, Being Kidnapped or Held Captive, as well as "Other" self-identified NLEs.

NLE Magnitude as a Moderator of the Relationships among PTRs, Post-Event State Coping and PTSD Symptoms

Past research has been equivocal with regard to whether researcher-defined designations of High- and Low- magnitude events would be related to PTRs, Post-Event State Coping, and PTSD symptoms (Berton & Stabb, 1996; Bowman, 1999; Creamer, McFarlane & Burgess, 2005; Jeavons, Greenwood & Horne, 2000; March, 1992). Thus, analyses were conducted to examine

this issue, and to determine whether MN-NLE Magnitude should be included as a covariate in subsequent analyses. It was anticipated that the relationships among PTRs, post-event Trait Coping, and PTSD symptoms would be moderated by MN-NLE Magnitude. Specifically, it was hypothesized that post-event State Coping would be a significant predictor for PTSD, but that the strength of the relationship would be larger for High- magnitude events. To test this hypothesis, the Baron and Kenny (1986) method was followed, which uses a multiple regression strategy, with the dependent variable predicted by the independent variable, moderator variable, and the interaction of the independent and moderator variables (See Table 9). A significant interaction term is indicative of a moderation effect, which is then plotted to identify the interaction pattern. PTSD Total was entered as the dependent variable, PTR Total as the independent variable, MN - NLE Magnitude as the moderator, and the interaction term was PTR Total X MN-NLE Magnitude. Results revealed a significant main effect for PTR Total, indicating a strong relationship between PTRs and PTSD symptoms ($R^2 = .47$, $\beta = .63$, $\Delta R^2 = .47$, $p < .001$). This relationship was further supported by a significant correlation between Total PTRs and Total PTSD symptoms ($r = .69$, $p < .01$). Though there was no main effect for MN-NLE Magnitude, and therefore no significant relationship between this moderator variable and PTSD symptoms, the interaction term was significant, indicating a moderator effect ($R^2 = .49$, $\beta = .14$, $\Delta R^2 = .02$, $p < .05$). Specifically, the relationship between PTSD and PTRs was significantly stronger for High Magnitude cases than for Low Magnitude cases (See Figure 1). Because this interaction was significant, subsequent analyses were conducted with NLE Magnitude entered as Step 1 to control for this effect.

Moderation of PTSD and PTRs by Baseline Coping

To examine moderation effects for the relationship between PTSD and PTR by baseline coping, a series of four hierarchical multiple regressions were conducted, with PTSD Total as the dependent variable, MN-NLE Magnitude (0 for Low Magnitude, 1 for high magnitude) as the covariate, PTR Total as the independent variable, and Baseline Trait Coping (Positive Coping, Externalizing Coping, Internalizing Coping, Distancing Coping) as the moderator, along with an interaction term (Coping variable X PTR Total). Results revealed a significant main effect for PTR Total ($R^2 = .47$, $\beta = .69$, $\Delta R^2 = .46$, $p < .001$), indicating a significant relationship between PTRs and PTSD symptoms. A significant interaction effect between PTR Total and Positive Baseline Coping was also found ($R^2 = .51$, $\beta = -.18$, $\Delta R^2 = .03$, $p < .001$), indicating a moderator effect (See Table 10). When predicting PTSD, participants with low Baseline scores on the Positive Coping scale showed a stronger relationship between PTRs and PTSD. For those with high Baseline scores on the Positive Coping scale, the relationship between PTRs and PTSD was not as strong (See Figure 2). Analyses of baseline Distancing and Internalizing scales revealed no effects, either main or interaction.

A significant interaction was found between PTR Total and Baseline Trait Externalizing Coping ($R^2 = .49$, $\beta = -.12$, $\Delta R^2 = .02$, $p < .05$; See Table 11). Specifically, the relationship between Total PTRs and PTSD was stronger for those with high scores on Baseline Trait Externalizing Coping (See Figure 3).

Moderation of PTSD and MN-NLE Coping by Baseline Trait Coping

An additional four hierarchical multiple regressions were conducted with PTSD Total as the dependent variable, MN- NLE Magnitude (0-1) as a covariate, MN-NLE Coping (Positive,

Externalizing, Internalizing, Distancing) as the independent variable, and Baseline Trait Coping (Positive, Externalizing, Internalizing, Distancing) as the moderator, along with an interaction term. Results revealed main effects for Baseline Trait Positive Coping (R^2 = .06, β= -.21, ΔR^2 = .04, p < .05), MN-NLE Externalizing Coping (R^2 = .24, β= .49, ΔR^2 = .22, p < .001), MN-NLE Distancing (R^2 = .23, β= .48, ΔR^2 = .02, p < .001), and MN-NLE Internalizing (R^2 = .42, β= .67, ΔR^2 = .41, p < .001). None of the moderating variables or interactions were significant.

Mediation of PTSD and PTR by State Coping

It was anticipated that one's state (or event-related) coping would mediate the relationship between PTRs and PTSD. To test this hypothesis, the Baron and Kenny (1986) method was followed to test the significance of state coping as a mediator between PTRs and PTSD. This method uses a series of multiple regressions. In the first regression, the dependent variable (PTSD symptoms) was significantly predicted by the independent variable (PTRs; β= .69, ΔR^2 = .47**,** p < .001). In the second regression, the mediating variables (MN-NLE Coping style: Positive Coping, Externalizing, Internalizing, and Distancing) served as the dependent variables. The independent variable, PTRs, significantly predicted three of the coping mediators – Externalizing (β= .36, ΔR^2 = .13**,** p < .001), Internalizing (β= .57, ΔR^2 = .28**,** p < .001), and Distancing (β= .44, ΔR^2 = .20**,** p < .001), but not Positive Coping. Thus, the third and last set of regressions were restricted to Externalizing, Internalizing, and Distancing Coping as mediators. For these analyses, PTSD was the dependent variable with the hierarchical entry of the mediating variable (MN-NLE Coping) entered first and the independent variable (PTRs) entered second. For each analysis, partial mediation effects were demonstrated (See Figures 4, 5, and 6). That is, entry of the mediator

variable significantly reduced the effect of the independent variable, but both variables remained significant. Sobel tests were conducted to examine whether the mediator effect for each of the coping variables was significant, which demonstrated significant mediating effects for all three variables (i.e., MN-NLE Externalizing, Internalizing, and Distancing).

Adolescent Adversity as a Predictor of Changes in Coping During High School Years

To determine if Adolescent Adversity had an effect on coping styles over time, four hierarchical multiple regressions were conducted with 24-Month Coping scores (Positive Coping, Externalizing, Internalizing, and Distancing) as the dependent variable (See Table 12). Baseline scores for the same variable were entered in Step 1 as a control variable and to allow prediction for that portion of the variance not linked with Baseline Coping. Adolescent Adversity scores were entered as Step 2. In all cases, Baseline Coping was a significant predictor of 24-Month Coping. Adolescent Adversity contributed beyond Baseline Coping only in the case of Baseline Externalizing coping in the prediction of 24-Month Externalizing Coping ($R^2 = .15$, $\beta = .23$, $\Delta R^2 = .05$, $p < .001$).

Discussion

The purpose of this study was to identify the prevalence of High- and Low-magnitude NLEs among adolescent girls, and to investigate the role of coping and PTRs in relation to PTSD symptoms, as these components have been linked in previous literature (Bernat et al.,1998; Compas et al., 1993; Frieze & Bookwala, 1996; Kraaij et al., 2003; Maercker, Bauducel, & Schützwohl, 2000). This study was unique in allowing a prospective examination of how Trait Coping styles (Baseline coping) styles relate to the linkage between PTRs and PTSD symptoms.

The prospective structure of the study also allowed for examination of changes in coping over time as related to the level and number of adverse events during the high school years.

As hypothesized, the majority of participants had experienced at least one NLE during their lifetime, and many experienced High- and Low- magnitude NLEs during the first two years of high school. This is consistent with previous research in the area of adversity (Costello et al., 2002), which indicates that adolescents experience high numbers of NLEs, often in concurrence with one another. Those events reported most frequently in the present study included the death of a close friend/extended family member, breakup with boyfriend/girlfriend, and serious argument with close friend/family member.

Second, it was hypothesized that the relationship between PTRs, state coping, and PTSD symptoms would be moderated by whether the event was a High- or Low- magnitude stressor. As anticipated, these relationships were moderated by event magnitude. However, only a limited number of events were clearly High- magnitude (i.e., had high PTR Perception of Danger scores). Typically, research that distinguishes between High- and Low-magnitude NLEs defines these variables according to DSM-IV criteria or researcher-determined event characteristics. Though studies are increasingly using subjective factors to determine event magnitude, the current study is unique in that it used the participants' PTR Perception of Danger scores to determine whether events were High- or Low-magnitude. The present findings indicated a clear trend to demonstrate the subjectivity of NLEs. Those events listed in the DSM as Traumatic NLEs were not consistently selected as an individual's MN-NLE. For example, only 28.6% of those who had experienced rape/sexual assault, an event that would be labelled as High-magnitude by the DSM-

IV and by the current strategy, chose this as their MN-NLE, while 25.8% of those who experienced a breakup with a boy/girlfriend selected this event as their MN-NLE.

Third, based on Gil (2005), it was anticipated that one's general coping style (Trait Coping assessed at baseline) would predict PTRs and NLE (i.e., State) coping and how they cope with a NLE (state coping) and that these reactions would affect levels of event-related symptomatology (i.e., PTSD symptomology). Results consistently indicated a significant relationship between PTRs and PTSD symptomology. In addition, results indicated that one's Baseline Trait Coping style was predictive of PTRs. This was true of all coping styles examined (Positive, Externalized, Internalized, and Distancing). This is an important finding because it demonstrates that pre-event Trait Coping has a lot to do with how one reacts to a NLE. Conceptually, this would support the idea of teaching youth positive and effective coping strategies, as those who develop such strategies are more likely to respond to more serious NLEs with effective strategies that may help protect them from developing PTSD symptoms. This point was further demonstrated with the moderation effect analyses. Baseline Trait Positive Coping served as a moderator for the relationship between PTRs and PTSD symptoms. That is, for those with high Trait Positive Coping at Baseline, the relationship between PTRs and PTSD symptoms was weaker when compared to those who had low Trait Positive Coping at Baseline, for which the relationship between PTRs and PTSD symptoms was stronger. Baseline Trait Externalizing Coping also moderated the relationship between PTRs and PTSD. That is, those with high Baseline Trait Externalizing Coping showed a stronger relationship between PTRs and PTSD symptoms as

compared to those with low Baseline Trait Externalizing Coping, who showed a weaker relationship between PTRs and PTSD symptoms.

However, there was no moderation effect when looking at the relationship between Trait Coping and PTSD. Results indicated that an individual's general baseline coping style did not moderate the relationship between PTRs and PTSD symptomology.

A fourth hypothesis anticipated that how one copes with a particular NLE would mediate the relationship between PTRs and event-related symptoms. That is, PTRs reflect "coping in the moment" when the NLE occurred, whereas post-event coping reflects how one coped after the NLE. It was anticipated that even though PTRs had a strong relationship with PTSD, post-event coping would account for some or all of that relationship. It was found that Internalized, Externalized, and Distancing State Coping styles partially mediated the relationship between PTRs and event-related symptoms. That is, accounted for some but not all the variance in the relationship between PTRs and PTSD symptoms. This indicates that while PTRs are significant predictors of how an individual will be affected by traumatic event, more controllable factors (i.e., the methods and strategies they use to cope with the event after it has happened) mediate this relationship. Thus, both PTRs and post-event State Coping appear to be important factors in predicting PTSD symptoms following NLEs.

Lastly, it was anticipated that exposure to high levels of adversity during high school years would have a negative effect on coping (i.e., decrease use of positive coping and increase use of negative coping). Of the four coping variables examined, only Externalizing Coping showed changes over time in relationship to exposure to Adolescent Adversity. That is, higher levels of

Adolescent Adversity were linked with increased reports of Externalizing Trait coping from baseline to the 24-month follow-up point. It is possible that exposure to high levels of adversity may increase one's sensitivity to stress, increase one's irritability, and heighten one's tendency to externalize blame, perceptions of control, and externalizing reactions. Further research is needed to examine whether these changes in Externalizing Coping are linked with subsequent adjustment problems, and to determine whether factors, such a social support and good problem solving, help ameliorate these changes in coping.

Limitations

There are a number of limitations in the current study that should be discussed. First, the sample was limited to adolescent females, and therefore can not be generalized to the male population. Second, analysis revealed that far more participants selected a Low Magnitude NLE as their NM-NLE than a High Magnitude NLE, creating an uneven distribution within an important variable. Though this was corrected by using MN-NLE magnitude as a covariate for the remainder of the analyses in the study, a more proportionate number of participants in each group would have allowed for the analysis of the groups separately. Third, despite efforts to control for the amount of time lapsed between experiencing a MN-NLE and reporting feelings and behaviors surrounding the event (i.e., the selected event had to have occurred within the preceding two years), the SRCS relies on a participant's memory in reporting behaviors and feelings that followed a NLE. With lapsed time, the possibility that participant's memories of the event and/or their reported emotions and behaviors following the event may not be accurate. Fourth, the measures used in this study are either (a) relatively new (i.e., PTR section of CITES-II), or (b) new to the population being

examined (i.e., SRCS). Though psychometric analysis were specific to the current population, further replication with other samples is required to validate these measures. Lastly, the sample used in this research was a normative sample. While a normative sample provided the researchers with a large number of participants, with a good distribution of exposure to NLEs, it is not clear whether similar patterns would emerge with populations that are more homogeneous in the types of NLEs experienced (e.g., motor vehicle accidents, child sexual abuse victims). Regardless of the issues surrounding the use of a normative sample, it would be interesting to test the hypotheses of this research with populations who have experienced more severe forms of trauma.

Implications for Practice and Future Research

The results of the present study may assist in the prevention of PTSD symptoms and other negative effects following the experience of a significant NLE. An increased understanding of which coping methods support healthy development and reduced symptomology following NLEs will guide those working with children and adolescents to promote and encourage the development of these strategies, with the aim of building reliance against PTSD symptomology. This holds true for both state and trait coping. In addition, the present findings support the concept that NLEs should be categorized based not only on event characteristics, but should also take into account the participant's perception of/reaction to the event. It is hoped that future research will take this and other supporting research into consideration when categorizing NLEs as High- or Low-magnitude, and not base categorization solely on DSM-IV criteria.

Overall, the findings of this study offer important contributions to research in the areas of adolescent coping and trauma. It is hoped that these finding will contribute to a better understanding of the relationships between coping, PTRs, NLEs, and PTSD.

References

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text revision). Washington, DC: Author.

Arias, I., & Pape, K. (1999). Psychological abuse: Implications for adjustment and commitment to leave violent partners. *Violence and Victims, 14*(1), 55-67.

Armeli, S., Gunthert, K.C., Cohen, L.H. (2001). Stressor appraisals, coping, and post-event outcomes: The dimensionality of antecedents of stress-related growth. *Journal of Social and Clinical Psychology, 20*(3), 366-395. DOI: 10.1521/jscp.20.2.266.22304.

Bal, S., Crombez, G., Van Oost, P., & Debourdeaudhuij, I. (2003). The role of social support in well-being and coping with self-reported stressful events in adolescents. *Child Abuse & Neglect, 27,* 1377-1395. DOI: 10.1016/S0145-2134(03)00137-6.

Bal, S., Van Oost, P., De Bourdeaudhuij, I., & Crombez, G. (2003). Avoidant coping as a mediatorbetween self-reported sexual abuse and stress-related symptoms in adolescents. *Child Abuse & Neglect, 27*(8), 883-97.

Baron, R.M. & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology. 51*(6), 1173-1182.

Bernat, J.A., Ronfeldt, H.M., Calhoun, K.S., & Arias, I. (1998). Prevalence of traumatic events and peritraumatic predictors of posttraumatic stress symptoms in a nonclinical sample of college students. *Journal of Traumatic Stress, 11*(4), 645-664.

Berton, M.W., & Stabb, S.D. (1996). Exposure to violence and post-traumatic stress disorder in urban adolescents. *Adolescence, 31*, 489- 498.

Boekaerts, M. (1996). Coping with stress in childhood and adolescence. In M. Zeidner & N. S. Endler (Eds.), *Handbook of coping: Theory, research and applications* (pp. 452-484). New York: Wiley.

Bowman, M.L. (1999). Individual differences in posttraumatic distress: Problems with the DSM-IV model. *Canadian Journal of Psychiatry, 44*, 21-33.

Braun-Lewensohn, O., Celestin-Westreich, S., Celestin, L.P., Verleye, G., Verté, D., & Ponjaert-Kristoffersen, I. (2009). Coping styles as moderating the relationships between terrorist attacks and well-being outcomes. *Journal of Adolescence, 32*, 585-599. DOI: 10.1016/j.adolescence.2008.06.003.

Breh, D.C., & Seidler, G.H. (2007). Is peritraumatic dissociation a risk factor for PTSD? *Journal of Trauma & Dissociation, 8*(1), 53-69. DOI: 10.1300/J229v08n01_04.

Breslau, N., Chilcoat, H.D., Kessler, R.C. & Davis, G.C. (1999). Previous exposure to trauma and PTSD effects of subsequent trauma: Results from the Detroit area survey of trauma. *American Journal of Psychiatry, 156*(6), 902-905.

Breslau, N., Kessler, R.C., Chilcoat, H.D., Schultz, L.R., Davis, G.C., & Adreski, P. (1998). Trauma and posttraumatic stress disorder in the community: The Detroit area survey of trauma. *Archives of General Psychiatry, 55*, 626-632. DOI: 10.1001/archpsych.55.7.626.

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A

theoretically based approach. *Journal of Personality and Social Psychology, 56*(2), 267-283.

Causey, D.L., & Dubow, E.F. (1992). Development of a self-report coping measure for elementary school children. *Journal of Clinical Child Psychology, 21*(1), 47-59.

Chaffin, M., Wherry, J.N., & Dykman, R., (1997). School age children's coping with sexual abuse stress and symptoms associated with four coping strategies. *Child Abuse & Neglect, 21*(2), 227-240.

Compas, B.E. (1987). Coping with stress during Childhood and Adolescence. *Psychological Builletin, 101*(3), 393-403.

Costello, J., Erkanli, A., Fairbank, J.A., & Angold, A. (2002). The prevalence of potentially traumatic events in childhood and adolescence. *Journal of Traumatic Stress, 15*(2), 99-112. DOI: 10.1023/A:1014851823163.

Creamer, M., McFarlane, A.C., & Burgess, P. (2005). Psychopathology following trauma: The role of subjective experience. *Journal of Affective Disorders, 86,* 175-182.

Crouch, J.L., Smith, D.W., Ezzel, C.E., & Saunders, B.E. (1999). Measuring reactions to sexualrauma among children: Comparing the children's impact of traumatic events scale and the trauma symptom checklist for children. *Child Maltreatment: Journal of the AmericanProfessional Society on the Abuse of Children, 4,* 255-263.

Dillman, D.A. (2000). *Mail and Internet Surveys: The Tailored Design Method*. New York: Wiley.

Ehlers, A., & Clark, D.M. (2000). A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy, 38,* 319-345.

Ehlers, A., Mayou, R.A., & Brayant, B. (1998). Predictors of chronic posttraumatic stress disorder after motor vehicle accidents. *Journal of Abnormal Psychology, 107*(3), 508-519.

Epstein, S., & Meier, P (1989). Constructive thinking: A broad coping variable with specific components. *Journal of Personality and Social Psychology, 58,* 332-350.

Frieze, I. H., & Bookwala, J. (1995). Coping with unusual stressors: Criminal victimization. In M. Zeidner & N. S. Endler's (Eds.), *Handbook of coping: Theory, research, and applications* (pp. 303-321). New York: Wiley.

Fletcher, K.E. (2003). Childhood posttraumatic stress disorder. In E.J. Marsh & R.A. Barkley (Eds.). *Child Psychopathology (2nd Ed.)* (pp. 330-371). New York: Guilford Press.

Folkman, S., (1992). Making the case for coping. In B.N. Carpenter (Ed.), *Personal coping: Theory, research, and application* (pp. 31-46). New York: Praeger.

Gershuny, B.S., Cloitre, M., & Otto, M.W. (2001). Peritraumatic dissociation and PTSD severity: Do event-related fears about death and control mediate their relation? *Behavior Research and Therapy, 41*(2), 157-166. DOI: 10.1016/S0005-7967(01)00134-6.

Gil, S. (2005). Coping styles in predicting posttraumatic stress disorder among Israeli students. *Anxiety, Stress, and Coping, 18*(4), 351-359. DOI: 10.1080/10615800500392732.

Gil, S., & Caspi, Y. (2006). Personality traits, coping styles and perceived threat as predictors of posttraumatic stress disorder after exposure to a terrorist attack: a perspective study. *Psychosomatic Medicine, 68,* 904-909.

Grant, K.E. & Compas, B.E. (2003). Stressors and child and adolescent psychopathology: Moving

from markers to Mechanisms of Risk. *Psychological Bulletin, 129*(3), 447-466. DOI: 10.1037/00332909.129.3.447.

Hample, P., & Peterman, F. (2005). Age and gender effects on coping in children and adolescents. *Journal of Youth and Adolescents, 34*(2), 73-83.

Herman-Stahl, M.A., Stemmler, M., & Petersen, A.C. (1995). Approach and avoidant coping: Implications for adolescent mental health. Journal of Youth and Adolescence, 24(6), 649-665. DOI: 10.1007/BF01536949.

Hezler, J., Robins, L., & McEvoy, L. (1987). PTSD in the general population. *New England Journal of Medicine, 317,* 1630-1634.

Hizli, F.G., Taskintuna, N., Isikli, S., Kilic, C., & Zileli, L. (2009). Predictors of posttraumatic stress in children and adolescents. *Children and Youth Services Review, 31*, 349-354. DOI: 10.1016/j.childyouth.2008.08.008.

Holeva, V., Tarrier, N., & Wells, N. (2001). Prevalence and predictors of acute stress disorder and PTSD following road traffic accidents : Thought control strategies and social support. *Behavior Therapy,* 32, 65-83.

Jeavons, S., Greenwood, K.M., & Horne D.J.L. (2000). Accident cognitions and subsequent psychological trauma. *Journal of Traumatic Stress, 13*(2), 359-365. DOI: 10.1023/A:1007797904536.

Kaplow, J.B., Dodge, K.A., Amaya-Jackson, L., & Saxe, G.N. (2005). Pathways to PTSD, part II: Sexually abused children. *American Journal of Psychiatry, 162*(7), 1305-1310. DOI: 10.1176/appi.ajp.162.7.1305.

Keane, T.M. (1996). Clinical perspectives on stress, traumatic stress, and PTSD in children and adolescents. *Journal of School Psychology, 34*(2), 193-197. DOI: 10.1016/0022-4405(96)00008-8.

Keppel-Benson, J.M., Ollendick, T.H., & Benson, M.J. (2002). Post-traumatic stress in children following motor vehicle accidents. *Journal of Child Psychology and psychiatry, 42*(2), 203-212. DOI: 10.1111/1469-7610-00013.

Krause, E.D., Kaltman, S., Goodman, L.A, & Dutton, M.A. (2008). Avoidant coping and PTSD symptoms related to domestic violence exposure: A longitudinal study. *Journal of Traumatic Stress, 21*(1), 83-90. DOI: 10.1002/jts.20288.

Lazarus, R.S., & Folkman, S. (1984). *Stress, appraisal, and coping.* New York: Springer Publishing Company, Inc.

Lazarus, R., (1999). *Stress and emotion: A new synthesis.* New York: Springer Publishing Company.

Lewis, R., & Frydenberg, E. (2002). Concomitants of failure to cope: Teaching adolescents about coping. *British Journal of Educational Psychology, 72*, 419-431.

Maercker, A., Beauducel, A. & Schützwohl, M. (2000). Trauma severity and initial reactions as precipitating factors for posttraumatic stress symptoms and chronic dissociation in former political prisoners. *Journal of Traumatic Stress, 13*(4), 651-660.

March, J. S. (1992). What Constitutes a Stressor? The “Criterion A” Issue. In J.R.T. Davidson, & E.B. Foa (Eds.). *Posttraumatic stress disorder: DSM-IV and beyond* (pp. 37-54). Washington, D.C.: American Psychiatric Publishing Inc.

Nader, K., Kriegler, J.A., Blake, D.D., Pynoos, R.S., Newman, E., & Weather, F.W. (1996). *Clinician administered PTSD Scale, child and adolescent version.* White River Junction, VT: National Center for PTSD.

Olff, M., Langeland, W., & Gersons, B.P.R. (2005). The psychobiology of PTSD: coping with trauma. *Psychoneuroendocrinology, 30,* 974-982.

Perry, B.D., & Azad, I. (1999). Posttraumatic stress disorders in children and adolescents. *Current Opinion in Paediatrics, 11,* 310-316.

Pfefferbaum, B., Doughtry, D.E., Reddy, C., Patel, N., Gurwitch, R.H., Nixon, S.J., & Tivis, R.D. (2002). Exposure and peritraumatic responses as predictors of posttraumatic stress in children following the 1995 Oklahoma City bombing. *Journal of Urban Health, 79*(3), 354-363.

Roemer, L., Orsillo, S. M., Borkovec, T. D., & Litz, B.T. (1998). Emotional response at the time of a potentially traumatizing event and PTSD symptomatology: A preliminary retrospective analysis of the DSM-IV criterion A-2. *Journal of Behavior Therapy & Experimental Psychiatry, 29*(2), 123-130.

Roth, S., & Cohen, L.J. (1986). Approach, avoidance, and coping with stress. *American Psychologist, 41,* 813-819.

Rutter, M. (1996). Stress research: Accomplishments and tasks ahead. In R.J. Haggerty, L.R. Sherrod, N. Garmezy & M. Rutter, (Eds.). *Stress, risk and resilience in children and adolescents: Processes, mechanisms and interventions* (pp. 354-386). Cambridge, UK: Cambridge University Press.

Saigh, P.A. (1996). Posttraumatic stress disorder among children and adolescents: An introduction. *Journal of School Psychology, 34*(2), 103-105. DOI: 10.1016/00224405(96)00001.

Saigh, P.A., Green, B.L., & Korol, M. (1996). The history and prevalence of posttraumatic stress disorder with special reference to children and adolescents. *Journal of School Psychology, 43*(2), 107-131. DOI: 10.1016/0022-4405(96)00002-7.

Saylor, C.F., Cowart, B.L., Lipovsky, J.A., Jackson, C., & Finch, A.J. (2003). Media exposure to September 11. *American Behavioral Scientist, 42*(12), 1622-1642. DOI: 10.1177/0002764203254619.

Schwarzer, R., & Schwarzer, C. (1996). A critical survey of coping instruments. In M. Zeidner & N. S. Endler (Eds.), *Handbook of coping: Theory, research and applications* (pp. 107-132). New York: Wiley.

Shalev, A.Y., Peri, T., Canetti, L., & Schreiber, S. (1996). Predictors of PTSD in injured trauma survivors: A prospective study. *The American Journal of Psychiatry, 153*(2), 219-225.

Solomon, S., & Canino, G. (1990). Appropriateness of the DSM-III-R criteria for post-traumatic stress disorder. *Comprehensive Psychiatry, 31*, 227-237.

Stallard, P., Velleman, R., & Baldwin, S. (1998). Prospective study of post-traumatic stress disorder in children involved in road traffic accidents. *British Medical Journal, 317*, 1619-1623.

Steiner, H., Erickson, S.J., Hernandez, N.L., & Pavelski, R. (2002) Coping styles as correlates of

health in high school students. *Journal of Adolescent Health, 30*, 326-335. DOI: 10.1016/s1054-139X(01)00326-3.

Tedeschi, R.G., & Calhoun, L.G. (1996). The posttraumatic growth inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress, 9*(3), 455-471. DOI: 10.1007/BF02103658.

Tremblay, C., Hébert, M., & Piché, C. (1999). Coping strategies and social support as mediators of consequences in child sexual abuse victims. *Child Abuse & Neglect, 23*(9), 292-945. DOI: 10.1016/S0145-2134(99)00056-3.

Weaver, T.L. & Clum, G.A. (1995). Psychological distress associated with interpersonal violence: A meta-analysis. *Clinical Psychology Review, 15*(2), 115-140. DOI: 10.1016/0272-7358(95)00004-9.

Wolfe, V.V., Dozois, D., Fisman, S., & DePace, J. (2008). Preventing depression among adolescent girls: Pathways toward effective and sustainable programs. *Cognitive and Behavioral Practice,* 15, 36-46.

Wolfe, V.V. (2007). Child sexual abuse. In E. J. Marsh & R. A. Barkley (Eds.). *Assessment of Childhood Disorders (4th ed.)*(pp. 685-726) New York: Guilford Press.

Wolfe, V.V. (2004). *Children's Impact of Traumatic Events Scale- II.* Unpublished questionnaire. Available from author, Child and Adolescent Centre, 346 South Street, London, Ontario.

Wolfe, V. V., Birt, J.A. (1997). Child sexual abuse. In E. J. Mash & L. G. Terdal (Eds.). *Assessment of childhood disorders* (3rd ed.) (pp. 569–626). New York: The Guilford Press.

Wolfe, V.V., & Birt, J.A. (April, 2003). Depressive symptoms, attributional styles, and coping

strategies among sexual abuse victims and clinical and nonclinical controls. Poster presented at the biennial meeting of the Society for Research in Child Development, Tampa, Florida.

Wolfe, V.V., & Birt, J., (2004a). *The Children's Impact of Traumatic Events Scale-Revised (CITES-R): Scale structure, internal consistency, discriminant validity, and PTSD diagnostic patterns.* Manuscript submitted for publication.

Wolfe, V.V. & Birt, J. (2004b). *The Children's Peritraumatic Experiences Questionnaire: A measure to assess DSM-IV PTSD Criterion A2.* Unpublished manuscript available from first author at IWK Health Centre, Halifax, NS.

Wolfe, V.V., Collins, K., Fisman, S., DePace, J., Empringham, S., & Steele, M. (2004). The Self Report Coping Scale: Psychometric properties and norms of adolescent girls. Poster presented at the Annual Research Day of the Department of Psychiatry, University of Western Ontario, London, Ontario, Canada.

Wolfe, V. V., Gentile, C., Michienzi, T., Sas, L., & Wolfe, D. (1991). The Children's Impact of Traumatic Events Scale: A measure of post-sexual abuse PTSD symptoms. *Behavioral Assessment, 13,* 359–383.

Tables

Table 1

Analysis of missing data including variable means, standard deviations, ranges, and percentage of cases missing.

Variable	Mean	SD	Range	Percentage of Cases Missing Data
Total PTSD Score	19.37	16.08	.00 - 84.0	9.5%
Total Peritraumatic Reaction Score	16.67	10.85	.00 - 55.0	14.2%
Trait Coping Style				
Positive Coping	51.84	8.91	25.2 – 74.0	1.4%
Externalized Coping	7.93	2.92	4.0 – 18.0	1.4%
Internalized Coping	16.56	4.65	7.0 – 31.0	1.4%
Distancing Coping	15.77	3.99	7.0- 30.0	1.4%
State Coping Style				
Positive Coping	30.04	6.65	16.0 – 48.0	13.3%
Externalized Coping	5.45	1.75	3.0 – 11.0	13.3%
Internalized Coping	11.33	2.93	7.0 – 21.0	11.4%
Distancing Coping	10.32	3.08	7.0 – 21.0	12.8
Follow-Up Coping Score				
Positive Coping	52.04	10.00	22.0 – 76.0	6.2%
Externalized Coping	7.68	3.40	1.0 - 76.0	6.2%
Internalized Coping	15.94	5.28	7.0 – 33.0	6.2%
Distancing Coping	14.97	5.09	5.0 – 31.0	6.2%
MN-NLE Magnitude	1.14	.35	1.0 – 2.0	12.8%
Adolescent Adversity	3.53	2.35	1.0 - 14.0	12.3%

Table 2

Alpha Values for Self-Report Coping Scale, and Positive Coping

Scale	Alpha Value
Social Support Seeking	.847
Self-reliance/Problem Solving	.820
Distancing	.808
Internalizing	.709
Externalizing	.730
Positive Coping	.720
Negative Coping	.597

Table 3

Factor analysis of peritraumatic reaction items restricted to five components

	Eigenvalues for Each Component			
	1	2	3	4
1. Dissociation (alpha = .875)				
a. Like I blanked out	**.789**	.032	.117	.074
b. Like a Zombie	**.727**	.004	.037	-.104
c. Like I wasn't there	**.709**	-.047	.067	-.069
d. Like I Might Faint	**.675**	-.018	-.032	.253
e. Numb	**.669**	.111	.111	.188
f. Like I Couldn't Feel What Was Happening	**.664**	.087	-.017	.075
g. Like I Left My Body	**.659**	.040	.093	-.016
h. Like I Lost Sense of Time	**.637**	.104	.087	.267
i. Shaky	**.531**	.045	.088	.404
j. Nauseous/Stomachache	**.496**	.035	.154	.145
k. Like I Was Someone Else	**.480**	.221	.040	.190
l. Like I Disappeared	**.422**	.224	.151	.144
m. Like I Might Be Killed	**.407**	.056	-.116	.192
n. Like I Might Be Hurt	**.391**	.275	.032	.340
2. Guilt (alpha = .885)				
a. Like I Made It Happen	.069	**.910**	.060	-.045
b. Like It Was My Fault	.086	**.900**	.069	.048
c. Like I Caused It	.135	**.891**	.026	-.013
d. Like I Deserved It	.143	**.796**	.048	.027
e. Guilty	.067	**.741**	.163	.116
f. Embarrassed	-.014	**.450**	.170	.360
3. Anger (alpha = .844)				
a. Mad	-.017	.166	**.892**	.158
b. Angry	-.005	.138	**.822**	.214
c. Like Throwing Something	.213	-.003	**.805**	.022
d. Like Shouting	.147	.119	**.784**	.063
e. Disgusted	.142	.091	**.628**	.334
f. Like Killing the Person Who Did This	.018	.010	**.552**	.004
4. Fear and Anxiety (alpha = .799)				
a. Frightened	.237	-.015	.121	**.768**
b. Scared	.183	-.034	.-52	**.737**
c. Worried	.046	.093	.189	**.668**
d. Nervous	.118	.279	.053	**.660**
e. Terror	.291	-.0146	.265	**.585**

Table 4

Factor analysis of PTR dissociation

	Eigenvalues for Each Component		
	1	2	3
Dissociation (alpha = .831)			
Like I Wasn't There	**.741**	.189	.058
Like I Left My Body	**.730**	.085	.202
Like I Couldn't Feel What Was Happening	**.664**	.202	.181
Like I Blanked Out	**.611**	.474	.222
Like I Lost Sense Of Time	**.578**	.220	.396
Like a Zombie	**.552**	.496	.020
Like I Disappeared	**.473**	-.156	**.609**
Like I Was Someone Else	**.331**	.120	**.559**
Physiological Responses (alpha = .761)			
Nausea/Stomachache	.098	**.770**	.081
Shaky	.182	**.711**	.216
Like I Might Faint	.274	**.660**	.319
Numb	.478	**.574**	.156
Perception of Danger (alpha = .381)			
Like I Might Be Hurt	-.002	.340	**.695**
Like I Might Be Killed	.078	.216	**.588**

Table 5

Means and standard deviations of each PTR score for each reported NLE

Selected MN- NLE	N	Perception of Danger	Fear/ Anxiety	Dissociati-on	Somatic Response	Anger	Guilt
High Magnitude NLE	4	2.16 (1.16)	1.40 (.47)	.63 (1.47)	1.40 (.97)	1.40 (.46)	.63 (.98)
Physically Hurt/Beaten							
Kidnapped/Held Captive	1	1.85	1.93	.41	-.70		-.04
Serious Accident Causing Injury	10	.88 (1.49)	.43 (.90)	.23 (.68)	.33 (1.36)	.53 (.86)	-.31 (.41)
Victim of Crime	3	.64 (2.10)	1.32 (.56)	-.40 (.69)	-.54 (.71)	.86 (1.34)	-.04 (.88)
Sexually Abused/Sexually Assaulted/Raped	2	.64 (0.00)	1.56 (.52)	.11 (0.00)	.24 (0.00)	.86 (.44)	1.64 (.95)
Serious Accident Not Causing Injury	7	.47 (1.09)	.04 (.96)	.47 (1.27)	.04 (1.36)	-.50 (.71)	.01 (.99)
Low Magnitude NLE							
Break-up With Boy/Girlfriend	25	.16 (.99)	-.41 (.89)	-.28 (.78)	-.06 (.75)	.06 (.77)	.61 (1.04)
Other Significant Life Event	17	.14 (1.36)	.68 (.93)	.18 (1.39)	.54 (1.15)	-.14 (.93)	-.06 (1.30)
Natural Disaster	2	.04 (.86)	.11 (.52)	.26 (1.48)	.24 (1.31)	-.06 (1.31)	.46 (1.65)
War/Terrorism	2	.04 (.86)	-.44 (1.29)	.11 (1.27)	.24 (1.31)	1.63 (1.09)	-.71 (.00)
Witness to Serious Accident	2	.04 (.86)	.84 (1.03)	-.79 (.00)	.01 (.33)	-.37 (1.31)	-.71 (.00)
Environmental Disaster	0						
Fire	0						
Saw/Heard/Heard About Parents	0						

Physically Fighting							
Suicide Attempt by Friend/Family Member	11	-.02 (.99)	.50 (.86)	.61 (1.28)	.49 (1.13)	.03 (1.26)	-.37 (.50)
Serious Argument with Close Friend/Family Member	21	-.05 (7.2)	-.28 (.91)	-.23 (.75)	-.23 (.80)	.41 (.91)	.84 (1.06)
Serious Illness	5	-.08 (1.08)	.47 (1.06)	.17 (1.82)	-.51 (1.21)	-.99 (.44)	.56 (1.59)
Death of Close Friend/Other Close Family Member	59	-.18 (.82)	-.20 (.97)	.06 (.97)	.14 (.93)	-.11 (.95)	-.46 (.64)
Death of Close Family Member	10	-.21 (.82)	-.33 (1.27)	.14 (1.15)	.24 (1.26)	.15 (.95)	-.31 (.74)
Parents Separated/Divorced	4	-.26 (.61)	-.53 (.55)	.11 (.60)	-.70 (.38)	.01 (.53)	-.46 (.32)
Family Member Arrested/In Trouble With the Law	2	-.57 (0.00)	.84 (1.03)	-.79 (0.00)	-.46 (.33)	1.32 (1.09)	.29 (.47)
Parent Lost Job/Family Income Dropped	1	-.57	.84	.11	-.69	1.17	-.04
Serious Bullying by\Peer	3	-.57 (.00)	-.38 (.56)	-.79 (.00)	-1.0 (.27)	.76 (1.08)	-.37 (.33)
Moved to New Home/Changed Schools	6	-.57 (0.00)	.53 (.76)	-.14 (.97)	-.54 (.91)	-.17 (1.52)	-.54 (2.8)

Table 6

Correlations between adolescent adversity scores and total PTR scores

Peritraumatic Reaction	Adversity After Entering High School
Perception of Danger	.148*
Dissociation	.233**
Physiological	.294**
Fear/Anxiety	.329**
Anger	.311**
Guilt	.146*
Total Peritrauamatic Reaction	.760**

Table 7

Correlations between adolescent adversity scores and total PTSD scores

PTSD Symptoms	Adversity During High School
PTSD Avoidance	.357**
PTSD Hyperarousal	.331**
PTSD Re-Experiencing	.385**
Total PTSD	.390**

* Correlation is significant at the .05 level (2-tailed)
** Correlation is significant at the .01 level (2-tailed

Table 8

Youth-Reported NLEs Before and After High School, and NLEs Selected as MN-NLE

Negative Life Event	Endorsed Event <2 Years Ago	Endorsed Event >2 Years Ago	Selected as MN-NLE	Percent Who Endorsed Item that Selected as MN-NLE
Physically Hurt/Beaten	5.5%	3.5%	2.0%	35.4%
Kidnapped/Held Captive	1.0%	2.0%	.5%	50.0%
Serious Accident Causing Injury	10.0%	4.5%	.5%	5.0%
Victim of Crime	8.5%	13.6%	1.5%	17.6%
Sexually Abused/Sexually Assaulted/Raped	3.5%	7.0%	1.0%	28.6%
Serious Accident Not Causing Injury	10.1%	9.0%	3.5%	35.0%
Break-up With Boy/Girlfriend	48.5%	8.0%	12.5%	25.8%
Other Significant Life Event	14.8%	2%	8.5%	56.7%
Natural Disaster	5.0%	10.6%	1.0%	10.0%
War/Terrorism	10.4%	9%	1%	9.5%
Witness to Serious Accident	9.5%	6.0%	.5%	10.6%
Environmental Disaster	1.0%	3.5%	0.0%	0.0%
Fire	6.5%	6.5%	0.0%	0.0%
Saw/Heard/Heard About Parents Physically Fighting	5.0%	9.0%	0.0%	0.0%
Suicide Attempt by Friend/Family Member	17.5%	6%	5.5%	31.5%
Serious Argument with Close Friend/Family Member	40.2%	4.5%	10.6%	26.3%
Serious Illness	9.0%	7.0%	3.5%	27.7%
Death of Close Friend/Other Close Family Member	44.8%	15.4%	.5%	65.5%

Death of Close Family Member	7.5%	8.0%	5%	66.7%
Parents Separated/Divorced	4%	18.6%	2%	37.5%
Family Member Arrested/In Trouble With the Law	11.1%	5.0%	1.0%	9.1%
Parent Lost Job/Family Income Dropped	10.0%	12.0%	.5%	5.0%
Serious Bullying by Peer	8.0%	12.1%	.5%	18.8%
Moved to new Home or Changed Schools	18.5%	22.5%	3%	16.2%

Table 9

Mediation of PTSD and PTR by NLE Magnitude

Variable	B	SE B	β
Step 1			
PTR Total Score	.939	.087	.634**
Step 2			
NLE Magnitude	-.872	2.612	-.019
Step 3			
PTR total X NLE Magnitude	.537	.237	.141*

Note: R^2 = .472 for Step 1; ΔR^2= .472 ($p < .01$; R^2 = .488 for Step 3; ΔR^2= .015 ($p < .05$).

* $p < .05$
** $p < .01$

Table 10

Moderation of PTSD and PTR by Baseline Positive Coping

Variable	B	SE B	β
Step 1			
MN-NLE Magnitude	.584	2.459	.013
Step 2			
Total PTR Score	1.023	.082	.690**
Step 3			
Baseline Positive Coping	-.095	.087	-.059
Step 4			
Total PTR X Baseline Positive	-.030	.009	-.174**

Note: R^2 = .473 for Step 2; Δ R^2= .457 ($p < .01$); R^2 = .507 for Step 4; Δ R^2= ..030($p < .01$)

* $p < .05$
** $p < .01$

Table 11

Moderation of PTSD and PTR by Baseline Externalized Coping

Variable	B	SE B	β
Step 1			
MN-NLE Magnitude	.196	2.521	.004
Step 2			
Total PTR Score	1.033	.083	.696**
Step 3			
Baseline Externalized Coping	.265	.250	.058
Step 4			
Total PTR X Baseline Externalized	.059	.027	.120*

Note: $R^2 = .473$ for Step 2; $\Delta R^2 = .457$ ($p < .01$); $R^2 = .490$ for Step 4; $\Delta R^2 = .014$($p < .05$)

* $p < .05$
** $p < .01$

Table 12

Adolescent Adversity as a Predictor of Changes in Coping During High School Years

Variable	B	SE B	β
Step 1			
Baseline Externalized Coping	.299	.069	.294**
Step 2			
Adversity After High School	.341	.102	.227**

Note: R^2 = .098 for Step 1; Δ R^2= .098 ($p < .01$); R^2 = .140 for Step 2; Δ R^2= .051($p < .01$);

* $p < .05$
** $p < .01$

Figures

Figure 1

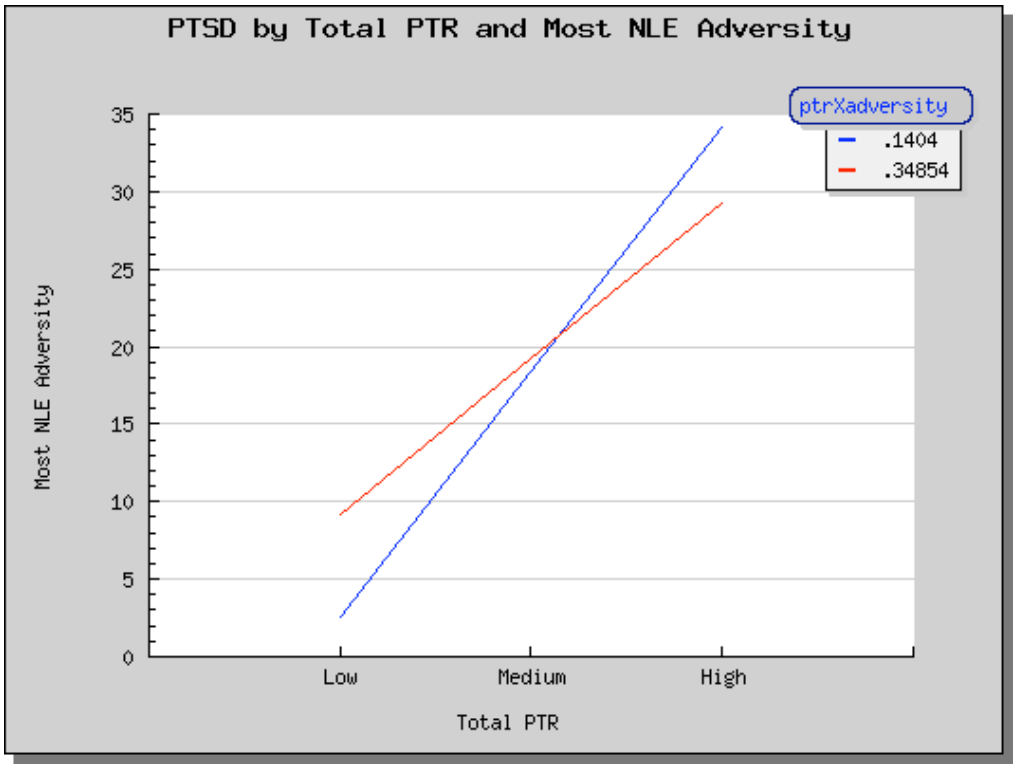


Figure 2

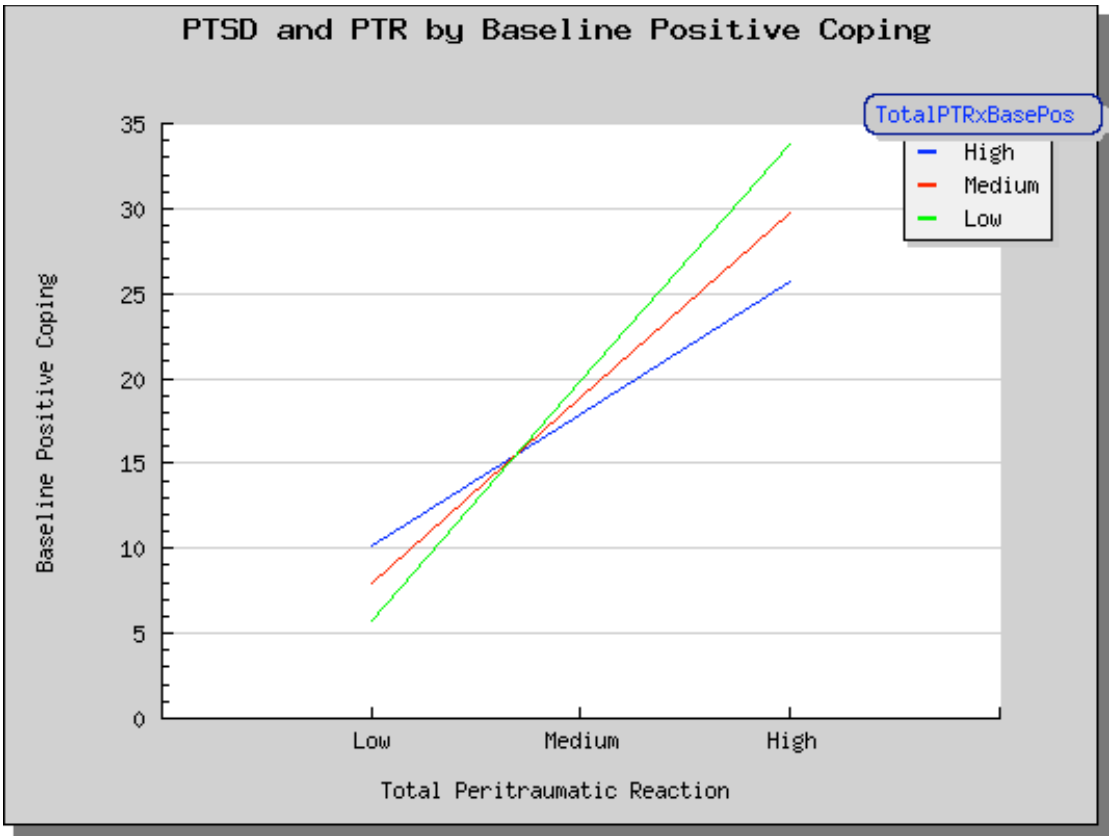

PTSD and PTR by Baseline Positive Coping
TotalPTRxBasePos
High
Medium
Low
Baseline Positive Coping
35
30
25
20
15
10
5
0
Low
Medium
High
Total Peritraumatic Reaction

Figure 3

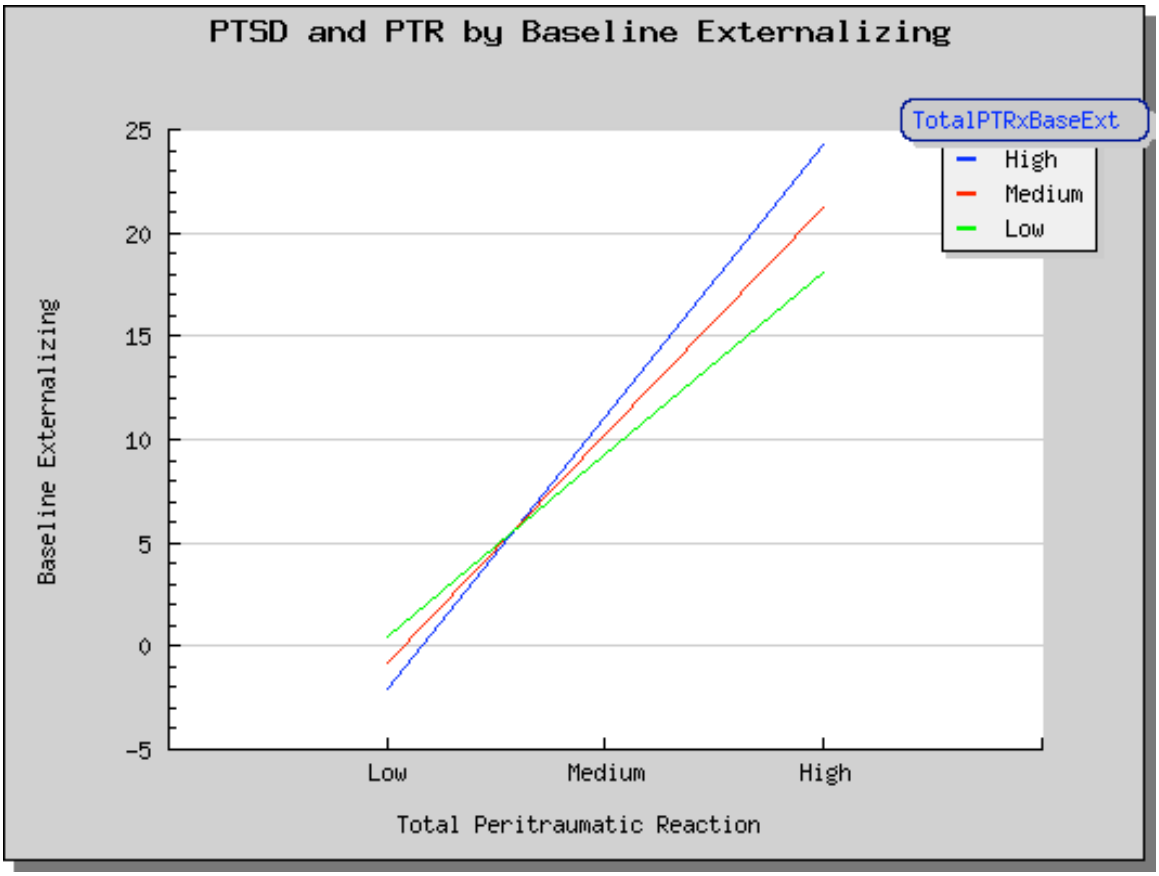
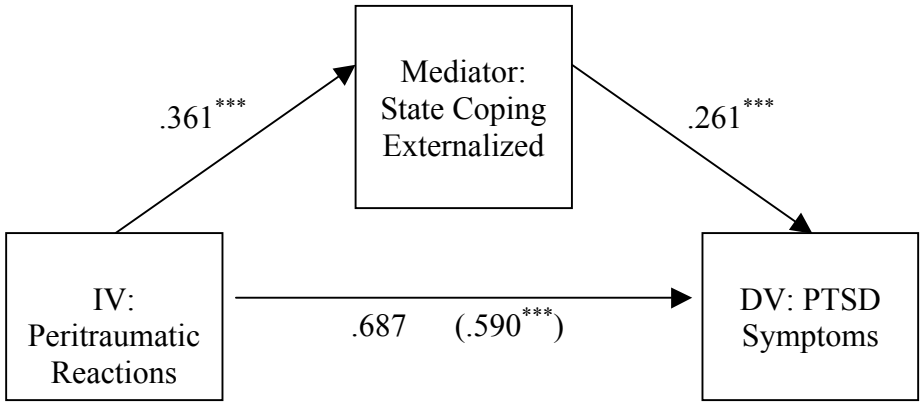

PTSD and PTR by Baseline Externalizing
TotalPTRxBaseExt
High
Medium
Low
Baseline Externalizing
25
20
15
10
5
0
-5
Low
Medium
High
Total Peritraumatic Reaction

Figure 4

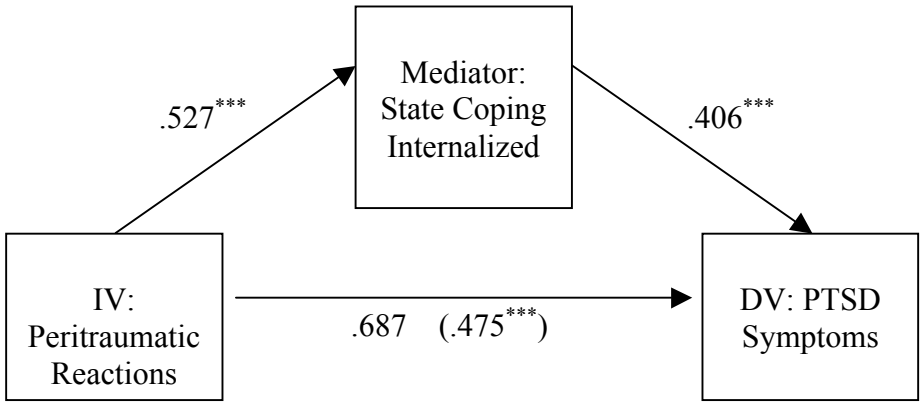
Mediation of externalized state coping in the relationship between PTRs and PTSD symptoms



Note. * $p < .05$ ** p < .01, *** p < .001

Figure 5

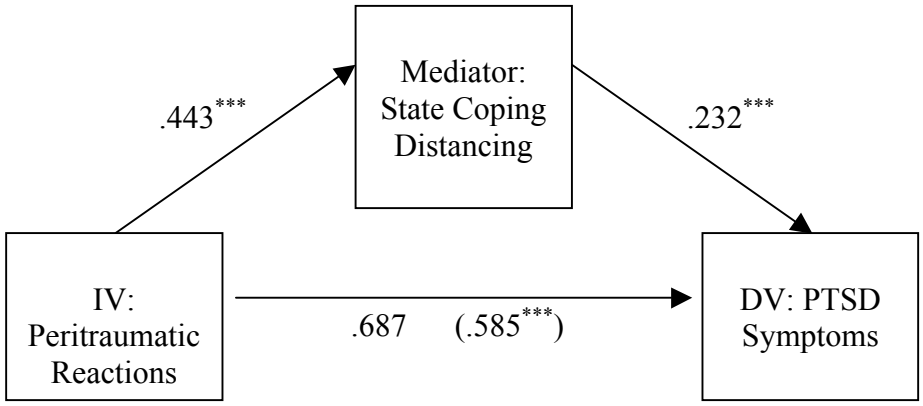
Mediation of internalized state coping in the relationship between PTRs and PTSD symptoms



Note. * $p < .05$ ** p < .01, *** p < .001

Figure 6

Mediation of distancing state coping in the relationship between PTRs and PTSD symptoms



Note. * $p < .05$ ** $p < .01$, *** $p < .001$