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Posttraumatic distress as experienced by adolescents: traumatic stress through adolescent eyes

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POSTTRAUMATIC DISTRESS AS EXPERIENCED BY ADOLESCENTS:
TRAUMATIC STRESS THROUGH ADOLESCENT EYES

A Dissertation
Presented in
Partial Fulfillment of the
Requirements for the Degree of
Doctor of Philosophy

BY

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AUGUST, 2011

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VITA

The author was born in Pittsburgh, Pennsylvania, April 24, 1977. She graduated from Shady Side Academy, received her Bachelor of Arts degree from Wheaton College in 1995, and her Master of Arts degree in Psychology from DePaul University in 2006.

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CHAPTER I

INTRODUCTION

Literature Review

Post Traumatic Stress Disorder (PTSD) has become a well-accepted diagnostic category in the assessment and treatment of trauma-exposed adolescents. There is limited understanding, however, regarding the extent to which specific aspects of the PTSD criteria fit adolescents at different developmental stages. The current PTSD criteria were developed primarily through theoretical and empirical research with adults. Similar symptoms have been repeatedly documented among trauma-exposed adolescents, with variations in the symptom structure and comorbid symptoms compared with adult studies. Understanding of the role of the actual traumatic stressor, however, has been largely neglected in studies of adolescent post traumatic distress. In the developmental context of adolescence, perceptions of traumatic stressors and types of stressors associated with PTSD cannot be assumed to mirror adults' experiences. Through better understanding of adolescents' experiences of traumatic stressors and related psychological symptoms, appropriate modifications in our understanding, and ultimately our diagnostic criteria are possible. Review of the current state of knowledge regarding PTSD, adolescence, and traumatic stressors will set the stage to examine developmental variations in the nature of traumatic stressors.

Post Traumatic Distress and Adolescents: Current Knowledge

The impact of developmental factors on PTSD presentation is widely acknowledged, as evidenced by inclusion of developmental differences in both the DSM-IV and the recent American Academy of Child and Adolescent Psychiatry Practice Parameters (APA, 2000; Cohen et al., 1998, 2010). Multiple studies have noted symptoms of post traumatic distress and PTSD in subgroups of adolescents following exposure to stressors including war (Thabet & Vostanis, 1999; Vizek-Vidovic, Kuterovac-Jagodic & Arambasic, 2000), abuse (Mennen, 2004), natural disaster (Evans & Oehler-Stinnett, 2006; Garrison et al., 1995; Longigan, Shannon, Taylor, Finch, & Sallee, 1994; Shannon, Lonigan, Finch & Taylor, 1994), peer or parent suicide (Brent et al., 1995), human made disasters (Udwin, Boyle, Yule, Bolton, & O’Ryan, 2000), motor vehicle accidents (Di Gallo, Barton, & Parry-Jones, 1997; Gillies, Barton, & DiGallo, 2003), severe medical illness (Brown, Madden-Swain, & Lambert, 2003; Stuber et al., 1997;), and community violence/violent crime (Fitzpatrick & Boldizar, 1993; Horowitz, Weine, & Jekel, 1995).

Of the previously cited studies, selected due to their more recent publication dates after the DSM-IV criterion had been established, most relied on paper and pencil measures of PTSD symptoms and general events questionnaires. Only three of the studies cited above reported any specific information on adolescents’ perception of the traumatic stressor, suggesting this element of post traumatic distress is frequently omitted, (Brent et al, 1995; Evans et al., 2006 and

Udwin et al., 2000), and just one by Udwin and colleagues included information on participants' perception and assessment of the threat associated with reported stressors. Furthermore, Udwin and colleagues found evidence for the relevance of the adolescents' threat assessments, noting their association with severity and chronicity of PTSD symptoms among study participants. The current body of knowledge regarding PTSD among adolescents clearly establishes that DSM-IV symptoms occur in significant groups of adolescents exposed to a wide range of potentially traumatic stressors. The lack of research on adolescents' perception of potentially traumatic events associated with PTSD presents a limitation of current knowledge. Further understanding of the defining characteristics of potentially traumatic stressors experienced through the lens of adolescence is needed.

Despite the plethora of studies noting the occurrence of PTSD among trauma exposed adolescents, much less attention has been paid to adolescents' specific trauma experience(s), and more specifically to whether the adolescent being assessed reported a precipitating traumatic stressor consistent with the DSM-IV PTSD criterion A. Criterion A defines the nature of the prerequisite stressor associated with PTSD. Although current empirical and clinical literature includes extensive lists of types of extraordinary or traumatic stressors believed to be associated with symptoms of PTSD, little is known regarding differences in symptom presentation related to these initial stressors, and even less empirical information exists regarding the essential aspects of what constitutes a traumatic stressor for adolescents. In the existing adolescent literature, potentially traumatic

stressors range from broadly threatening experiences such as exposure to domestic and community violence to more extreme and less frequent events such as war and torture (Cohen et al., 1998). Furthermore, existing studies have largely failed to explore the perception of the event by the young person as it relates to symptom development, a critical level of analysis beyond simple listing of events correlated with adult symptoms of PTSD.

Preliminary evidence (single study) has indicated that traumatic stressors identified by younger adolescents as most disturbing often fail to correspond to the most objectively severe event reported by the same young person (Aisenberg, Ayon, & Orozco-Figueroa, 2008). More specifically, a study of traumatic experiences with community violence noted that younger adolescents identified events as most upsetting that differed from the most objectively severe event they endorsed, even though regression analysis found the most severe event was the strongest predictor of PTSD symptom variance. Severity was assessed using a weighted severity scale according to the legal severity or average criminal sentences for specific types of violence (Aisenberg et al., 2008). Another study reported evidence that some particular stressors such as witnessing a death or an extreme parental reaction to stressors are particularly salient for predicting PTSD symptom development and diagnosis among adolescents (Eksi et al., 2007). Although specific comparisons of adolescents with adults are lacking, these findings raise the possibility that the perception of potentially traumatic stressors may be impacted by developmental considerations. Understanding themes and identification of variations across developmental stages in the perception and

saliency of various potentially traumatic events is directly related to the conceptualization and identification of PTSD among young people, and yet currently there is a notable void of study of the experience of traumatic stressors and associated symptoms during adolescence, and across broader developmental stages.

In comparison with the limited empirical knowledge specific to developmental considerations and variations in the definition of a traumatic stressor, a growing body of knowledge exists specific to developmental variations in symptoms of post traumatic distress among trauma-exposed youth. Fletcher's (2007) analysis of trauma exposed youth and confirmatory factor analysis of large samples of trauma exposed children note symptoms both congruent and extending beyond the DSM-IV symptoms of PTSD. These symptoms included intrusive thoughts, active and passive avoidance, and arousal including intrusive memories, nightmares, flashbacks, avoidance of reminders, anhedonia, distressing responses to reminders, difficulties with concentration, exaggerated startle reactions and hypervigilance (Anthony, Lonigan, & Hecht, 1999). Furthermore, the presence of symptom clusters similar to those defining adult PTSD has been noted across late childhood, early adolescence, and late adolescence (Anthony et al., 1999; Fletcher, 2007; Taylor, Kuch, Koch, Crockett & Passey, 1998). Despite these initial similarities, developmental status has been found to significantly impact clinical presentation among the core symptoms used to diagnose PTSD, with increasing adult congruent symptoms of PTSD among adolescents who are developmentally approaching adulthood (Cohen et al., 1998). Although

understanding of the connection between development and variations in PTSD remains limited, both theory and research acknowledge variations in the nature of some PTSD symptoms: Research further delineating the nature of these differences is expected in the coming years.

The American Psychiatric Association has acknowledged the potential developmental impact on PTSD presentation for children and adolescents with the inclusion of a number of criteria specific allowable variations geared primarily towards younger children. Specific to the definition of a traumatic stressor, the DSM-IV (1994) and DSM-IV TR (2000) include the modifying option that the prerequisite response of “intense helplessness, fear or horror” with respect to the stressor may be expressed by children as disorganized or agitated behavior. Additional adaptations retained from the DSM-III-R subcommittee’s work note that children’s dreams may not be as specific as adults, reliving may be expressed through repetitive play, foreshortened future may be expressed differently than adults, and omen formation and somatic symptoms should also be considered. (Brett, Spitzer, & Williams, 1988). Finally, the DSM-IV and the DSM-IV-TR narrative text also specifically include developmentally inappropriate sexual activity without explicit threat of violence as a traumatic event meeting PTSD criterion A for young people and caution the clinician to carefully evaluate diminished interest, noting that it may be difficult to observe at first glance among children (APA, 1994, 2000). However, the question regarding whether current diagnostic criteria and specifically the diagnostic threshold developed through adult study should be applied universally across development remains unresolved

(Green, 1991). While a handful of child specific modifications are included in current DSM-IV-TR diagnostic criteria for PTSD, the need for further delineation and modification to “more accurately reflect developmental variations” is openly acknowledged by the American Academy of Children and Adolescents (Cohen et al, 1998, p.5). The lack of adolescent specific modifications is also notable given the broad developmental literature on changes in cognition, social, and relational functioning through the adolescent years (Gullotta, Adams, & Markstrom, 2000). The current research agenda intends to further this particular call through furthering understanding of variations in the experience of traumatic stress and PTSD symptom presentation among adolescents.

Defining Traumatic Stressors: The Evolution of PTSD Criterion A

Understanding the current definition of a traumatic stressor prerequisite to the diagnosis of PTSD is needed prior to exploration of developmentally relevant aspects of said stressors. Although the American Psychological Association first formally defined a traumatic stressor in relation to adults in the DSM-III, a focus on stressors tied to adult psychological distress has been present since the initial codification of the DSM (APA, 1980). Prior to the specific exploration of the potential objective and subjective aspects of traumatic stressors that may trigger developmental variations in adolescent post traumatic distress, a brief review of the history of the broad concept of a traumatic stressor is in order.

The American Psychiatric Association’s first official codebook of diagnosis, the initial DSM (1952), including a category for transient personality disorders characterized by “gross stress reactions,” with the precipitating stressor

requiring that the “individual has been exposed to severe physical demands or extreme emotional stress such as in combat or in civilian catastrophe (fire, earthquake, explosion, etc).” These reactions were presumed to occur among adults and to resolve rapidly, thus their classification as transient state (Wilson, 1994). Furthermore, the concept of a stressor of particular magnitude was suggested by the definition, setting the initial stage for future definitions of traumatic stressors (Wilson, 1994). Although devoid of developmental considerations, this initial definition is notable for its recognition that some characteristics of stressors may be associated with psychological distress.

The second revision of the DSM, the DSM-II (1968), reclassified psychological reactions to a particular set of stressors as an adjustment disorder labeled Adjustment Reaction of Adult Life. Three brief examples were included in the text in lieu of a unified definition: an unwanted pregnancy with hostility and depression, fear associated with military combat, and an individual facing a death sentence. A long list of other possible stressful events was then referenced in the manual’s appendix including motor vehicle accidents, rail accidents, accidents caused by fire, poisoning accidents, medical accidents, animal bites, suicide attempts, fights, brawls, and rapes. This laundry list of potential stressors did not further the understanding of the characteristics of those stressors associated with psychological distress. Examination of the list fails to reveal any obvious unifying criteria as it includes potentially life threatening events (e.g. rape, explosive railway accident, war injuries) as well as less serious events (e.g. fall from slipping, stumbling or tripping, excessive hot or cold) and stressors

common to everyday life (e.g. insect bites and stings, accidental falls, food poisoning) with extreme and exceptional events such as war injuries due to nuclear weapons or legal executions. Furthermore, child and adolescent adjustment reactions were classified separately and with examples with little resemblance to extreme stressors (e.g. jealousy associated with birth of patient's younger brother, irritability and depression associated with school failure, adolescent brooding and discouragement). As the examples provided attest, these concerns referenced developmental stressors unrelated to extraordinary or life threatening events, and were notably distinct from the broader list of life threatening stressors listed for adults. Although the DSM-II retained the concept that particular types of stressors could be associated with psychological distress and explicitly tied daily life stressors with child and adolescent adjustment difficulties, conceptualization of traumatic stressors as distinctive from more general stressors was lacking. The lack of distinction among different types of stressors in the adult diagnostic category and the absence of inclusion of life threatening stressors in the separate diagnosis included for children and adolescents support this conclusion.

The DSM-III published in 1980 first introduced the separate diagnostic category of PTSD, defining the relevant prerequisite stressor as “generally outside the range of human experience” and “a recognizable stressor that would evoke significant symptoms of distress in almost everyone.” This definition is notable in requiring that the stressor be of a particular magnitude (Wilson, 1994). However, this definition was later critiqued for being excessively subjective as it

became apparent that the classification of a recognizable stressor varied notably between individuals as well as clinicians (Weathers & Keane, 2007). The DSM-III-R (1987) attempted to clarify the prerequisite stressor as both external and beyond the range of everyday stressors by adding examples of physical life threat to self or others, psychological threat to self or others, involvement in a disaster, or the witnessing of horrific events. A new category of events involving indirect exposure was added including for example the act of learning about a serious threat to a significant other. These examples were all classified as severe or life threatening stressors, a clear departure from earlier vague definitions of relevant stressor events (Weathers & Keane, 2007; Wilson, 1994). Furthermore, the addition of a secondary clause stating that the stressor “is usually experienced with intense fear, terror or helplessness” provided additional specificity regarding the type and severity of distress associated with this class of stressors (Weathers & Keane, 2007). Significantly, child specific symptom adaptations were included in the DSM-III-R text, acknowledging for the first time that traumatic stressors could also be linked with psychological distress among children. Notable for providing a stronger operational definition of a traumatic stressor and acknowledging that children can experience psychological distress following traumatic stressors, the DSM-III-R definition still left many questions including whether traumatic events were truly outside of usual human experience, and whether the revisions were clarifying or simply broadening the DSM-III definition.

The fourth and current versions of the DSM, the DSM-IV (1994) and subsequent DSM-IV-TR (2000), built on previous definitions of traumatic stress while adding a two part definition for a traumatic stressor. The two-part definition for the prerequisite traumatic stressor was codified as PTSD criteria A. These criteria reference both the objective traumatic nature of the stressor (criterion A1) and the subjective response to the stressor (criterion A2) as prerequisite for diagnosis of PTSD. Criterion A1 specifies that “the person has experienced, witnessed, or been confronted with an event or events that involve actual or threatened death or serious injury, or a threat to the physical integrity of oneself or others” (APA, 2000). Accompanying text includes a partial list of events that may fit the extreme stressor definition including violent personal assaults, kidnapping, terrorist attacks, disasters, severe accident, serious injury of a family member or close friend, and sudden unexpected death of a family member or close friend. Additionally, developmentally inappropriate sexual experiences without threatened or actual violence or injury are explicitly included in the DSM-IV text. Criterion A2 specifies “the person's response involved intense fear, helplessness, or horror” (APA, 1994, 2000). It is noteworthy that a child specific modification for criterion A2 was included noting that in children, criterion A2 “may be expressed instead by disorganized or agitated behavior” (APA, 1994, 2000). For a stressor to be adequate for diagnosis of PTSD, both criteria A1 and A2 must be satisfied. Finally, text regarding differential diagnosis was expanded to acknowledge that individuals can become symptomatic and even display PTSD specific symptoms in response to stressors not meeting criteria A,

and instructing that in these cases Adjustment Disorder classification rather than PTSD is warranted (Weathers & Keane, 2007).

The DSM-IV definition of PTSD including the prerequisite definition of a traumatic stressor was validated primarily through the PTSD field trial designed specifically to research the proposed PTSD criteria for the DSM-IV (Kilpatrick et al., 1998). The trial included 528 older adolescents and adults ages 15 and older, the majority of whom (N=400) were seeking mental health treatment following a potentially traumatic stressor (Kilpatrick et al., 1998). This study differentiated low magnitude stressor events such as the nonviolent death of family or friends and chronic illness from high magnitude stressor events that included stressors presumably within the DSM-III-R criteria A definition such as completed rape, serious accidents, serious physical assaults, homicides and military combat. The study noted a few incidents of PTSD symptom positive responses with presumably low magnitude events, while affirming that the great majority of PTSD occurred in the presence of high magnitude events such as assault or combat (Kilpatrick et al., 1998). It also compared different variations in PTSD criterion A2 that require a response involving subjective fear, helplessness or distress. The authors concluded that these variations minimally impacted PTSD prevalence rates among the study sample (Kilpatrick et al., 1998). However, the sample consisted primarily of adults seeking mental health treatment after exposure to a potential traumatic event. The authors recommended including the subjective reactions including fear, helplessness, or horror in criteria A, noting the prevalence of these types of reactions among participants reporting exposure to a

high magnitude traumatic event with PTSD symptoms, the congruence with factor analysis, and the limited impact on the diagnostic threshold (Kilpatrick et al, 1998). These findings were then used to support differentiating symptoms specific to high magnitude stressors as PTSD while suggesting that reactions to low magnitude stressors be classified as Adjustment Disorders. Specific to trauma among youth, the study noted that traumatic experiences occurred frequently during childhood and adolescence, with 74.5% of initial high magnitude events reported occurring before age 18, and 49.7% of these events occurring before age 11. However, with a mean subject age of 37.1 years and no reporting specific to the older adolescents included in the sample, little else regarding developmental variations can be drawn from this study.

Following the publication of the DSM-IV PTSD traumatic stressor criteria established largely based on the field trial conducted by Kilpatrick's research team, multiple investigators reported potentially contradictory findings regarding other stressors associated with the development of PTSD. Among multiple adult populations, some stressors that were incongruent with PTSD criterion A1 were found to be associated with the development of PTSD symptoms, challenging the classification of these psychological presentations as a separate type of disorder (e.g. Adjustment Disorder). When symptoms of PTSD were compared using paper and pencil symptom measures between adults reporting stressors that met the criterion A1 (experiencing, witnessing or being confronted with event(s) involving actual or threatened death or serious injury or threat to physical integrity) and those reporting other significant stressors that were reportedly

incongruent with criterion A1 (e.g. divorce of parents, bereavement of a loved one, end of a romantic relationship, or leaving home for the first time), these non-criterion A1 stressors were associated with equal greater severity of PTSD symptoms and greater likelihood of “probable” PTSD in multiple subsequent studies. (Cameron, Palm, & Follette, 2010; Gold, Marx, Soler-Baillo & Sloan, 2005; Long et al., 2008; Mol et al., 2005; Van Hooff, McFarlane, Baur, Abraham, & Barnes, 2009). At the level of individual stressors, four primary stressor types were identified as most frequently associated with PTSD symptoms among individuals reporting exposure to non criterion A1 stressors: Death (not unexpected) or serious illness of a close person, romantic relationship problems, family relationship problems, and non life threatening personal medical problems (Gold et al., 2005). Each of the previously noted research teams (Cameron et al., 2010; Gold et al., 2005; Long et al., 2008; Mol et al., 2005; Robinson & Larson, 2010; Van Hooff et al., 2009) posited different explanations for their findings of PTSD in the absence of PTSD criterion A1 traumatic stressors. Each of these studies challenged the DSM-IV conceptualization of the PTSD criterion A1 as referencing categorically distinctive stressors specific to the development of psychological pathology questioning the validity of differentiating non-criterion A1 stress reactions as distinctive Adjustment Disorders. Other researchers and practitioners have questioned if PTSD criterion A is necessary at all in the diagnosis of PTSD, with limited empirical evidence that diagnosis based on criteria B-F is adequate without consideration of criteria A at all (Kraemer, Wittmann, Jenewein, Maier, & Schnyder, 2009; Rosen, 2008). In response to

these empirical and theoretical challenges to the current PTSD criterion A1, each research team proposed different diagnostic changes, ranging from expanding the A1 criterion to abandoning the A1 criterion altogether.

The reviewed studies questioning the validity of the current PTSD criterion A1 were notable for the absence of adolescent participants. A comprehensive literature review of studies of PTSD absent a criterion A1 stressor found only case study evidence of a similar phenomenon with adolescents. Weaver (2000) published a detailed case study of an adolescent girl presenting with classic symptoms of PTSD in response to repeated emotional bullying that he argued were more congruent with the DSM-IV conceptualization of PTSD than with an Adjustment Disorder. This is consistent with the previously cited studies that noted distinctive PTSD symptoms among adults exposed to some types of stressors incongruent with the current PTSD criteria for a traumatic stressor.

Literature critical of the studies that criticize the role of criterion A1 cite both theoretical and empirical shortcomings in the methodologies of the previously noted studies (Kilpatrick, Resnick, & Acierno, 2009), and offer further evidence supporting the current PTSD criterion A1. Of note, three of the previously referenced studies challenging PTSD criterion A1 either consisted entirely or relied heavily on undergraduate college student samples (Cameron et al., 2010; Gold et al., 2005; Long et al., 2008). This population (undergraduate students) is well known to be a poor representation for the broader adult population (Sears, 1986). Furthermore, when Drs. Boals and Schuettler (2009)

attempted to replicate the findings of Gold's 2005 team, they instead found increased PTSD symptoms associated with criterion A1 congruent traumatic events compared with incongruent stressors. Also building on the DSM-IV field study results that support the current PTSD criterion A1, Kilpatrick's team (2009) analyzed data from studies of hurricane exposed adults and a national sample of adolescents and found that the vast majority of participants presenting with PTSD reported exposure to criterion A1 congruent events. These findings are consistent with R. J. McNally's theoretical critique expanding the PTSD criterion A1 to include lower magnitude stressors is problematic as it will open the floodgates to false positive diagnosis of PTSD and dilute the concept of PTSD as a diagnostic category.

More recently, researchers have also critically examined PTSD criterion A2 requiring the presence of "intense fear, helplessness, or horror" associated with the potentially traumatic stressor. Results of these studies have been relatively consistent in noting that meeting criterion A2 does not greatly increase predictive utility beyond criterion A1 (Bedard-Billigan & Zoellner, 2008, Breslau & Kessler, 2001, Kilpatrick et al., 1998). The significance of excluding the smaller group of individuals reporting criterion A1 stressors and clinically significant symptoms of PTSD absent this criterion is unclear. With the exception of a study of adolescents that queried specifically about fear, these studies have focused exclusively on adult samples (Kilpatrick et al., 2009).

Current research on the necessity and sufficiency of the PTSD criteria A for the subsequent diagnosis of PTSD is therefore best characterized as equivocal,

with very limited empirical research focused specifically on adolescents. Given these divergent empirical and conceptual conclusions, there is no clear consensus regarding the adequacy of PTSD criterion A1 as it relates to identification of traumatic stressors among adults. Further, there is a clear dearth of research exploring the applicability of the criteria to children and adolescents. While asking important questions and raising relevant and exciting questions for future study, the current body of research on the DSM-IV criteria A for traumatic stressors is limited by both methodological shortcomings and narrow sampling frames. Qualitative research regarding the types of stressors associated with PTSD symptoms among adolescents is the next logical step to further determine if similar patterns and types of non-criterion A1 stressors are associated with PTSD symptoms among adolescents. Research to further explore other potentially relevant stressors specific to adolescents (such as the impact of adolescent bullying that Weaver documented) and the unique developmental contribution that subjective reactions such as fear or horror play among adolescent populations may also further our understanding of adolescent PTSD.

Potentially Traumatic Stressors and Adolescents: Considering Contributions from Developmental Psychology

With the relative dearth of PTSD specific literature regarding adolescents' perception of potentially traumatic events and the appropriateness of the current DSM-IV definition of traumatic stressors, this review of the literature now turns to specific adolescent development, adolescent risk perceptions, and broader

research on risk factors associated with trauma exposed youth who report symptoms consistent with PTSD.

Developmental psychologists reflecting on adolescence in contemporary western societies have frequently divided adolescence into stages with distinctive physical, emotional, cognitive, behavioral, social, and moral developmental tasks bridging the chasm between the dependency of childhood and the presumed independent functioning of the adult world. With slight variations depending on the theorist and source, adolescence is typically divided into three stages with early adolescence encompassing middle school and early high school years (approximately ages 12-14), middle or late adolescence including youth through the high school years (ages 15-18) and transitioning adolescents encompassing those in the post high school years (approximate ages 18-21). In order to explore developmental variations of potential relevance to PTSD, a brief overview of developmentally salient changes through adolescence is required. Understanding adolescents as consisting of multiple developmental stages does not negate the individuality or idiosyncratic developmental tracks of individuals, but rather may illuminate common developmental concerns relevant to the experience of potentially traumatic stressors during these stages.

The development of abstract thought, time orientation, social development, and emotional instability are associated with early adolescence. During this developmental phase, cognitive development is increasingly sophisticated yet biased towards the present, with limited thoughts of the future (American Academy of Child and Adolescent Psychiatry [AACAP], 2001; Pruitt,

1999). Limited future orientation may impact risk assessment, a topic more thoroughly explored later in this review of literature. Social movement away from family and towards peer relationships typically occurs during early adolescence. Loyalty and close social relationships also increase during this period, with frequent focus on a small group of same sex friends and gradual incorporation of other sex peers leading to the initiation of dating (Pruitt, 1999). Relationships with family members are often characterized by increased assertiveness on the part of the younger adolescent, with increased demands for autonomy fueling periodic conflicts even as the young person remains dependent on his or her family for significant material, emotional and social support (Steinberg, 1981). Supportive and engaged relationships with parents that “fit” with early adolescents’ needs are associated with positive academic, social, and psychological adjustment, while excessively conflictual, rigid or detached relationships with family members are associated with non-optimal developmental outcomes (Bronstein et al, 1996; Eccles, 1993). The developmental saliency of peer socialization and family relationships may conceivably result in peer and family related stressors holding particular salience among youth at this developmental stage. Finally, emotional instability is salient during this developmental phase, with hormonal and role changes provoking a certain chaos even among psychologically healthy youth (Pruitt, 1999). Combined with the increased ability for abstract expression, this emotionality may increase vulnerability to perceive a wide range of stressors as potentially traumatic.

Developmental milestones during late adolescence include cognitive advances in future orientation and manipulation of complex abstract situations, increased independence, and the ongoing importance of social and peer relationships. The ability to manipulate abstract verbal concepts and complex social situations increases, and future orientation is more notable (Pruitt, 1999). This increased cognitive capacity and future orientation may result in an increased awareness of the significance and potential consequences of stressors, theoretically increasing risk for perceiving the stressors as traumatic (Garrison et al., 1995). In contrast, increased emotional regulation abilities and cognitive maturity may promote coping and decrease the risk of PTSD development (Pynoos & Nadar, 1993). Peer relationships remain important but are placed into the context of other interests and obligations, with more mature family relationships, the development of more serious romantic relationships, and increased sexual expression (AACAP, 2001). The prominent role of romantic partners may increase the saliency of stressors related to intimate relationships, while social and familial stressors may remain particularly relevant in the psychological adjustment of older adolescents.

Literature examining risk factors for traumatic stress reactions notes various stressors typically not classified as traumatic by current DSM-IV criteria that may increase adolescents' risk for development of characteristic symptoms of PTSD. Specifically, Laor and colleagues (2002) noted that the experiences of loss, separation, and displacement among youth exposed to stressful events were associated with the development of symptoms of PTSD among children also

exposed to a single event potentially traumatic stressor. This finding is consistent with Gold et al.'s (2005) finding among a sample of college age young adults that stressors including anticipated deaths that may fail to meet current PTSD criterion A1 were frequently associated PTSD symptoms. This is also consistent with the broader developmental saliency of social and familial relationships among both early and late adolescents. These types of stressors occur in the context of family relationships, and can be classified as stressors of human design. This finding is supported by a relatively robust body of literature on resilience that notes the protective influence of parent support, school support, and peer support among trauma exposed adolescents who do not develop clinical symptoms (Agaibi & Wilson, 2005). It therefore stands to reason that traumatic and non traumatic stressors that disrupt parental support, school support and peer support may be the most problematic in relationship to the development of PTSD among adolescents. Once again, the emphasis on relationship stressors is congruent with the broader developmental tasks of early and late adolescents. Furthermore, the three most salient non-criterion A1 stressors associated specifically with PTSD symptoms among college students include the death (not unexpected) or illness of a close person, romantic relationships problems and family relationships (Gold et al., 2005). These developmental tasks are arguably salient across early and late adolescence, raising the possibility that similar PTSD non-criterion A stressors may be developmentally and quantitatively linked with the development of PTSD among a significant group of adolescents.

Finally, exploration of developmental research specific to the conceptualization of stressors and risk relates directly to the perception of threat to life or physical integrity included in the PTSD definition of a traumatic stressor. Despite wide dissemination theories of adolescent perceptions of invulnerability and invincibility (Elkind, 1974), empirical research into risk perception does not appear to support these concepts. Two recent studies of actual risk perception among adolescents found that they were actually less optimistic about avoiding illness and injuries than their parents, and were less likely than adults to view themselves as invulnerable (Cohn, Macfarlane, Yanez, & Imai, 1995; Millstein & Halpern-Felsher, 2002). Furthermore, most adolescents overestimated the risk associated with a list of natural and behavioral events ranging from experiencing a hurricane to alcohol use and sexual behavior. Perception of personal risk was inversely related to age, with younger adolescents assessing a higher probability of negative outcomes than older adolescents (Millstein & Halpern-Felsher, 2002). Both younger and older adolescents invariably assessed behaviors as higher risk than both a comparison sample of adults and, when available, actuarial data (Millstein & Halpern-Felsher, 2002). Multiple theoretical explanations have been advanced regarding these findings that are beyond the scope of the current literature review. However, differences in risk perceptions from early adolescence to late adolescence and into adulthood may directly influence responses to PTSD criterion A2 queries if adolescents developmentally overestimate the risk of serious harm to themselves or others when compared to the adults with whom the criteria were initially developed.

Assuming that adolescents' risk perception specific to PTSD relevant stressors is consistent with these findings, younger adolescents will be more likely than older adolescents, and older adolescents more likely than adults, to meet the current DSM-IV criterion A2 following a similar potentially traumatic stress experience. This may result in unique increased risk of PTSD among adolescents exposed to stressful events that they perceive as traumatic or life threatening beyond those events classified as potentially traumatic for adults. As risk perception is implicitly included in the current PTSD DSM-IV criteria A1 and A2, knowledge of variations in adolescents' risk perception that may influence diagnosis are critical to further refining diagnostic criteria. This understanding is also necessary to establish the optimum thresholds distinguishing youth best identified and treated for PTSD from those presenting with less severe Adjustment Disorders or from clinically non significant stress reactions.

Quantity and Quality of Traumatic Stressors Experienced by Adolescents

A final area of inquiry specific to understanding traumatic stressors among adolescents relates to the quality and quantity of exposure episodes with stressor events linked with the development of PTSD. Although it is widely established that not all youth exposed to traumatic stressors develop PTSD, research specific to the impact of traumatic stressor characteristics related to PTSD risk has been initiated only in the last decade and lacks consensus regarding the impact of stressor dose and stressor type. As the previously explored evidence that symptoms clearly characteristic of PTSD rather than Adjustment Disorder may develop in a significant subgroup of stress exposed individuals following stressors

incongruent with DSM PTSD criteria A is relatively recent, inquiry regarding the nature of PTSD related stressors with adolescents has focused on exposure to those traumatic stressors that are congruent with the DSM-IV criteria for PTSD.

Research on a dose response model of PTSD among children and adolescents generally supports a dose dependent positive relationship, although some contradictory evidence has been noted. A meta-analysis of 25 studies of PTSD among children and adolescents noted evidence of a positive relationship between severity of exposure and PTSD symptoms among youth exposed to acts of violence (gang violence, sniper attack, school shooting and community violence), natural disasters (earthquakes, a hurricane and a bushfire), and sexual abuse (Foy, Madvig, Pynoos, & Camilleri, 1996). More recent individual studies of similar stressors have likewise supported this hypothesis, noting increased PTSD severity with increased episodes and severity of war trauma and torture, and multiple studies consistently noting increased PTSD symptoms among repeatedly sexually abused youth (Hall, 2000; Rodriguez, Ryan, Van de Kemp, & Foy, 1997; Williams, 1993). However, other studies including children and adolescents have failing to link severity or frequency of episodes related to PTSD symptoms, for example noting inconsistent symptom patterns between youth directly and indirectly impacted by war, lack of correspondence between severity of exposure to severe flooding and symptom severity, and a lack of correspondence between motor vehicle objective severity and PTSD symptoms (Bowman, 1997; Earls, Smith, Reich, & Jung, 1988; Schnyder, Moergeli, Klaghofer, & Buddeberg, 2001). The complex relationship between dose and

stressor type may also be obscuring these comparisons as the very nature of some types of stressors may involve a particularly strong dose of trauma compared with other types of traumatic events.

Existing theory suggests that in the case of chronic traumatic stress (e.g. repeated “doses” or exposure incidents), the stressor experience and typical responses may be qualitatively distinctive. Lenore Terr (1991) suggested that there are two distinctive types of trauma impacting youth: Type I traumas are characterized by single unanticipated traumatic event, while type II traumas characterized by repeated traumatic events over a period of time. This typology has proven theoretically and empirically appealing to numerous subsequent researchers including Kenneth Fletcher, Joanne Herman, and the American Academy of Child and Adolescent Psychiatry panel developed the initial AACAP practice parameters for PTSD treatment (Cohen et al., 1998). Theorists and researchers have further built on this concept of differential types of trauma differentiating uncomplicated or general posttraumatic reactions to single traumatic stressors from complex posttraumatic reactions associated with chronic or repeated traumatic exposure (Briere & Spinazzola, 2005; Herman, 1992). A further child and adolescent specific variant of the complex trauma theory has been posited as a proposed new diagnostic category: Developmental Trauma Disorder has been proposed by Bessel Van der Kolk for inclusion in the DSM-V to classify the developmental sequel of young people who experience repeated traumatic stress beginning in early childhood (Van der Kolk, 2005). These traumatic stressors are not required to meet the DSM-IV-TR PTSD criterion A1

definition of life or injury threatening event, but rather are conceptualized primarily as repeated incidents of maltreatment, abuse, neglect and traumatic separation frequently associated with negative emotional and developmental outcomes (Van der Kolk, 2005). While the concepts of developmental trauma and complex trauma have been increasingly adopted by theorists in the last two decades, the longer standing diagnostic definition of traumatic stressors lends most easily towards defining simple traumas, and the more recently defined concepts of developmental trauma and complex trauma are still unclear. Furthermore, the impact of multiple similar and dissimilar traumatic stressors at different developmental stages remains largely unknown. Further examination of the impact of dose and acute or chronic nature of different traumatic stressors in broad samples of trauma-exposed adolescents is needed to clarify the relationship between these factors and the development of adolescent PTSD.

Qualitative characteristics of specific stressors have also proven relevant in understanding the risk of PTSD symptom development among trauma-exposed youth. Previous researchers and theorists have suggested that stressor type may be particularly salient to the development of PTSD symptoms among adolescents. More specifically, theory and limited research support a stronger association between war and crime specific stressors and PTSD development, positing that the nature of these stressors may be unique as they are unexpected trauma of human design and include direct brushes with death (McNally, 1993). However, other comparisons between qualitatively distinctive stressors and PTSD development have failed to support differential contributions of distinctive

traumatic stressors to PTSD symptom development. For example, comparisons of youth exposed to sexual abuse, physical abuse and domestic violence noted no statistically significant difference in the PTSD diagnostic rates (Silva et al., 2000). Broader theoretical constructs and research comparing youth exposed to multiple types of traumatic stress are lacking in the adolescent literature, thus the possibility of a differential impact of violent compared with non-violent traumas (or trauma of human design compared with to trauma of natural design) are unknown at the current time.

Epidemiological research using larger samples of adolescents offers some additional insight into the relationship between types of traumatic stressors and PTSD symptoms among adolescents. Lifetime PTSD rates among large adolescent samples in the United States range from 2% to 9% (Breslau, Davis, Andeski & Peterson, 1991; Cuffee et al., 1998; Giaconia et al, 1995.; Kilpatrick & Saunders, 1997). However, prevalence rates as high as 48.9% of sexually abused youth, 39% of severely maltreated youth, 56% of youth reporting both physical and sexual abuse, and 50% of war exposed adolescents have been reported. (Gabbay, Oatis, Silva, & Hirsch, 2004). Likewise, PTSD diagnosis rates varying from 5%-95% have been cited among youth survivors of differing types of natural disasters, PTSD rates ranging from 12-53% prevalence have been noted among medically ill adolescents, and PTSD rates from 14% to 69% have been noted among youth exposed to violent stressors (Gabbay et al., 2004). Although methodological differences preclude blind comparison of these prevalence differences, even studies using similar instruments have found notable differences

in PTSD rates across different types and variations of similar types of trauma. While these significant differences suggest that aspects of the traumatic stressor itself are salient in the development of adolescent PTSD, they also highlight the need for additional empirical and theoretical work to better understand these divergent findings and patterns. No existing research or theoretical explanation has been posited to summarize the role or salient features of the qualitative type of stressor and PTSD symptom development among adolescents. Therefore, further research into the relationship between the nature of the presenting traumatic stressor(s) and PTSD symptom presentation is warranted in order to better understand variations in traumatic stressors and associated symptoms of PTSD among adolescents.

In summary, current theory and empirical knowledge have consistently noted differences in PTSD symptom presentation related to the qualitative type of the stressor, the dose or exposure severity, and the chronic or single incident nature of traumatic stressors. Consistent patterns have yet to be determined. Ongoing inquiry is needed to meaningfully synthesize and extend previous findings regarding the nature of these relationships, and to begin to differentiate impact of different developmental phases on the impact of various traumatic stressors.

Rationale

Existing research raises questions about the criteria for a traumatic stressor used in the diagnosis of PTSD. More specifically, there is currently a void of research regarding the relevance and developmental appropriateness of PTSD criteria A with adolescents. These criteria are prerequisite to the PTSD diagnosis and require that the individual has “experienced, witnessed, or been confronted with an event or events that involve actual or threatened death or serious injury, or a threat to the physical integrity of oneself or others” and respond with “fear, helplessness or horror.” Adolescents’ cognitive, affective, social, and environmental development influences their understanding and perception of risk. It is therefore reasonable to consider that events not considered traumatic by this definition among adults might be so perceived among adolescents, and that developmentally congruent modifications may be necessary for these criteria. Furthermore, adult research on the PTSD criteria A have produced controversy regarding the definition of a traumatic stressor, and regarding whether the current PTSD criteria are excessively broad, excessively constrained, or adequately balanced. These questions will directly influence modification decisions regarding PTSD in the upcoming DSM-V, which subsequently drives efforts to prevent, identify and treat PTSD.

The current study utilized a broad sample of youth who were specifically queried regarding traumatic stressors and their perception of risk of death or serious injury associated with these experiences in order to examine the current

DSM-IV PTSD A criteria. The impact of other significant life stressors generally recognized to fall outside the PTSD A1 criterion but that may be perceived or experienced as traumatic through the developmental lens of adolescence were also explored in order to examine the relationship between these experiences and PTSD symptom development. Finally, the inclusion of multiple types of trauma and indicators of repeated trauma allowed preliminary exploration of differential presentation between adolescents reporting simple trauma and those reporting complex or repeated traumatic stressors. These analyses contribute to our understanding of the adequacy of the current DSM-IV PTSD criteria A for adolescents as well as point towards developmental variations to incorporate into future diagnostic criteria.

Statement of Hypotheses and Research Questions

RQ I: What traumatic and general stressors are associated with increased symptoms of PTSD among adolescents?

H I: Youth reporting major life stressors not meeting DSM-IV criterion A1 for PTSD will report a similar number of symptoms of PTSD compared with youth exposed to stressors that do meet DSM-IV criterion A1.

RQ II: What types of stressors and life experiences characterize youth who report clinically significant symptoms of PTSD in the absence of an endorsed traumatic stressor?

H II: Youth reporting major life stressors (non criterion A1 congruent) involving major disruptions of family relationships or loss of a close friend will report a

higher number of PTSD symptoms compared with youth reporting other major life stressors.

H III: The current DSM-IV PTSD criterion A1 for traumatic stressors requiring specific fear of death or serious injury will predict increased total symptom report of previous six month PTSD among adolescents exposed to traumatic stressor(s).

H IV: Younger adolescents exposed to potentially traumatic stressors will be more likely than older adolescents exposed to the same type of stressor to endorse fear of serious injury or death with respect to the stressor.

H V: Youth exposed to repeated potentially traumatic stressors of a sexual nature will report a greater overall number of PTSD symptoms than peers exposed to a single traumatic stressor of a sexual nature.

H VI: Youth exposed to repeated potentially traumatic stressors of a violent nature will report a greater overall number of PTSD symptoms than peers exposed to a single traumatic stressor of a violent nature.

H VII: Youth exposed to traumatic stressor(s) of human design will report more symptoms of PTSD than peers exposed to traumatic stressor(s) of nature or non human design.

CHAPTER II

METHODS

Analysis of quantitative data collected through telephone survey methods from a national sample of American adolescents was used to examine the research questions and hypotheses. The following section expands upon the methodology with which the data were collected.

Research Participants

Research participants were 4,023 adolescents between the ages of 12 and 17 living at residential addresses in the United States who were included in the National Survey of Adolescents (Kilpatrick & Saunders, 1995). All adolescents who lived in households with telephones that spoke English or Spanish and resided with a parent or guardian who also spoke English or Spanish and gave permission for his or her adolescent to be interviewed were included. Based on census data regarding telephone availability and language fluency, the primary researchers estimated that this sampling frame covered 93% of U. S. adolescents living in households with parents or guardians, and therefore was highly representative of this population (Kilpatrick & Sanders, 1997).

The adolescent sample included two sub samples, a national probability sample and an over sample of central city areas. The first sub-sample of 3,161 adolescents was identified using multi-stage stratified, area probability, and random digit dialing sampling (Kilpatrick & Sanders, 1997). This means that population based samples were chosen from each of the nine U.S. census regions, telephone banks within each region were compiled, and random digit dialing was

used to identify participants. Non-answering numbers were called four times before being replaced, and answered phone numbers were screened for adolescents residing at the address. If more than one adolescent resided at an address, the adolescent with the most recent birthday was systematically selected for inclusion in the study. The second sub-sample used the same telephone and selection criteria but selected urban counties to produce a central city over sample of 862 additional adolescents (Kilpatrick & Sanders, 1997).

The actual sample included all completed protocols from 5,367 households initially identified as eligible based on the described sampling procedures. Of these households, 4,836 parents or guardians completed the parent interview (90.1% of identified eligible households), 4,236 households gave permission for their adolescents to be interviewed (78.9% of total eligible households, 87.6% of households with completed parent interview) and 4,023 adolescents completed the interview (75% of eligible selected households, 83.2% of households with completed parent interviews, and 95.0% of households with parental permission) (Kilpatrick & Sanders, 1997). The final sample included a majority of non Hispanic Whites (70.2%), followed by African Americans (15%), Hispanics (8%), Native Americans (3.5%), Asians (1.1%), and adolescents with other ethnic identifications (2%) (Kilpatrick & Sanders, 1997). There were slightly more males than females (N = 2,065 vs. N = 1,958) with all participants in the 12 to 17 year old range and in the fifth through twelfth grades (Kilpatrick & Sanders, 1997).

Procedure

For each household in which it was determined that there was at least one adolescent, trained interviewers asked to speak to a parent or guardian and proceeded with a request for a short parent interview (approximately 10 minutes) including an overview of the study, information on the voluntary and confidential nature of the study, information on sponsorship and general purpose of the study, and request for permission for their adolescent to participate. This interview also served to gather basic demographics. In addition, parents were briefly screened for their concerns related to safety and violence specific to themselves and their children.

Interviews were conducted by professional employees of Schulman, Ronca, and Bucuvalas, Incorporated, an international research firm based in New York, who were provided with additional training on the protocols for this study and special considerations for telephone interviewing of adolescents (Kilpatrick and Sanders, 1997). Interviews were conducted using Computer Assisted Telephone Interviewing (CATI) technology that managed the complex ordering and skip patterns, and ensured all calls could be transcribed into a centralized data system.

Adolescents were interviewed either immediately after the parent/guardian interviews, at an agreed upon appointment, or using repeated random callbacks for failed appointments that continued until the adolescent was contacted to reschedule, decline further participation, or until the end of the study time frame. Adolescents were informed about the topic and nature of the survey, the types of

questions, and selection criteria, assured of confidentiality, informed they could skip any question or end the interview at any time by hanging up, and asked for assent to participate. Two steps were included to encourage honest, free, and private responses by adolescents. First, adolescents were first asked if they were in a private situation where they could answer openly, and if not were offered a call back at another time. Second, questions were primarily closed ended, allowing simple yes and no or one word answers that would provide no specific information to others listening regarding what the adolescent was talking about (Kilpatrick & Sanders, 1997). The principal investigators reported that this strategy was successful based on a very low termination rate for sensitive questions such as sexual assault, with more than 99% of adolescents agreeing to answer these questions, a rate which was consistent with rates for less sensitive topics (Kilpatrick & Sanders, 1997).

The principal investigators report that telephone survey methodology was selected based on previous research documenting the validity and efficiency with large-scale samples of adolescents. According to previous studies, use of telephone methodology found no difference in the rates of detection of victimization compared with in-person interviewing (Catlin & Murray, 1979). Furthermore, telephone interviewing conducted for a portion of the National Youth Survey, another large scale adolescent survey, found no differences between telephone and in-person procedures with adolescents in assessed rates of delinquent and substance use behaviors (Kilpatrick & Sanders, 1997).

Measures selected for this survey included those successfully used in the National Women's Study (which was also conducted by telephone), with small modifications to update questions to DSM-IV criteria (Kilpatrick, 1993). For overview purposes, general data collection domains and data specific to the current research agenda will be reviewed. The National Study of Adolescents introductory script and the original data collection prompts and coding for items utilized in this study are included Appendix A. The reader is referred to the full codebook distributed with the data set for additional information on the National Survey of Adolescents and a complete survey protocol (Kilpatrick & Sanders, 1995). Data were collected in the following domains:

1. **Demographic Characteristics:** Basic demographic data were collected for a range of individual and family characteristics.
2. **Family History of Substance Abuse:** Family substance abuse history was assessed using questions from the National Women's Study to collect information about substance use, substance abuse, and related problems among the adolescent's biological family. These items were not included in the current study.
3. **Victimization History/Traumatic Stressors:** Victimization history was assessed used a procedure adapted from the National Women's Study (Kilpatrick, 1993) and the PTSD Field Trial Survey (Kilpatrick, Resnick, Freedy, Pelcovitz, Resick, Roth, & van der Kolk, 1992) to identify and obtain descriptive information regarding completed rape, other sexual assault, aggravated assault, other physical assault, and witnessed violence.

In each case, questions were explicit and designed to capture the full range of possible assaults. Noting the difficulty collecting information about sexual assault, an extensive and detailed protocol was developed using extensive pilot testing in order to capture the most accurate information (Kilpatrick & Sanders, 1997). In the cases of physical and sexual assault, descriptive information was collected about the first, most recent, and worst incidents of physical and sexual assaults. Measurement of witnessed violence used questions developed from the Los Angeles Civil Disturbance Study (Hanson, Freedy, Kilpatrick & Sanders, 1993), with added questions for this new protocol. The protocol also included screening questions relevant to the diagnosis of PTSD, specifically asking respondents if they feared serious injury or death for each reported traumatic stressor. Items specific to experiencing or witnessing physical and sexual assault, fear of death or serious injury, and number of reported incidents (data collection allowed a maximum of three incident reports for physical and sexual assault) were used in the current study.

4. Other Potentially Traumatic Events: Items regarding potential trauma exposure through accidents, natural disasters, injury, other situations involving serious injury or damage, and other situations involving perceived threat of serious injury or death were included in the survey. Once again, youth were explicitly asked if they feared serious injury or death for each reported traumatic stress experience. These items were used as potentially traumatic stress events in the proposed analyses.

5. **General Life Stressors:** Fourteen general life stressors were queried as dichotomous variables with a yes or no response indicating whether or not the adolescent had experienced the event in the preceding year. Items ranged from death of a family member to academic failure. For hypothesis and research questions directly comparing criteria A1 stressors with other general stressors, a coding team was convened to identify general stressors that may in some cases overlap the PTSD criterion A1 requirement that a person has “experienced, witnessed, or been confronted with an event or events that involve actual or threatened death or serious injury, or a threat to the physical integrity of oneself or others.” Items determined to potentially overlap included the serious illness or injury of a family member, the death of a family member, the serious illness or injury of a close friend, the loss of a close friend, the death of a close friend, and a major personal illness or injury. These items were then excluded from analysis in order to differentiate general stressors incongruent with PTSD criterion A1 from stressors congruent with this criterion.
6. **Post Traumatic Stress Disorder (PTSD):** PTSD was measured with a modified version of the DIS updated to DSM-IV criteria that was developed and successfully used in three other large-scale telephone survey projects. The PTSD Field Trial study evaluated the reliability of the DSM-III-R version of the measure compared with the Structured Clinical Interview for the DSM-III-R, and found evidence for reliability and validity with a Kappa coefficient of .77 for lifetime PTSD and .71 for

current (past six months) PTSD (Kilpatrick & Sanders, 1997). The PTSD survey measurement includes explicit screening questions for all 17 DSM-IV PTSD criteria. PTSD symptoms were queried as present or absent for the previous six months as well as a lifetime time frame.

7. **Modified Post Traumatic Stress Disorder (PTSD):** For purposes of the current research agenda, a second PTSD total symptom measure was created to address the high comorbidity and clinical symptom overlap between PTSD, Generalized Anxiety and Depression among adolescent samples. A coding team was assembled to identify symptoms of PTSD that overlap with at least one symptom of Generalized Anxiety or Major Depressive Disorder. The symptoms the coding team determined do not overlap were retained for a modified PTSD measure focused on unique symptoms of PTSD.
8. **Substance Use and Abuse, Delinquent Behaviors:** Extensive modules for the assessment of substance use and abuse as well as delinquent behaviors were included in the protocol. These data are not directly relevant to the current study and therefore the reader is referred to Kilpatrick and Sanders (1997) for additional information on this part of the survey.
9. **Additional Items:** Screening questions for Major Depression as well as the nine core symptoms of depression were included in the survey. The two included screening items for Major Depression are the two core diagnostic symptoms. At least one of these two symptoms is required for diagnosis

of Major Depression. These items were utilized to assist in controlling for depression in the current study.

CHAPTER III

RESULTS

The collected data were analyzed using a variety of procedures to address the research hypotheses and questions. Hypotheses focused on comparing mean PTSD symptoms between youth meeting and not meeting specific thresholds were analyzed with t test and ANOVA analyses. Hypotheses focused on the prediction of increased symptoms under certain conditions were examined primarily with regression analysis. The hypothesis focused on examining different response rates between older and younger adolescents was analyzed using chi square analysis.

Coding Team Consensus

Prior to initiating data analysis, a coding team was assembled in order to determine which general stressor variables should be excluded due to potential overlap with PTSD criterion A1, to differentiate interpersonal oriented general stressors from general stressors, and to identify the subset of PTSD symptoms that do not overlap with symptoms of Major Depression or Generalized Anxiety Disorder (notable comorbidities among adolescents), in order to further differentiate the impact of different stressors on PTSD specific symptoms.

A coding team was assembled with five master's level mental health clinicians with strong knowledge and familiarity with DSM-IV diagnostic criteria. For one coding task, one team member was absent resulting in a team of four. Team members were provided written and verbal directions specific to coding the fourteen general stressor items as potentially overlapping or not potentially

overlapping the PTSD criterion A1 definition for a traumatic stressor, coding each of the generalized stressors as interpersonally oriented or other oriented, and coding each symptom of DSM-IV PTSD as overlapping with at least one symptom of Major Depressive Disorder or Generalized Anxiety Disorder or as independent from these common comorbidities. In each case, team members independently coded the items, then participated in a consensus meeting to discuss any disagreements. The primary researcher provided initial instructions, then left the area to ensure independent team functioning, with a designated chair to coordinate the consensus discussions. Outcomes of the coding team and rating consistency are reported below. Copies of the coding worksheets are included in Appendix B.

Four team members independently coded each of the 14 general stressors as potentially overlapping or not overlapping. The outcome was 100% agreement that six of the items may potentially overlap the requirements for criterion A1. Excluded items were serious illness or injury of a family member, death of a family member, death of a close friend, serious illness or injury of close friend, losing a close friend, and personal illness or injury. These six items were therefore excluded from analysis. The remaining eight items were retained as general non criterion A1 stressors.

Five team members next independently coded each of the 14 general stressors as interpersonal oriented or other type of stressor. Independent coding resulted in 100% agreement for 10 items, 80% agreement for three items and 60% agreement for two items. Consensus discussion resulted in 100% agreement for

all 14 items. Twelve items were coded as interpersonal in nature (moving to a new home, changing schools, serious illness or injury of family members, parents separating or divorcing, death of a family member, death of a close friend, serious illness or injury of a close friend, new step parent, losing a close friend, having to repeat a grade, major personal illness or injury and school suspension), while two were coded as other types of stressors (parent losing job and getting at least one failing grade on a report card). As a result of the very limited number of stressors judged non interpersonal in nature, comparison between these two categories (proposed Hypothesis II) was dropped from planned analysis.

Finally, five team members coded each of the included PTSD symptom items as overlapping or not overlapping with DSM-IV symptoms for Major Depression and/or Generalized Anxiety Disorder. Of the 21 PTSD symptom items, independent coding resulted in 100% agreement regarding whether or not an item overlapped with a symptom of Major Depression or Generalized Anxiety Disorder for 15 symptoms, 80% agreement for four symptoms, and 60% agreement for the remaining two symptoms. Consensus meeting resulted in 100% agreement for all 21 items, with 13 of the items considered unique to PTSD and eight considered to overlap with a symptom of Major Depression or Generalized Anxiety Disorder. A full list of items coded as unique to PTSD and as overlapping with a symptom of Major Depression or Generalized Anxiety is included in Appendix C.

Findings I : Stressors Associated with Adolescent PTSD Symptoms (RQ I)

RQ I: What traumatic and general stressors are associated with increased symptoms of PTSD among adolescents?

Regression analysis was conducted with all youth reporting exposure to all types of stressors (potentially traumatic and generalized stressors), with total six-month PTSD symptoms as the dependent variable and individual stressors as the independent variables. The two depression screening items were included as controls to address potential co-morbidity with Major Depression. Hierarchical design was used, with stressors meeting DSM-IV PTSD criterion A1 entered first, facilitating statistical control for these stressors in the consideration of other included stressors. All of the remaining stressors were then entered with the goal of determining which predict PTSD symptoms.

Regression analysis produced a positive and statistically significant relationship between witnessing violence, experiencing sexual assault, experiencing physical assault, involvement in a serious accident, a non-specified event other than the criterion A1 stressors queried where the participant feared he or she might be seriously injured or killed (a catch all traumatic stressor item included after the specific traumatic stressors), parents separating or divorcing, being suspended from school, and receiving a failing grade on a report card. All other examined stressors were not significant predictors of total PTSD symptoms. The overall model was statistically significant ($F = 163.95, p = <.01$) with $R = .64, R^2 = .41$ and Adjusted $R^2 = .41$. The model prior to the inclusion of the non criterion A1 stressors was also statistically significant ($F = 302.95, p <.01$) with R

= .64, $R^2 = .40$, Adjusted $R^2 = .40$. The inclusion of the non criterion A1 events therefore added one percent to the explanation of variance in total PTSD symptoms. In this analysis, experiencing sexual assault was the strongest predictor of increased symptoms of PTSD, followed by experiencing physical assault, another situation in which the youth feared death or serious injury, and personally witnessing violence. The small negative co-efficients for the variables “other situation where you were seriously injured or suffered physical damage” and “new stepparent” is understood to be a result of likely collinearity of each item with other specific items related to the item. Full regression results are provided in Table 1.

Follow up analysis was conducted including the six “overlap” stressors previously excluded by the coding team due to inadequate information to classify them as congruent or incongruent with PTSD criterion A1. Acknowledging this limitation and including these items in secondary analysis may still provide information on the broader relationship between these stressors and PTSD. Hierarchical regression analysis was repeated with all youth reporting exposure to all three types of stressors (potentially traumatic or criterion A1 congruent stressors, general non criterion A1 stressors, and potentially overlapping or ambiguous stressors). Total six-month PTSD symptoms was the dependent variable and individual stressors were the independent variables. The two depression screening items were again included as controls to address potential co-morbidity with Major Depression. Stressors meeting DSM-IV PTSD criterion A1 were entered first, facilitating statistical control for these stressors in the

Table 1

Multiple Regression of Stressor Events Impact on Adolescent PTSD Total Symptom Endorsement

| Stressor Type | Beta | t | Significance |
|--|------|---------|--------------|
| Experienced sexual assault | .16 | 12.26** | <.01 |
| Experienced physical assault | .11 | 8.36** | <.01 |
| Other situation with participant fearing death or serious injury | .09 | 7.14** | <.01 |
| Personally witnessed violent event | .06 | 4.92** | <.01 |
| Serious accident | .06 | 4.42** | <.01 |
| Suspended from school | .04 | 3.13** | <.01 |
| Parents separated or divorced | .03 | 2.04* | .04 |
| Failing grade on report card | .03 | 2.34* | .02 |
| Natural Disaster | .02 | 1.21 | .23 |
| Other situation in which you were seriously injured or suffered damage | -.02 | -1.26 | .21 |
| Moved homes | .02 | 1.49 | .14 |
| Changed schools | .02 | 1.28 | .20 |
| Parent lost their job | .02 | 1.31 | .19 |
| New Stepparent | -.01 | -.60 | .55 |
| Had to repeat grade | .01 | .36 | .72 |

* Statistically significant at $p < .05$

** Statistically significant at $p < .01$

consideration of other included stressors. All of the remaining retained stressors were then entered with the goal of determining which predict PTSD symptoms. The resulting regression model again supported a positive and statistically significant relationship between witnessing violence, experiencing sexual assault, experiencing physical assault, involvement in a serious accident, another situation with fear of being seriously injured or killed, being suspended from school and receiving a failing grade. This regression analysis also found a positive and statistically significant relationship between the serious injury or illness of a close friend, the serious injury or illness of a family member, the loss of a close friend, and a major personal illness or injury with total PTSD symptoms. All other examined stressors were not significant predictors of total PTSD symptoms. The overall model was statistically significant ($F = 128.06, p = <.01$) with $R = .65, R^2 = .42$ and Adjusted $R^2 = .42$. Experiencing sexual assault remained the strongest predictor of total PTSD symptoms, again followed by experiencing physical assault. Loss of a close friend and serious illness or injury of a close friend were also strong predictors of total PTSD symptoms. In summary, the inclusion of items regarding the serious illness or injury of a close friend, serious illness or injury of a family member, the loss of a close friend, and major personal illness or injury in this model explained an additional one percent of the variance in total PTSD. Full regression results are provided in Table 2. It is notable that loss of a close friend and serious illness/injury of a close friend were stronger predictors than some of the PTSD criterion A1 congruent stressors and all other general

Table 2

Multiple Regression of Stressor Events Impact on Adolescent PTSD Total Symptom Endorsement with Ambiguous Stress Events Included

| Stressor Type | Beta | t | Significance |
|---|------|---------|--------------|
| Experienced sexual assault | .14 | 11.22** | <.01 |
| Experienced physical assault | .10 | 7.12** | <.01 |
| Other situation with fear of being seriously injured or killed | .08 | 6.27** | <.01 |
| Personally witnessed violent event | .05 | 3.85** | <.01 |
| Serious accident | .04 | 3.37** | <.01 |
| Loss of a close friend | .08 | 5.83** | <.01 |
| Serious illness/injury close friend | .06 | 4.69** | <.01 |
| Suspended from school | .04 | 2.79** | <.01 |
| Failing grade on report card | .03 | 2.10* | .04 |
| Serious illness/injury family member | .03 | 2.27* | .02 |
| Major personal illness or injury | .03 | 2.03* | .04 |
| Parents separate or divorce | .03 | 1.95 | .05 |
| Natural disaster | .01 | .87 | .39 |
| Moved homes | .02 | 1.11 | .27 |
| Changed schools | .01 | .89 | .38 |
| Parent lost job | .01 | .85 | .39 |
| Death of family member | -.01 | -.49 | .63 |
| New stepparent | -.01 | -.85 | .39 |
| Other situation with serious injury or physical damage to oneself | -.02 | -1.82 | .07 |
| Repeated grade | <.01 | .32 | .75 |

* Statistically significant at $p < .05$

** Statistically significant at $p < .01$

stressors, while the death of a friend or family member alone was not a significant predictor of increased symptoms of PTSD. Once again, The small negative coefficients for the variables “other situation where you were seriously injured or suffered physical damage,” “death of a family member,” and “new stepparent” is understood to be a result of likely collinearity of these items.

Additional secondary analysis was undertaken to explore the potential impact of the total stressors a youth reported and symptoms of PTSD. The current data set includes 21 items querying PTSD criterion A1 congruent stressors. Six of these items address different types of witnessed violence, six more address events that constitute sexual assault, five ask about different types of physical assault, and one each query natural disasters, accidents, other situations with serious injury and damage, and other situations involving fear of death or serious injury. It is possible that multiple items could be endorsed with respect to one larger traumatic event (e.g. physical assault involving both fists and weapons, sexual assault involving penetration and genital touching). The current data set does not address how many total times a youth may have experienced each of the potentially traumatic stressors. Despite these limitations, a total traumatic stressor count variable was constructed from the 21 types of traumatic stress events congruent with PTSD criterion A1. This index indicates how many of these specific events were endorsed but does not capture if some events occurred repeatedly. This variable was labeled the Traumatic Stress Index.

An additional stressor count variable was constructed to assess total stressors that were not congruent with PTSD criterion A1. The eight general life stressors designated by the coding team as PTSD criterion A1 incongruent were each queried with a single question. These responses were combined into a general life stressor variable labeled the General Life Stress Index.

Due to the large number of possible variables, attention was focused on the 12 stressors previous regression indicated were predictive of increased PTSD symptoms. The depression screening items were entered into the hierarchical regression analysis first, followed by the two stressor exposure indexes (Traumatic Stress Index and General Stress Index). The twelve selected stressors were then entered. These twelve stressors were witnessed violence, experienced physical assault, experienced sexual assault, serious accident, other situation not queried with fear of being killed or seriously injured, parents divorced, suspended from school, failing a grade, serious illness or injury of a family member, serious illness or injury of a close friend, loss of a close friend, and major personal illness or injury. The resulting regression model was statistically significant ($F=186.47$, $p < .01$) and explained forty three percent of the variance in total PTSD symptoms ($R^2 = .43$, Adjusted $R^2 = .43$). Of note, the model including only the depression screening items, Traumatic Stress Index, and General Stress Index absent any specific stressors was also statistically significant and explained 40% of the variance in total PTSD symptoms ($F = 678.09$, $p < .01$, $R^2 = .40$, Adjusted $R^2 = .40$). The final model including the Traumatic Stress Index and specific stressors accounted for more variance than the previous regression models, and

was also more parsimonious than previous models: After controlling for the depression screening items, total Criterion A1 congruent experiences (e.g. the Traumatic Stress Index) was the strongest statistically significant predictor of increased total PTSD symptoms, followed by sexual assault, loss of a close friend, illness or injury of a close friend, other experience involving fear of death or serious injury, physical assault, and serious illness or injury of a family member. See Table 3 for standardized coefficients. All other previous statistically meaningful stressors were no longer statistically significant. The General Stress Index was also not a statistically significant predictor of PTSD symptoms after the variance for other included variables was controlled. Furthermore, no general stressors that were clearly incongruent with PTSD criterion A1 remained significant. However, loss of a close friend and serious illness or injury of a close friend, stressors that were classified as ambiguous due to the possibility they would be PTSD criterion A1 congruent in some situations and incongruent in others, were among the strongest predictors of total PTSD symptoms.

Table 3

Multiple Regression of Stressor Count Index and Specific Stressor Types on Total Adolescent PTSD Symptoms

| Stressor Type | Beta | t | Significance |
|---|------|--------|--------------|
| Traumatic Stress Index | .12 | 5.05** | <.01 |
| Sexual assault | .12 | 8.32** | <.01 |
| Experienced physical assault | .05 | 2.96** | <.01 |
| Loss of a close friend | .08 | 6.24** | <.01 |
| Other situation with participant fearing death or serious injury | .05 | 3.49** | <.01 |
| Serious illness/injury close friend | .05 | 4.23** | <.01 |
| Serious illness/injury family member | .03 | 2.05* | .04 |
| General Stress Index | .02 | 1.22 | .22 |
| Parents separate or divorce | .02 | 1.24 | .22 |
| Suspended from school | .02 | 1.53 | .13 |
| Failing grade on report card | .02 | 1.03 | .31 |
| Major personal illness or injury | .02 | 1.49 | .14 |
| Witnessed violence | .01 | .95 | .34 |
| Serious accident | .01 | .84 | .40 |

* Statistically significant at $p < .05$

** Statistically significant at $p < .01$

Findings II: Traumatic Stressors and General Life Stressors (HI, RQ II, HIII & HIV)

H I: Youth reporting major life stressors not meeting DSM-IV criterion A1 for PTSD will report a similar number of symptoms of PTSD compared with youth exposed to stressors that do meet DSM-IV criterion A1.

A t-test of two independent samples was used to compare the mean six-month PTSD symptom total for adolescents exposed to a major life stressor not meeting DSM criterion A1 for PTSD and those reporting exposure to a PTSD DSM criterion A1 congruent stressor. A follow up analysis examined mean symptoms using the modified PTSD symptom measure that excluded symptoms overlapping with generalized anxiety and depression to assess if the hypothesis holds with this more specific symptom subset.

A t-test of two independent samples was used to compare mean 6 month PTSD symptom scores for youth reporting exposure to one or more general life stressor in the absence of any reported PTSD criterion A1 stressors and youth reporting exposure to one or more criterion A1 stressor in the absence of any of the identified general life stressors. Youth reporting exposure to one or more of the stressors the coding team noted as ambiguous (e.g. stressors that in some cases could be PTSD criterion A1 congruent and others PTSD criterion A1 incongruent) were excluded from this analysis. Total PTSD score is a continuous variable including 21 items that assess the core DSM-IV PTSD symptoms. Excluding youth reporting exposure to ambiguous stressors and those reporting both criterion A1 and non-congruent general life stressors resulted in independent

samples of 165 youth reporting exposure to one or more general life stressors (in the absence of potentially traumatic criterion A1 congruent stressors), and 319 youth reporting exposure to at least one criterion A1 stressor in the absence of reported general life stressors. Independent samples T test found a significant difference in the mean symptoms between the criterion A1 congruent stressor and criterion A1 incongruent stressor groups with $t = 3.58$ ($p = <.01$). This initial finding fails to support the hypothesis, finding significant differences in the mean scores of youth exposed exclusively to general life stressors and criterion A1 congruent stressors. Examination of the group means found significantly higher mean symptoms among the youth reporting criterion A1 congruent stressor(s). See Table 4 for group means.

Follow up analysis repeated the above procedures utilizing the thirteen item modified PTSD measure including those symptoms that are unique to PTSD without overlap with Major Depression or Generalized Anxiety Disorder. The same samples including youth reporting exclusive exposure to either general stressors (non criterion PTSD A1 congruent) and criterion A1 congruent stressors were used. Independent samples t test produced $t = 4.04$ ($p = <.01$). This finding again fails to support the hypothesis by finding significant differences in the mean scores of youth exposed exclusively to general life stressors verses criterion A1 stressors. Examination of the group means reveals significantly higher mean symptoms among the youth exposed to PTSD criterion A1 congruent stressor(s).

Table 4

PTSD Symptoms among Adolescents Exposed to Criterion A1 Congruent and Incongruent Stressors

| Stressor Type | Full PTSD scale | |
|--|-----------------|------|
| | Mean | SD |
| Criterion A1 Congruent Traumatic Stressor | .76** | 1.81 |
| Major Life Stressor (Not Criterion A1 Congruent) | .33** | .83 |

* Statistically significant at $p < .05$

** Statistically significant at $p < .01$

Supplementary analyses were conducted in light of the findings for research question I regarding the role of exposure to an increased number of stressor types on PTSD. The same sample of youth exposed exclusively to either general stressors (non criterion A1 congruent) or criterion A1 congruent stressors were retained for this analysis. ANCOVA analysis was used to examine mean differences in total PTSD symptoms while controlling for covariance associated with the depression screening items, the Traumatic Stress Index, and General Stressor Index. See research question I for information on the nature and limitations of these indexes. After variance due to the two depression screening items and the two total stress indexes (Traumatic Stress Index and General Stressor Index) was controlled, the results no longer supported a significant difference in total PTSD symptoms between youth reporting exposure to criterion A1 congruent and criterion A1 incongruent stressors ($F = 1.35, p = .25$). The overall model remained statistically significant ($F = 180.76, p = .00$) and explained 39% of the variance in total PTSD symptoms (Adjusted $R^2 = .39$): The General Stress Index was not a statistically significant covariate in this model. When variance specific to depressive screening items and total number of traumatic stressors impacting the youth exposed exclusively to criterion A1 congruent stressors is removed, there is no longer a statistically meaningful difference in total symptoms of PTSD between these youth and youth exposed exclusively to general life stressors.

It is possible that these findings are a function of the specific sample characteristics of youth exposed exclusively to criterion A1 congruent or

incongruent stressors. Additional exploration of the data noted significant differences in the total number of both criterion A1 congruent stressors and non-congruent A1 stressors these youth reported, compared with the larger sample that included youth reporting exposure to both types of stressors. Youth reporting exclusive exposure to criterion A1 stressors without general or ambiguous stressors endorsed a mean of 1.78 traumatic stressors. However, of the larger sample of 3849 youth reporting exposure to criteria A1 criteria stressors without requiring the absence of other types of stressors, the mean was 2.58 traumatic stressors. Likewise, while youth from the larger sample of 3948 adolescents who reported at least one general stressor reported an average of 1.38 such stressors, those youth reporting exposure exclusively to general stressors (without endorsing any of the criterion A1 congruent or unclassified stressors) reported a mean of 1.61 general stressors.

There is not adequate evidence to accept or reject hypothesis I at this time. Although initial analysis support increased symptoms of PTSD among youth exposed exclusively to criterion A1 congruent stressors, these findings fail to remain significant when the total number of types of traumatic stressors youth endorsing criterion A1 congruent stressors report is accounted for.

RQ II: What types of stressors and life experiences characterize youth who report clinically significant symptoms of PTSD in the absence of an endorsed traumatic (PTSD criterion A1 congruent) stressor?

In order to explore the phenomena of youth endorsing symptoms of PTSD in the absence of an identified potentially traumatic stressor, exploratory data

analysis was conducted with youth denying all queried potentially traumatic stressors but endorsing multiple symptoms of PTSD.

Of the 4,021 adolescents included in the sample, 684 adolescents did not endorse any specific potentially traumatic (PTSD criterion A1 congruent) event. Of these 684 youth, 533 endorsed zero symptoms of PTSD, 82 endorsed one symptom, 26 endorsed two, 17 endorsed three symptoms, five endorsed four symptoms, seven endorsed five symptoms, two endorsed seven symptoms and one each endorsed nine and ten symptoms. For purposes of exploratory data analysis, characteristics of those youth endorsing at least six PTSD symptoms were explored. This threshold was selected based on previous research with this database that noted significant levels of both clinical distress and functional impairment at this symptom threshold (Saul, 2006).

Statistical comparison of youth who did not endorse either a clear PTSD criterion A1 congruent traumatic stressor or symptoms of PTSD with those youth who reported significant PTSD symptoms absent a clear criterion A1 stressor was limited by the extremely limited sample size of youth meeting the symptom threshold who did not endorse a traumatic stressor (N=4).

Case level analysis of the four cases of youth reporting symptoms of PTSD absent a clearly congruent criterion A1 stressor revealed that three reported multiple life stressors that were identified by the coding team as ambiguous or possibly encompassing both PTSD criterion A1 congruent and A1 non congruent stressors. For example, three of the four youth reported experiencing the loss of a close friend in the past year. The survey instrument did not inquire about details

of this loss, opening the possibility that the friend was lost in a manner that would meet criterion PTSD A1 for a traumatic stressor. Likewise, two of these four youth endorsed experiencing the serious illness or injury of a family member in the past year, two reported experiencing the death of a family member in the past year, and one reported the serious injury or illness of a friend in this same time frame. For each of these items, additional information was not collected precluding a determination if the specific stress experience would meet the criterion A1 definition of a traumatic stressor. Of note, only one youth in a sample of more than 4,000 adolescents reported no potentially Criterion A1 congruent stressors while also reporting six or more symptoms of PTSD.

H III: The current DSM-IV PTSD criterion A1 for traumatic stressors requiring specific fear of death or serious injury will predict increased total symptom report of previous six month PTSD among adolescents exposed to traumatic stressor(s).

Regression analysis including all youth reporting exposure to potentially traumatic stressors ($N = 3339$) controlling for depression screening items found that endorsing fear of serious injury or death predicted increased total PTSD symptoms ($t = 14.39, p = .00, b^* = .21$).

Follow up analysis using ANCOVA was undertaken to explore the potential role of variance from the depression screening items and the Traumatic Stress Index created for research question I. The Traumatic Stress Index and two depression screening items were introduced as covariates in order to control these sources of variance. The resulting model was statistically significant ($F=258.35 p$

= .00) and explained a total of 38% of variance in total PTSD symptoms. This is a particularly noteworthy portion of total variance given the relatively small number of predictors.

Results of the ANCOVA analysis are included in Table 5. Youth reporting five or more episodes of a traumatic stressor with fear of serious injury or death were consolidated into a single group due to the low individual cell counts. Increased episodes of traumatic stress with fear of death or serious injury continued to be associated with higher PTSD symptom reports. Table 6 presents estimated marginal means for total PTSD symptoms based on the number of times a youth endorsed fear of serious injury or death, after variance due to the Traumatic Stress Index and depression screening items was removed. A general upward trend of PTSD symptoms with increased reported experiences of traumatic stress with fear of injury or death is observed, with a notable increase in mean PTSD symptoms among those youth reporting three or more traumatic stressors with fear of serious injury or death when compared to youth reporting two or less traumatic stressors with this same fear.

Table 5

ANCOVA Analysis of Total Reported PTSD Symptoms among Trauma Exposed Youth

| | F |
|---|----------|
| Corrected model Adjusted R Squared = .38 | 258.35** |
| Depression Screening Item 1 (covariate) | 194.46** |
| Depression Screening Item 2 (covariate) | 385.20** |
| Traumatic Stress Index (covariate) | 146.24** |
| Fear of Serious Death or Injury | 2.21* |

* Statistically significant at $p < .05$

** Statistically significant at $p < .01$

Table 6

Estimated Marginal Means for Total PTSD Symptoms among Trauma Exposed Youth Endorsing Fear of Serious Injury or Death

| Episodes of fear of death/serious injury | Estimated Mean PTSD Symptoms |
|---|------------------------------|
| No episodes of fear of death or serious injury associated with traumatic stressor | 2.09 |
| One episode of fear of death or serious injury associated with traumatic stressor | 2.17 |
| Two episodes of fear of death or serious injury associated with traumatic stressor | 1.95 |
| Three episodes of fear of death or serious injury associated with traumatic stressor | 2.68 |
| Four episodes of fear of death or serious injury associated with traumatic stressor | 2.49 |
| Five or more episodes of fear of death or serious injury associated with traumatic stressor | 2.46 |

Additional secondary analysis was conducted to further explore the role of threat perception (e.g. fear of serious injury or death) on the diagnostic threshold and total reported PTSD symptoms. The six-symptom threshold was selected again to distinguish clinically significant cases of distress consistent with PTSD from youth experiencing sub-clinical distress (Saul, 2006). Frequency and distribution data were examined including the 3,202 youth reporting exposure to at least one criterion A1 congruent stressor. Sixty nine percent of youth reporting exposure to at least one potential criterion A1 stressor and endorsing at least six symptoms of PTSD also endorsed fear of serious injury or death with respect to at least one experienced traumatic stressor, while 31% did not. In contrast, among youth who reported exposure to a PTSD criterion A1 stressor absent the development of clinical symptoms of PTSD, 44% endorsed experiencing fear of serious injury or death, while 56% denied this symptom. This difference is statistically significant ($\chi^2 = 98.63, p < .01$).

Hypothesis III is supported given that trauma exposed youth (criterion A1 stressor congruent) who reported fear of serious injury or death endorsed significantly more symptoms of PTSD than their trauma exposed peers who denied fear of serious injury or death. This relationship remained significant when variance due to symptoms of Major Depression and exposure to an increased number of types of traumatic stress were controlled.

Results III: Understanding Different Types of Traumatic Stressors (H IV, H V, & H VI)

H IV: Younger adolescents exposed to potentially traumatic stressors will be more likely than older adolescents exposed to the same type of stressors to endorse fear of serious injury or death with respect to the stressor.

Four chi-square analyses were conducted to address this hypothesis. Four separate samples of youth exposed exclusively to traumatic stress involving sexual abuse, traumatic stress involving being the victim of community violence, traumatic stress related to a serious accident, and traumatic stress related to a natural disaster were examined. With each sample, chi-square analysis compared older adolescents (ages 15-17) with younger adolescents (ages 12-14) and youth reporting fear of death or serious injury with those denying this fear.

Chi Square analysis of 838 youth reporting experiencing a serious accident found a statistically significant difference in the number of older compared with younger adolescents reporting fear of being seriously injured or killed ($\chi^2 = 24.83$, $p < .01$). Older adolescents (15-17 year olds) were significantly more likely to report fear of being seriously injured or killed (55.6%) than their younger adolescent peers (38.2%). Chi Square analysis of 734 youth reporting experiencing a physical assault likewise noted a statistically significant difference in the number of older compared with young adolescents endorsing fear of serious injury or death ($\chi^2 = 10.77$, $p < .01$). Once again, older adolescents (15-17 year olds) were more likely to report fear of being seriously injured or killed (62.3%) than their younger adolescent peers (50%). No statistically significant differences

in distribution of youth endorsing fear of serious injury or death based on their age groups were noted in the two remaining Chi Square distributions of youth experiencing sexual assault or a natural disaster (χ^2 for natural disaster stress = .05, $p = .44$, χ^2 for sexual assault = .02, $p = .49$). Chi Square distributions are reported in Table 7.

H V: Youth exposed to repeated potentially traumatic stressors of a sexual nature will report a greater overall number of PTSD symptoms than peers exposed to a single traumatic stressor of a sexual nature

H6 VI Youth exposed to repeated potentially traumatic stressors of a violent nature will report a greater overall number of PTSD symptoms than peers exposed to a single traumatic stressor of a violent nature.

Sexual assault and physical assault items were queried in a different manner than other traumatic stressors, allowing youth to report up to three specific episodes of each type of stressor. As previously noted, other traumatic stressor questions did not gather information regarding whether the traumatic event occurred more than one time. Two separate t-tests of independent samples were utilized to compare the mean symptoms reported for adolescents reporting multiple incidents of physical assault and sexual assault and those reporting only one incident. Repeated exposure to a trauma was identified as either multiple discrete events, or an assaultive experience that was reported to have occurred as a series of events.

One hundred fifty three youth reported experiencing a single event sexual assault compared with 170 youth reporting multiple episodes of sexual assault.

Table 7

Chi Square Analyses of Youth Exposed to a Potentially Traumatic Stressor Reporting Fear of Serious Injury or Death, by Age Group

| Stressor Type | Endorsed Fear of Serious Injury or Death? | | χ^2 |
|------------------|---|----------------------|----------------|
| | Younger 12-14 | Older 15-17 years | |
| Serious Accident | 38.2%** (N = 126) | 55.6%** (N = 268) | 24.83 p<.01 |
| Physical Assault | 50.0%** (N = 143) | 62.3%** (N = 279) | 10.77 p<.01 |
| Sexual Assault | 30.6% (N = 33) | 29.8% (N = 65) | .019 p=.49 |
| Natural Disaster | 29.6% (N = 131) | 29.0% (N = 151) | .050 p=.44 |

* Statistically significant at p<.05

** Statistically significant at p<.01

Both groups of youth reported notable symptoms of PTSD. See Table 8 for mean PTSD symptom data. Comparison of the number of PTSD symptoms between youth reporting single and multiple episode sexual assault trauma failed to reject the null hypothesis of no difference between the groups ($t = .79, p = .43$).

Examination of youth exposed to single and multiple episodes of physical assault included 358 youth reporting single physical assault exposure, and 375 youth reporting multiple incident exposure. Results provide evidence consistent with rejecting the null hypothesis, with a statistically significantly higher mean symptom report among youth exposed to multiple episodes of physical assault ($t = 5.09, p = .00$). See Table 8 for mean PTSD symptom information.

Table 8

PTSD Symptoms among Single Episode and Multiple Episode Trauma Exposed Youth

| Stressor Type | Total PTSD Symptoms | | | |
|------------------|-----------------------|------|-------------------------|------|
| | Single episode trauma | | Repeated episode trauma | |
| | Mean | SD | Mean | SD |
| Sexual Assault | 4.94 | 4.85 | 5.34 | 4.67 |
| Physical Assault | 3.13** | 3.57 | 4.65** | 4.53 |

* Statistically significant at $p < .05$

** Statistically significant at $p < .01$

Supplementary analyses were conducted to examine the role of cumulative impact of multiple other traumatic stress exposures on these findings. Two modified Traumatic Stress Indices were created to account for the total types of

different traumatic stressors a youth reported, excluding stressors involving sexual assault (for hypothesis V) and stressors involving physical assault (for hypothesis VI). These indexes accounted for total other types of potentially traumatic stress each youth reported, while the analysis compared youth exposed to single or multiple episodes of the physical or sexual assault trauma. The new variables were labeled Traumatic Stress Index Modified (No Sexual Assault Items) and Traumatic Stress Index Modified (No Physical Assault Items).

Two ANCOVA analyses were conducted comparing the mean PTSD symptoms among youth exposed to single stressors of a sexual or physical assault with those exposed to multiple stressors, while controlling for variance due to the modified Traumatic Stress Indexes.

First, PTSD symptoms among youth exposed to single vs. multiple episodes of sexual assault were examined with the Traumatic Stress Index Modified (No Sexual Assault Items) as a covariate. Once again, exposure to a single compared with multiple episodes of sexual trauma failed to be a statistically significant stressor of total PTSD symptoms ($F = .009, p = .92$). The modified Traumatic Stress Index (without sexual assault items) was a significant predictor of variance in symptoms of PTSD ($F = 47.40, p < .01$).

Next, PTSD symptoms among youth exposed to single vs. multiple episodes of physical assault were examined with the Traumatic Stress Index (No Physical Assault Items) as a covariate. The model was statistically significant, with both the modified Traumatic Stress Index (excluding physical assault items) and the distinction between youth exposed to single episode compared with

multiple episode physical assault accounting for significant variance in total PTSD symptoms. Consistent with the initial findings, youth reporting exposure to multiple episodes of physical assault reported significantly more symptoms of PTSD even after covariance due to total types of non-physical assault was controlled ($F = 10.16, p < .01$). The estimated mean PTSD symptoms among youth reporting multiple episodes of physical assault remained higher than those youth reporting single exposure. Youth endorsing multiple episodes of physical assault reported an estimated marginal mean 4.39 PTSD symptoms compared with an estimated marginal mean of 3.42 PTSD symptoms among youth reporting a single episode assault.

In summary, current findings fail to support hypotheses V that youth exposed to multiple episodes of sexual assault will report more symptoms of PTSD than peers reporting a single episode traumatic stressor. The high mean PTSD symptoms reported by youth reporting even single episode exposure to sexual assault may result in a ceiling effect limiting comparison between single and multiple episodes of sexual assault.

The current findings do support hypothesis VI that youth who report multiple episodes of physical assault will report more symptoms of PTSD than peers reporting single episode physical assault. Youth reporting repeated physical assault stressors reported higher mean PTSD symptoms, and this difference was statistically significant. Furthermore, this finding remained statistically significant after variance due to the total types of non-physical assault traumatic stressors was controlled.

H VII: Youth exposed to traumatic stressor(s) of human design will report more symptoms of PTSD than peers exposed to traumatic stressor(s) of nature or non human design.

Independent sample t testing was used to compare the mean PTSD symptoms among adolescents reporting exposure to traumatic stressor(s) exclusively of human design (e.g. physical or sexual abuse or assault, community violence, domestic violence) and adolescents reporting exposure exclusively to stressor(s) of natural or non human design (natural disasters). Stressor types that were ambiguous or could be classified as human design or natural/accidental based on specific circumstances were excluded (e.g. physical and automobile accidents, non specified traumatic events).

One hundred thirty seven youth reported exclusive exposure to natural disaster stressor(s) in the absence of other types of queried stressors, while 1125 youth reported exposure exclusively to physical assault, sexual assault or witnessed violence in the absence of other queried stressors. Youth exposed exclusively to traumatic stressors of human design reported significantly more symptoms of PTSD than those exposed exclusively to natural design stressors ($t = 3.75, p < .01$). Mean symptoms by stressor type are reported in Table 9. This finding supports the hypothesis that youth exposed to stressors of human design report greater symptoms of PTSD than peers exposed to stressors of natural design.

Table 9

Stress Design Type and PTSD Symptoms

| Stressor Type | Total PTSD Symptoms | |
|--|---------------------|------|
| | Mean | SD |
| Human Design (abuse, assault and violence) | 1.20** | 2.30 |
| Natural Design (natural disasters) | 0.66** | 1.46 |

* Statistically significant at $p < .05$

** Statistically significant at $p < .01$

CHAPTER IV.

DISCUSSION

Strengths and Limitations

Prior to discussing the findings, it is appropriate to pause and reflect on the strengths and limitations of the data set and methods of the study as they relate to the current findings.

The current study benefits from a nationally representative sample of adolescents. The study protocol gathered information on a wide range of types of potentially traumatic and general life stress experiences, and specifically queried each of the DSM-IV symptoms of PTSD. The authors included specific protocols to address confidentiality and promote honest responding, recognizing the sensitive nature of some of the questions. Finally, the study was conducted by professional research staff, promoting consistent adherence to the research protocol.

The current study also has some noteworthy limitations. First, the data was collected nearly 15 years before the final draft of this manuscript. Although the DSM-IV criteria are still current, the ensuing dramatic changes in technology including the advent and widespread adoption of social media may impact the nature and experience of traumatic stressors in ways not considered when the data were collected. With respect to specific stressors, the study did not query all potentially traumatic stressors in the same manner, allowing only dichotomous responding to potentially large categories of stressors such as natural disasters.

Finally, the study relied on structured interviews requiring yes-no responding rather than clinician interview.

Stressors and PTSD among Adolescents (Hypothesis I and Research Questions I and II)

The first hypothesis and both research questions focus on the characteristics of stressors associated with PTSD symptoms among adolescents. The use of a national sample including youth exposed to a wide range of stressors both consistent with the current PTSD A1 criterion for a traumatic stressor and major life stressors not consistent with the current PTSD A1 criterion facilitated examination of the adequacy of the current criterion for a PTSD relevant stressor among adolescent populations.

Youth exposed exclusively to criterion A1 congruent stressors reported significantly more PTSD symptoms than youth exposed exclusively to general life stressors, after variance related to the depression screening items was accounted for. However, when supplementary ANCOVA analysis examined mean PTSD symptoms between youth reporting general and traumatic stressors while also controlling for covariance associated with depression items and a rough index of cumulative traumatic stressors (Traumatic Stress Index), these results were no longer statistically significant. This is more consistent with the spirit of the null hypothesis, qualifying the initial findings. Of note, a significant portion of variance in total PTSD symptoms was explained by the total types of PTSD criterion A1 congruent stressors a youth endorsed.

The measure of the impact of total stressors a youth reported was not included as a primary hypothesis due to limitations of the data set in determining the total number of incidents of traumatic stress each youth experienced. However, in reviewing the literature this potential factor is quite limited, with most research on adolescent PTSD focusing on one specific type of trauma. Laor and colleagues (2002) included an index including six past traumatic and major life experiences in their study of PTSD with earthquake exposed youth, finding a positive association between exposure to these past stressors and symptoms of post traumatic dissociation and grief. However, this index included a very small sample of possible past stressors and a mix of potentially traumatic stressors (past disaster) and other life stressors (birth of a sibling). The current study included a much wider range of types of potentially traumatic stressors, with some queried for repeated exposure and others queried in a dichotomous manner. The methodology used to create the Traumatic Stress Index is reviewed in the results section.

These findings provide qualified support for the contention that criterion A1 stressors are categorically distinctive and specifically linked to the development of PTSD. Furthermore, the results are not consistent with studies finding that clearly non criterion A1 congruent stressors such as divorce are more closely associated with PTSD than criterion A1 consistent stressors (Gold et al, 2005, Long et al., 2008, Mol et al., 2005).

Further follow up analysis was conducted to better understand the impact of the Traumatic Stress Index on reported symptoms. Exploratory examination of

the data found that youth reporting exposure exclusively to PTSD criterion A1 congruent or incongruent stressors differed in potentially meaningful ways from the larger sample of youth including those exposed to more than one type of stressor. As previously noted, stressors were classified as potentially traumatic stressors, general life stressors, or ambiguous/potentially overlapping stressors. Youth reporting exclusive exposure to criterion A1 congruent traumatic stressors reported less symptoms of PTSD than their peers reporting both traumatic and general stressors. In particular, youth exposed only to potentially traumatic stressors reported 1.78 mean PTSD symptoms, while the larger group of youth reporting exposure to potentially traumatic stressor(s) with or without endorsement of other types of stressors reported a mean of 2.58 PTSD symptoms. It is possible that youth reporting exposure to only one type of stressor are categorically different and less likely to experience significant PTSD symptoms. Alternatively, it is possible that exposure to additional stressors may exacerbate PTSD responses to traumatic stressors. Another possibility would involve general stressors serving as a proxy for reduced protector factors or supports that could mitigate the negative effects of traumatic exposure.

Taken together, these findings do support a particular salient role for traumatic stressors in the development of PTSD. However, these findings also raise the possibility that interactions between traumatic and general stressors stressors, increased total types or episodes of traumatic stressors, and depressive symptoms may have significant and potentially complex effects on symptom presentation.

The first research question further explored the relationship between different types of stressors and the development of increased PTSD symptoms. Seven criterion A1 congruent stressors, eight major life stressors, and six ambiguous stressors that the coding team noted may overlap with the previous two categories (e.g. PTSD criterion A1 congruent and incongruent) were examined to determine which were most closely associated with increased total PTSD symptoms. Experiencing sexual assault was the strongest predictor of a higher total number of endorsed PTSD symptoms, followed by experiencing physical assault, an unspecified other situation involving fear of death or serious injury, the loss of a close friend, the serious illness or injury of a close friend, and personally experiencing violence. The particularly strong association between sexual abuse and personally experienced physical abuse or violence is consistent with prior research noting that these types of stressors may be more highly associated with PTSD among youth (Gabbay et al., 2004).

Also noteworthy, general stressors whose wording was more likely associated with simple bereavement (e.g. death of a family member) were not significant predictors of increased PTSD symptoms, while those indicating serious injury or illness and those referring specifically to youth's friends were significant predictors of increased PTSD symptoms. This is consistent with Gold and colleagues (2005) findings about the relevance of loss or illness of a close person as related to development of PTSD among adults. Furthermore, the notable relevance of the loss, serious illness, or injury of a close friend is consistent with the developmental literature noting the particular salience of peer

relationships during adolescence (AACAP 2001, Pruitt, 1999). The current study did not include adequate prompts to determine whether these situations were congruent or incongruent with the criterion A1 stressor definition. Nonetheless, endorsement of these specific stressor experiences (loss, serious injury, or serious illness of a close friend) was a stronger predictor of total PTSD symptoms than many clearly Criterion A1 congruent stressors. It was also a stronger predictor of total PTSD symptoms than experiencing a similar event (loss, serious illness or injury) involving a family member. The salience of these stressors is clearly consistent with the adolescent literature that highlights the central role of peers during adolescence. Adolescents may experience potentially traumatic loss of peers through events ranging from death to interpersonal conflict to the heartbreak of romantic relationships ending. As the particulars of these experiences were not further explored, conclusions about the specific types of peer loss tied to PTSD symptoms remain unclear. Nonetheless, the identification of these events as predictive of variance in PTSD symptoms suggests these types of stressors hold particular relevance in understanding adolescent PTSD.

Initial regression models suggested that a number of PTSD criterion A1 non congruent stressors including parents divorce and major school difficulties were also associated with increased mean symptoms of PTSD. However, these findings failed to remain significant after the total number of traumatic stressor event types that a youth endorsed was accounted for. The Traumatic Stress Index created and utilized to measure total traumatic stress exposure is acknowledged to be a rough estimate of total stress exposure due to its reliance on total types of

traumatic stressors endorsed rather than a true count of total traumatic stress exposure. Nonetheless, including this index in regression modeling resulted in the strongest and most parsimonious model. In this model the Traumatic Stress Index was the strongest predictor of variance in total PTSD symptoms followed by experiencing sexual assault, loss of a close friend, serious illness or injury of a close friend, and experiencing physical assault. Neither the General Stressor Index nor any specific general life stressor remained a statistically significant predictor of PTSD symptoms after accounting for variance due to depression symptoms, the Traumatic Stress Index, and the specific traumatic stressors. Furthermore, all of the stressors remaining in this model are either clearly criterion A1 congruent or are potentially congruent with criterion A1 in some circumstances. These findings are consistent with Kilpatrick's field study (1998) that distinguished stressors such as sexual assault, physical assault, serious accident, and traumatic death (labeled by Kilpatrick's team as high magnitude stressors) from stressors such as chronic illness and nonviolent, anticipated death. These findings are also consistent with understanding post traumatic stress events as distinctive from general life stressors that do not involve some type of experience involving serious injury, illness or death.

Finally, the salience of the Traumatic Stressor Index is noteworthy. An increased number of PTSD symptoms in this same sample is directly associated with increased rates of self reported distress and functional impairment (Saul, 2006). During the course of the current study, another research team also examined the risk associated with multiple exposures to potentially traumatic

events among the same national sample of adolescents (Macdonald, Danielson, Resnick, Saunders, & Kilpatrick, 2010). This team created specific models of repeated victimization for reported sexual assault, physical assault and witnessed violence. They concluded that the number of victimizations an adolescent experienced increased the odds of developing both PTSD and comorbid depressive or substance abuse disorders, supporting theories such as the diathesis-stress model that propose a cumulative effect for repeated potentially traumatic events (MacDonald et al., 2010).

Taken together, these findings support the possibility that both increased experiences of traumatic stress and qualitatively distinctive stressors contribute unique risk elements with respect to the development of PTSD symptoms. Specifically, direct experiences of sexual and physical violence were particularly salient in predicting increased total symptoms of PTSD. Increasing our understanding and inclusion of broad measures of total exposure to traumatic stressors and identification of these specific life stressors associated with the development of PTSD is important in understanding risk factors and events of particular salience during adolescence. Although the findings clearly highlight the importance of measuring and accounting for the impact of total traumatic stress events, the limitations of the measure used in this study bear repeating: The Traumatic Stress Index in this study measured the total types of traumatic stress a youth reported, not a true traumatic exposure count. The measure could not capture the severity of specific stress episodes nor the total number of episodes a youth experienced, but rather total types of different traumatic events reported.

Furthermore, the index did have some overlap with individual traumatic stressor types by relying on a count of total endorsed stressor types.

The second research question seeks to clarify the previous analysis in understanding the relationship between the general life stressor (variables that do not meet the PTSD criterion A1) and the development of PTSD symptoms. Of the 684 surveyed youth who denied any clearly criterion A1 congruent traumatic stressor, only four endorsed six or more symptoms of PTSD in the preceding six month period. This threshold (six PTSD symptoms) was selected due to evidence that it distinguishes a clinically relevant threshold between youth experiencing some distress and those presenting with clinically problematic symptoms meriting formal diagnosis (Saul 2006). Three of these four youth reported general life stressors involving the death, illness or loss of a family member or friend that were considered ambiguous in the current study due to inadequate information to determine if they were indeed congruent with PTSD criterion A1.

During the course of the current research study, Kilpatrick's research team also re-analyzed the same National Survey of Adolescent data set as well as an adult dataset of survivors of a major hurricane with a focus on role of PTSD criterion A1 (Kilpatrick, Resnick, & Acierno, 2009). Consistent with the current findings, these authors noted that DSM-IV congruent PTSD was rare absent a criterion A1 event, finding 16 cases of lifetime PTSD absent a criterion A1 stressor among the more than 4,000 participants, and also the presence of past year stressors involving death or illness of a family member or close friend in the majority of these cases (Kilpatrick et al., 2009).

The findings from the first two research questions and from hypothesis I generally support the findings of the PTSD field trial (Kilpatrick 1998) that few adolescents will develop PTSD symptoms absent an extraordinarily stressful event. Although a number of non-criterion A1 stressors (parents' divorce, school suspension and failing grade) initially appeared to predict increased PTSD symptoms, once variance due to the Traumatic Stress Index was removed they were no longer significant predictors of increased PTSD symptoms. At the case analysis level, exposure exclusively to stressors incongruent with criterion A1 was insufficient to explain the subsequent development of PTSD. The impact of stressors labeled as ambiguous in this study and involving loss, serious illness and injury is less apparent: The current findings do not preclude possibility that death, loss, or injury of friends or family that does not fully meet PTSD criterion A1 may be adequate to result in the development of PTSD in some cases, as Gold and colleagues (2005) and Mol and colleagues (2005) reported. Furthermore, the findings suggest the possibility that salient general life stressors may increase the probability that a young person also exposed to a traumatic stressor might experience increased PTSD symptoms.

The present analyses were limited by the inadequate information gathered with a number of potentially traumatic stressors to clearly classify certain events as either PTSD criterion A1 congruent or criterion A1 incongruent. These stressors included the loss of a close friend or family member, the serious illness or injury of a family member, death of a family member or close friend and personal illness or injury. These general life stressors were excluded from initial

analyses due to this limitation. As noted, they were included in various secondary analyses in order to further explore their potential relevance, while acknowledging this classification limitation. Similar limitations impacted the full exploration of these same items in the study by Mol and colleagues (2005) as well as Long and colleagues (2005). However, when Gold and colleagues gathered and coded qualitative data regarding the precipitating stressful event, non traumatic death or serious illness of a friend or family member was the most frequently identified non criterion A1 congruent stressor associated with PTSD symptoms. The current study was unable to further examine if this stressor absent the criterion A1 definition is sufficient in some cases to lead to the development of PTSD. Except for the ambiguous stressors previously discussed, the findings indicate that stressors incongruent with PTSD criterion A1 definition fail to remain significant predictors of total PTSD after an index of exposure to multiple types of traumatic stressors is included.

Future research is needed to further clarify the role of stressors involving specific characteristics of loss, particularly involving serious illness, injury, or death of friends, family, and the individual herself in the development of adolescent (and adult) PTSD. Both qualitative and quantitative inquiry is needed to distinguish the characteristics of these stressors in the development of PTSD symptoms or the resiliency to these symptoms. This detailed inquiry would further clarify if these stressors are independently sufficient to explain the development of PTSD, or if more complex interactions with other stressors are present when these symptoms do develop. Large scale studies gathering more

detailed information regarding total traumatic and general stress exposure and replicating the differential impact of different stressor types on adolescent PTSD are recommended. Finally, if future research consistently confirms the saliency of sexual assault, physical assault, and serious injury, and illness or loss of close friends in the development of adolescent PTSD, then these specific traumatic stressor types should be prioritized in efforts to prevent and treat PTSD among adolescent populations.

Adolescent PTSD and Fear of Serious Injury or Death (Hypothesis III and IV)

Hypothesis III and IV examine part of the PTSD criterion A1 requiring the specific fear of death or serious injury in defining a potentially traumatic event associated with PTSD. The PTSD Field Study (Kilpatrick et al, 1998) examined this criterion in an adult sample, comparing the PTSD criteria from the DSM III, which did not specify the perceived threat, with the expanded criterion adapted for the DSM-IV requiring the perceived threat of serious injury or death. The analysis found little difference in overall PTSD diagnostic rates with the inclusion or exclusion of threat perception, ultimately recommending retaining the perceived threat characteristic. However, no similar examination addressing adolescent populations and incorporating relevant developmental aspects of risk assessment had been conducted at the time of this research proposal. The National Study of Adolescents provided a unique opportunity to examine the role of potentially traumatic stressors, the assessment of whether the event involved the fear of serious injury or death, and PTSD symptoms in an adolescent sample exposed to a broad range of stressor types.

Hypothesis three posited that the presence of specific fear of death or serious injury would predict increased total symptoms of PTSD among adolescents. The findings supported this hypothesis, finding significantly higher PTSD symptom rates among youth who reported fear of serious injury or death in response to at least one specific traumatic stressor. The impact was substantial, with the mean PTSD symptoms reported among youth reporting fear of serious injury or death more than double the mean PTSD symptoms among peers reporting traumatic stress experience(s) absent this assessed threat. Follow up analysis found that endorsement of fear of serious injury or death remained a significant predictor of increased PTSD symptoms even after variance due to depression symptoms and the Traumatic Stress Index was controlled. This finding suggests that the perception of threat as defined by fear of serious injury or death is a salient aspect in the development of PTSD among adolescents.

Additional follow up analysis examined whether the perception of threat was prerequisite for meeting the diagnostic threshold for PTSD. This analysis found a significant minority of adolescents reporting exposure to potentially traumatic stressor(s) with clinically significant symptoms of PTSD absent the endorsement of perceived threat of serious injury or death. One hundred thirty nine youth or 31% of the 451 youth who reported both exposure to a potentially traumatic stressor(s) and clinically significant symptoms of PTSD defined as six or more symptoms denied experiencing fear of serious injury or death specific to any specific traumatic stressors reported. This finding contrasts the conclusions of the PTSD field study which noted minimal diagnostic impact of including a

particular requirement regarding threat perception or reaction, and highlights this as a diagnostic aspect that may be specifically impacted by developmental status: Requiring that an adolescent experience fear death or serious injury as part of the diagnostic criteria would exclude a sizable minority of youth reporting exposure to a potentially traumatic stressor with clinically relevant symptoms of PTSD.

Hypothesis four further explored the perceived risk of serious injury or death among adolescents exposed to a broad range of traumatic stressors. The hypothesis built on recent findings in developmental psychology that younger adolescents tend to overestimate the risk of serious harm to themselves or others when presented with theoretical risk outcomes (Millstein & Halpern-Felsher, 2002). The findings failed to support this hypothesis among youth exposed to a PTSD criteria A1 congruent traumatic event. Older adolescents were significantly more likely than their younger adolescent peers to report fearing they would be seriously injured or killed following a serious accident or physical assault, while no statistically significant difference was noted with respect to sexual assault or natural disasters. This finding suggests that assessment of theoretical risk differs from assessment of risk associated with an experienced traumatic experience. It is possible that the increased cognitive capacity and future orientation of the older adolescents contributed to a tendency to report fear of serious injury or death when confronting potentially traumatic stressors. Alternative explanations are that these older adolescents were more likely to have previous exposure to violence or accidents or may have been exposed to more serious events. Increased previous exposure to violence or crime has been

associated with increase perceived vulnerability to harm or death (Greene, 1995). The current analysis is limited by the lack of ability to differentiate the order of reported stressors, to assess and control for objective differences associated with different traumatic stress events, or to fully control for the total episodes of traumatic stress a youth experienced. The lack of difference in the frequency of fear of serious injury or death between younger and older adolescents with respect to two of the four types of stressors (sexual assault and natural disaster) suggest uncertainty regarding potentially meaningful differences in assessment of threat between these two developmental phases. These findings highlight the need for future research regarding both developmental variations in the assessment of traumatic stressors across different developmental stages, and the potential impact of these variations on the development of PTSD symptoms.

The Qualitative Nature of Traumatic Stressors and Adolescent PTSD (Hypothesis V, VI, and VII)

The final three hypotheses examine qualitative characteristics of specific potentially traumatic stressor(s) in relation to the development of increased symptoms of PTSD. Hypotheses V and VI compare youth reporting single episode sexual and physical assault traumas with youth reporting multiple episode sexual or physical assault traumas, while hypothesis VII explores possible differences in symptom manifestation between traumatic stressors of human design and those of natural design.

Analysis of youth reporting experiencing a single event sexual assault and those reporting multiple episodes of sexual assault failed to support a difference in

total symptom presentation between these two groups. Of note, the mean reported symptoms of PTSD was quite high in both groups, with mean 5.11 PTSD symptoms endorsed among youth reporting single episode sexual assault and 5.22 PTSD symptoms among youth reporting multiple episodes of sexual assault. Secondary analysis controlling for variance due to total traumatic stressor types excluding sexual assault related events was consistent with the initial findings in failing to find a statistically significant difference between youth reporting single and multiple episode sexual assault stressors.

The results fail to refute the null hypothesis with respect to hypothesis five, finding no significant difference in total PTSD symptoms between youth reporting single and repeated exposure to sexual assault. However, sexual assault was more predictive of increased PTSD symptoms than any other examined traumatic stressor in this study (see Research Question 1). It is possible that the strength of this association may produce a ceiling effect, obscuring the impact of repeated trauma exposures. This is consistent with previous research noting particularly high rates of PTSD among sexually abused youth (Carey, Walker, Rossouw, Seedat, & Stein, 2008; Gabby et al., 2004; Walker, Carey, Mohr, Stein, & Seedat, 2004). It is also consistent with Summit's (1983) "child sexual abuse accommodation syndrome" which posits that sexual abuse among children and adolescents is unique due to the mixed messages our society sends regarding disclosure and the frequent delay of disclosure for extended periods of time related to these messages. According to Summit, although young people are often socialized to believe that sexual abuse or assault is wrong, the perpetrator often

convinces them that they will not be believed and/or will suffer terrible consequences if they disclose what occurred. As a result, disclosure is often delayed resulting in a period of ongoing threat and harm. This model suggests that even single episode sexual abuse or assault can involve an extended period of threat, therefore potentiating its impact of a traumatic stressor. If a ceiling effect does exist with respect to sexual assault, it is consistent that repeated episode sexual assault may be associated with little or no increase in total PTSD symptoms, explaining the failure to find a statistically significant difference.

Examination of youth reporting single and multiple episode physical assault did find significant difference with those youth who reported repeated exposure reporting a greater number of mean PTSD symptoms compared with peers reporting single episode physical assault. Furthermore, this difference remained statistically meaningful after variance due to the total count of traumatic stress event types excluding physical assault was controlled, with youth reporting multiple physical assault episodes reporting significantly more symptoms of PTSD. These results refute the null hypothesis, supporting hypothesis six that exposed to repeated episodes of violent stressors will report a greater number of PTSD symptoms.

Analysis of youth reporting exposure exclusively to traumatic stressors of human design compared with those reporting exclusive exposure to stressors of natural design supported the hypothesis that traumatic stressors of human design predicted increased PTSD symptoms. Youth reporting exposure to both types of traumatic stressors were excluded to focus on this theoretical distinction

articulated by Dr. McNally. Comparison between the two groups of youth found higher total PTSD symptoms among youth reporting one or more traumatic stressor of human design (e.g. involving sexual abuse, physical violence, domestic violence or witnessed violence) when compared with youth reporting one or more exposure to a natural design (e.g. a natural disaster).

These findings are consistent with findings from the PTSD field trial and Kilpatrick's analysis of the National Survey of Adolescents which found youth exposed to potentially traumatic events involving interpersonal violence to be at greater risk for developing PTSD (Brewin, Andrews, & Valentine, 2000; Kilpatrick et al., 1998, Kilpatrick et al., 2009). Human design stressors may be particularly salient in understanding the development of PTSD, suggesting the importance of prevention, assessment, and intervention efforts targeting these types of traumatic stressors.

CHAPTER V

SUMMARY

The presence of symptoms of PTSD among subgroups of adolescents following a range of potentially traumatic events has been well established. In contrast, much less is known regarding the adolescent experience of traumatic stressors as it relates to the development or absence of significant PTSD symptoms. Furthermore, little is known regarding the appropriateness and relevance of the DSM-IV definition of a traumatic stressor with respect to adolescents.

The current study utilized a national survey of over 4,000 adolescents who reported a wide range of traumatic and major life stressors. The study examined the types of stressors associated with the development of adolescent PTSD, the appropriateness and impact of the requirement that an individual endorse fear of death or serious injury specific to a PTSD traumatic event, and the potential role of developmental stage or age with respect to perceived threat. This research also examined whether repeated or chronic exposure to a specific type of trauma and/or traumatic stressors of human design were associated with greater PTSD symptom development compared with single episode stressors and stressors not attributed to human design.

Current findings support the differentiation of potentially traumatic stressors as defined by the current DSM-IV PTSD criterion A1 from major life stressors unrelated to injury or loss of life. Increased symptoms of PTSD were noted in the presence of traumatic stressors congruent with PTSD criterion A1

and stressors potentially congruent with this criterion and involving death, loss or serious injury. Traumatic stress exposure involving sexual assault was the most predictive of increased total PTSD symptoms. Four stressors that could potentially be congruent or incongruent with Criterion A1 including loss of a close friend, serious illness or injury of a close friend, serious illness or injury of a family member, and major personal illness or injury were also significant predictors of increased PTSD symptoms. An index measuring increased exposure to traumatic stress events as indicated by endorsing multiple types of traumatic stressors (Traumatic Stress Index) was a particularly strong predictor of increased PTSD symptoms, suggesting that previous and/or cumulative exposure to traumatic stressors may be a key factor in the development of adolescent PTSD symptoms. This is consistent with past research noting increased symptoms of PTSD with repeated exposure to traumatic stress events. The Traumatic Stress Index utilized a count of the twenty one individual event queries that were included in the assessment of exposure to physical violence, witnessed violence, sexual violence, and other criterion A1 congruent stress experiences. However, interpretation of the Traumatic Stress Index is limited by overlap with specific traumatic events as well as reliance on the total types of traumatic stress experiences endorsed rather than a true count of traumatic stress events or severity of individual events. A true count of traumatic stressors or detailed coding of event severity could not be constructed from the current study data.

The second area of inquiry in the current study was the assessment of threat defined as endorsing the fear of death or serious injury related to a

potentially traumatic stressor. Significantly higher PTSD symptom rates were reported among youth who experienced increased episodes of traumatic stress with this fear of serious injury or death. The mean PTSD symptoms reported by youth reporting experiencing at least one stressor involving the fear of serious injury or death was more than double the mean PTSD symptoms among peers reporting exposure to potentially traumatic stressor absent this assessed threat. Follow up analysis found that increased episodes of traumatic stressors including fear of serious death or injury remained a significant predictor of greater PTSD symptoms even after variance related to depression screening items and the Traumatic Stress Index was controlled. Additional supplementary analysis noted a potential distinction from adult studies of the role of threat assessment, finding a substantial minority of youth reporting traumatic event exposure and clinically significant symptoms of PTSD in the absence of fear of serious injury or death. This suggests that while threat assessment may be relevant to prevention, assessment, and intervention among adolescents, it may be problematic as a diagnostic threshold: Requiring fear of serious injury of death with a potentially traumatic stressor for PTSD diagnosis would exclude a significant number of youth experiencing clinically relevant PTSD symptoms. Analysis of patterns of differing threat assessment between older and younger youth revealed that older adolescents were significantly more likely than their young adolescent peers to report fear of serious death or injury following a serious accident or physical assault, while no statistically significant pattern was discernable with respect to sexual assault or natural disasters. This finding provides some support for

differential risk assessment associated with developmental status, while requiring further research to determine why this pattern presented with some but not all examined traumatic stressors.

Finally, characteristics of potentially traumatic stressors were examined as they relate to increased risk of symptoms of PTSD. Comparison of youth reporting single episode physical assault with those reporting repeated episode physical assault refuted the null hypothesis, finding increased PTSD symptoms among youth reporting repeated physical assaults. These findings remained significant after variance due to total traumatic stressors other than physical assault was controlled. However, analysis of youth reporting single and repeated sexual assault exposure failed to note statistically significant difference in total symptoms between these groups. This finding may reflect the particularly strong relationship between sexual assault and increased PTSD symptoms resulting in a ceiling effect or another not yet identified interaction between traumatic stressors and symptoms. Finally, comparison of traumatic stressors of human design and natural or non-human design supports the notion of increased risk for PTSD symptoms among youth exposed exclusively to stressors of human design. Stressors of human design such as physical assault, sexual assault, or witnessed violence were associated with increased symptoms of PTSD among adolescents when compared with stressors of natural design. This is consistent with past adult findings linking exposure to potentially traumatic events involving interpersonal violence to increased risk of PTSD symptoms.

In summary, the current findings generally support the distinctive nature of potentially traumatic stressors as they relate to the development of PTSD. These findings also note the relevance of stressors involving the loss, serious injury, or illness of close friends among adolescents, and note the need for further investigation regarding whether stressors involving the loss or injury of oneself, one's friends, or one's family need be congruent with PTSD criterion A1 in order to predict increased adolescent PTSD symptoms. These findings do not support other general life stressors as adequate to independently result in PTSD. However, they do raise the possibility that non-traumatic stressors may potentiate the impact of traumatic stressors in the subsequent development of PTSD. Fear of serious injury or death was positively associated with greater symptom manifestation among adolescents. However, requiring an adolescent to specifically endorse fearing for their life or fearing serious injury would exclude a significant group of adolescents who report both traumatic stress exposure and clinically significant symptoms of PTSD. Continuing to build knowledge regarding the theoretical and empirical impact of exposure to a range of traumatic stressors among adolescents will ultimately increase our understanding of the impact of these experiences on their psychological well-being.

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APPENDIX A: National Survey of Adolescents – Introduction, Data Collection
Prompts and Original Coding of Items Utilized in Current Research Agenda

A. Introductory Script

SCREENER

Hello, I'm with SRBI, the national research organization in New York City. We are conducting the National Survey of Adolescents under a grant from the United States Department of Justice.

I am going to ask you some questions -- about things that happen in your school, in your neighborhood, in your family, and also your opinions -- things you like and don't like. This is part of a national survey of more than 4,000 boys and girls age 12 through 17.

[You were originally chosen completely at random to represent the opinions and experiences of thousands of young people. We did this by dialing random phone numbers until we found someone the right age. You don't have to participate in this interview if you don't want to, but your help will make a big difference.]

The interview will take about a half an hour. I'll be asking you some questions about dangerous situations you may have faced and about some personal situations, where you might have been threatened. You can stop the interview at any time. If this is a bad time to talk, I can call back at a better time for you. To thank you for your help, we will be sending you a check for five dollars.

We would like you to try and answer every question that you can. However, if there is any question that you don't want to answer, that will be OK. Also, if there is any question that you don't understand, please say so. If there are too many people around for you to talk freely, just let me know and I can call back later. We are not going to tell your parents, your school or anyone else anything you told us.

Can we begin now? [IF NO, SCHEDULE CALLBACK]

B. Demographic Items

S1. How old are you? AGE (SCREEN OUT IF NOT 12 THRU 17)

S2. What is your date of birth? Month Day Year

[CHECKPOINT A: CALCULATE AGE BY (S2- INTERVIEW DATE). IF NEW AGE DOES

NOT AGREE WITH S1, ASK RESPONDENT WHICH IS WRONG AND CORRECT.]

C. Post Traumatic Stress Disorder

People experience a variety of moods and feelings from time to time. In your case,
has their ever been a period of two weeks or more during which

57a1. You had trouble concentrating or keeping you mind on what you were doing, even when you tried to concentrate? | 1 Yes |

c. When was the last time you [READ ITEM] within the last month | 1 Yes | Within the Past six months | 2 Yes |, or more than six months ago? | 3 Yes |

57a2. You lost interest in activities which usually meant a lot to you | 1 Yes |

c. When was the last time you [READ ITEM] within the last month | 1 Yes | Within the Past six months | 2 Yes |, or more than six months ago? | 3 Yes |

57a3. You felt you had to stay on guard much of the time | 1 Yes |

c. When was the last time you [READ ITEM] within the last month | 1 Yes | Within the Past six months | 2 Yes |, or more than six months ago? | 3 Yes |

57a4. You deliberately tried very hard not to think about something that had happened to you | 1 Yes |

c. When was the last time you [READ ITEM] within the last month | 1 Yes | Within the Past six months | 2 Yes |, or more than six months ago? | 3 Yes |

57a6. You had difficulty falling asleep or staying asleep | 1 Yes |

c. When was the last time you [READ ITEM] within the last month | 1 Yes | Within the Past six months | 2 Yes |, or more than six months ago? | 3 Yes |

57a7. You stopped caring about activities in your life that used to be important to you | 1 Yes |

c. When was the last time you [READ ITEM] within the last month | 1 Yes | Within the Past six months | 2 Yes |, or more than six months ago? | 3 Yes |

57a8. unexpected noises startled you more than usual | 1 Yes |

c. When was the last time you [READ ITEM] within the last month | 1 Yes | Within the Past six months | 2 Yes |, or more than six months ago? | 3 Yes |

57a9. You kept having unpleasant memories, or seeing them in your mind | 1
Yes |

c. When was the last time you [READ ITEM] within the last month |
1 Yes | Within the Past six months | 2 Yes |, or more than six
months ago? | 3 Yes |

57a11. You had repeated bad dreams or nightmares | 1 Yes |

c. When was the last time you [READ ITEM] within the last month |
1 Yes | Within the Past six months | 2 Yes |, or more than six
months ago? | 3 Yes |

57a13. You went out of your way to avoid certain places or activities which
might remind you of something that happened to you in the past | 1 Yes |

c. When was the last time you [READ ITEM] within the last month |
1 Yes | Within the Past six months | 2 Yes |, or more than six
months ago? | 3 Yes |

57a15. You deliberately tried to avoid having any feelings about something
that happened to you in the past | 1 Yes |

c. When was the last time you [READ ITEM] within the last month |
1 Yes | Within the Past six months | 2 Yes |, or more than six
months ago? | 3 Yes |

57a17. You felt cut off from other people or found it difficult to feel close to
other people | 1 Yes |

c. When was the last time you [READ ITEM] within the last month |
1 Yes | Within the Past six months | 2 Yes |, or more than six
months ago? | 3 Yes |

57a18. It seemed you could not feel things anymore or that you had much less
emotion than you used to | 1 Yes |

c. When was the last time you [READ ITEM] within the last month |
1 Yes | Within the Past six months | 2 Yes |, or more than six
months ago? | 3 Yes |

57a19. You found yourself suddenly feeling very anxious, fearful, or panicky |
1 Yes |

c. When was the last time you [READ ITEM] within the last month |
1 Yes | Within the Past six months | 2 Yes |, or more than six
months ago? | 3 Yes |

57a20. Little things bothered you a lot or could make you very angry | 1 Yes
|

c. When was the last time you [READ ITEM] within the last month |
1 Yes | Within the Past six months | 2 Yes |, or more than six
months ago? | 3 Yes |

57a21:Disturbing memories kept coming into your mind whether you wanted
to think

of them or not | 1 Yes |

c. When was the last time you [READ ITEM] within the last month |
1 Yes | Within the Past six months | 2 Yes |, or more than six
months ago? | 3 Yes |

57a23.You felt a lot worse when you were in a situation that reminded you of
something that had happened in the past | 1 Yes |

c. When was the last time you [READ ITEM] within the last month |
1 Yes | Within the Past six months | 2 Yes |, or more than six
months ago? | 3 Yes |

57a25.You found yourself reacting physically to things that reminded you of
something that had happened in the past | 1 Yes |

c. When was the last time you [READ ITEM] within the last month |
1 Yes | Within the Past six months | 2 Yes |, or more than six
months ago? | 3 Yes |

57a27.The way you think about or plan for the future was changed by
something that happened to you in the past| 1 Yes |

c. When was the last time you [READ ITEM] within the last month |
1 Yes | Within the Past six months | 2 Yes |, or more than six
months ago? | 3 Yes |

57a29.Have you ever had a "flashback"- that is, have you ever had an
experience in which you imagined that something that happened in the past
was happening all over again? (Doesn't have to be
for two weeks| 1 Yes |

c. When was the last time you [READ ITEM] within the last month |
1 Yes | Within the Past six months | 2 Yes |, or more than six
months ago? | 3 Yes |

57a31a. Throughout this interview we've talked about distressing experiences
that you may have had. Have you EVER felt that there parts of any such
experience that you couldn't remember?

Yes.....1

No.....'2 SKIP TO Q.60a

[VOL] Not sure.....3 SKIP TO Q.60a

[VOL] Refused.....4 SKIP TO Q.60a

D. Additional Items: Screening Questions for Major Depression

50. Now I would like to ask you about moods and feelings. Have you ever had a period of two weeks or longer when you were feeling depressed, down, Or irritable most of the day, nearly every day?

Yes.....1

No.....2

[VOL] Not sure.....3

[VOL] Refused.....4

51. Has there ever been a time of two weeks or longer when you were uninterested in most things or unable to enjoy things you used to do nearly every day?

Yes..... 1

No.....2

[VOL] Not sure.....3

[VOL] Refused.....4

E. Victimization History/Traumatic Stressors : Witnessed Violence Items

Some young people tell us they have seen one person violently attack another person. By Seeing a violent attack, we mean when you have actually seen someone beat up, rob, sexually assault, cut or stab with a knife, shoot at, actually shoot, or even kill another person. The people involved in the attack may have been strangers, friends, neighbors, or even family members. We would like to find out about any violent attacks you have actually seen, whether it happened at school, in your neighborhood, somewhere else, or even in your home. We mean seeing violent attacks in real life, not on TV or in movies.

1a. Have you ever-seen someone actually shoot someone else with a gun?

Yes.....1

No.....2

2a. (Not counting any incidents you already told me about,) have you ever seen someone actually cut or stab someone else with a knife?

Yes 1

No.....2

3a. (Not counting any incidents you already told me about,) have you ever seen someone being sexually assaulted or raped?

Yes.....1

No.....2

4a. (Not counting any incidents you already told me about,] have you ever seen someone being mugged or robbed?

Yes.....1

No.....2

5a. (Not counting any incidents you already told me about,) have you ever seen someone threaten someone else with a knife, a gun, or some other weapon?

Yes.....1

No.....2

6a. (Not counting any incidents you already told me about,) have you ever seen someone beaten up, hit, punched, or kicked such that they were hurt pretty badly?

Yes.....1

No.....2

[CHECK POINT: FOR EACH YES IN Q1-6, ASK FOLLOW-UP SERIES B-H. IF ALL NO, SKIP TO Q7A.]

[OBSERVATION OF VIOLENCE SERIES - LOOP EACH YES IN Q1a-Q6a]

b. Have you seen something like this more than once?

YES1

NO2

h. During this incident, were you afraid you might be-killed or seriously injured?

Afraid of being killed1

Afraid of being injured..... 2

Afraid of both3

Not afraid..... 4

F. Victimization History/Traumatic Stressors – Sexual Assault

9a. Now I would like to ask you some questions that are included in surveys of adults when we try to find out about how often sexual abuse and mistreatment happens. But I want to be sure that you would feel comfortable in answering a few questions in this area. Remember you don't have to answer any of the questions that you don't want to answer. Do you mind if I continued?

10a.I don't mind, go ahead.....1 SKIP TO Q.10a

I do mind, don't want questions asked.....2 SKIP TO Q.18a

Sometimes a person may do sexual things to a young person that the young person doesn't want. These unwanted sexual things can happen to boys as well as girls and to young men as well as young women. People who try to do unwanted sexual things to young people are not always strangers but can be someone you know well like a neighbor, teacher, coach, counselor, boss, baby-sitter, minister or priest. They can even be a family member. People who

try to make young people do unwanted sexual things aren't always men or boys - they can also be women or girls. I am talking about any experiences you've had where someone tried to make you do something sexual you didn't want to do, no matter who did it, how long ago it happened, or whether it was reported to police

Has a man or boy ever put a sexual part of his body inside your private sexual parts, inside your rear end or inside your mouth when you didn't want them to?

Yes.....1

No..... .2 SKIP TO Q.11A

11a. (Not counting any incidents you already told me about), has anyone, male or female, ever put fingers or objects inside your private sexual parts or inside your rear end when you didn't want them to?

Yes.....1

No.....2

12a. (Not counting any incidents you already told me about), has anyone, male or female, ever put their mouth on your private sexual parts when you didn't want them to?

Yes.....1

No.....2

13a. (Not counting any incidents you already told me about), has anyone, male or female, ever touched your private sexual Parts when you didn't want them to.

Yes1

No2

14a. (Not counting any incidents you already told me anyone ever made you touch their private sexual didn't want them to?

15a. Ask Boys Only (Not counting any incidents you already told me about), has a women or girl ever put your private sexual part in her mouth or inside her body when you didn't want her to?

Yes1

No2 SKIP TO Q.16A

CHECK POINT TO COUNT SEXUAL ASSAULT INCIDENTS:

10. A male put his body inside your sexual parts.....1

11. Someone put fingers or objects inside your sexual parts.....2

12. Someone put their mouth or your private parts.....3

13. Someone touched your private parts.....4

14. Someone made you touch their private parts.....5
 15. A woman put your private parts in her mouth or body.....6

CHECK POINT: FOLLOW-UP TO SEXUAL ASSAULT SCREENERS
 IF YES TO Q10a, Q11a, Q12a, OR Q15a, RAPE= YES. IF YES TO Q13a,
 OR

Q14a, MOLEST = YES. IF NO TO ALL, SKIP TO Q26A.

** IF RESPONDENT SAID YES TO ONE INCIDENT, ASK Q16A (GO
 THROUGH
 ONE LOOP).

** IF RESPONDENT SAID YES TO ONE OR TWO INCIDENTS, ASK
 Q16B ABOUT
 THOSE INCIDENTS (GO THROUGH TWO LOOPS).

** IF RESPONDENT SAID YES TO THREE OR MORE INCIDENTS, ASK
 Q16D TO
 DETERMINE FIRST INCIDENT (GO THROUGH 1ST LOOP). THEN GO
 TO Q16E
 FOR MOST RECENT INCIDENT (GO THROUGH 2ND LOOP). THEN GO
 TO Q16F
 FOR MOST SERIOUS INCIDENT (GO THROUGH 3RD LOOP).

16a. ONLY ONE INCIDENT: You said that... [INCIDENT FROM
 DUMMY]? I'd
 like to ask you some questions about that incident. GO TO 17a. THEN GO
 TO Q18A.

16b. IF ONLY TWO INCIDENTS: Which of these incidents happened to you
 first? [RECORD FIRST INCIDENT FROM DUMMY]? Now I'd like to ask
 you some questions about that first incident. GO TO 17a FOR 1ST LOOP.
 THEN ASK Q16C.

16c. [RECORD SECOND INCIDENT FROM\ DUMMY]? Now I'd like to ask
 you some questions about the most recent/other incident. GO TO 17a FOR
 2ND LOOP. THEN GO TO Q18a.

16d. IF THREE OR MORE INCIDENTS: Which of these incidents happened
 to you first? [RECORD FIRST INCIDENT FROM DUMMY]? Now I'd like
 to ask you some questions about that first incident. GO TO 17a FOR 1ST
 LOOP. THEN ASK Q16E.

16e. Which of these incidents happened to you most recently? [RECORD
 MOST RECENT INCIDENT FROM DUMMY]? Now I'd like to ask you
 some questions about that most recent incident. GO TO 17a FOR 2ND LOOP.
 THEN ASK Q16F.

16f. Would you consider any of the other incidents that you

told me about to be more serious or worse than the two incidents we just talked about?

Yes1

No 2 SKIP TO Q.18a

16g. How many?

One.....1

Two.....2

Three or more...3

16h. Why (was it/were they) more serious or worse?

16i. Which of the incidents was the most serious or worst? [RECORD INCIDENT FROM DUMMY]? Now I'd like to ask you some questions about that incident. GO TO 17a FOR 3RD LOOP. THEN GO TO Q18A.

[SEXUAL ASSAULT INCIDENT SERIES LOOP - up to three times]
DUMMY INDICATOR OF TYPE OF INCIDENT BEING REPORTED IN LOOP

17b. Was this (most recent incident) a single incident or a series of incidents where the same person did similar things over a period of days, weeks, or months?

Series of events.....1

Single event.....2

[VOL] Not sure.....3

[VOL] Refused....4..

17j. During this (these) incident(s)- were you ever afraid that you might be seriously injured or even killed?

Yes1

No2

[VOL] Not sure3

[VOL] Refused4

THANKING RESPONDENT (IF FIRST INCIDENT): "I'd like to thank you for telling me about that. I know sometimes these things are hard to talk about, but what you know can really help other people."

(IF SECOND OR THIRD INCIDENT): "Again, thank you for telling me about that. Your experiences are very important to us."

G. Victimization History/Traumatic Stressors – Physical Assault

18. Sometimes young people get hit, beat up or physically assaulted by another person. The person who hits, attacks or beats up a young person isn't

always a stranger, but can be someone who the young person knows well, even a family member or friend. The person doing the hitting can be older than the young person, about the same age, or even younger than the young person. Young people tell us they sometimes get hit, attacked or beat up at school, in their neighborhood, or even at home. These types of attacks can even happen to small children sometimes. Many times, young people never tell anyone about these events.

18a. Has anyone -- including family members or friends -ever attacked you with a gun, knife or some other weapon, regardless of when it happened or whether you ever reported to police

| 1 Yes | 2 No | 3 Refuse | 4 Not Sure |

18b. (Not counting any incidents you already told me about), has anyone – including family members or friends – ever physically attacked you without a weapon, but you thought they were trying to kill or seriously injure you | 1 Yes | 2 No | 3 Refuse | 4 Not Sure |

18c. (Not counting any incidents you already told me about), has anyone – including family members or friends – ever threatened you with a gun or knife, but didn't actually shoot or cut you? | 1 Yes | 2 No | 3 Refuse | 4 Not Sure |

18d. (Not counting any incidents you already told me about), has anyone – including family members or friends -- ever beat you up, attacked you, or hit you with something like a stick, club, or bottle so hard that you were hurt pretty bad?. | 1 Yes | 2 No | 3 Refuse | 4 Not Sure |

18e. (Not counting any incidents you already told me about-), has anyone – including family members or friends -- ever beat you up with their fists so hard that you were hurt pretty bad? | 1 Yes | 2 No | 3 Refuse | 4 Not Sure |

CHECK POINT TO TALLY PHYSICAL ASSAULT INCIDENTS:

- a. Attacked with a gun, knife weapon1
- b. Attacked without weapon, with intent to harm2
- c. . Attacked over a period of time3
- d. Beaten with a stick, bottle, or something else-4
- e. Beaten up with fists.....- .5

19 CHECK POINT: FOLLOW-UP TO PHYSICAL ASSAULT SCREENERS

(* DUMMY INDICATOR OF TYPE OF INCIDENT BEING REPORTED]
IF YES TO Q18a THROUGH Q18e, PHYSICAL ASSAULT= YES. IF NO TO ALL,
SKIP

IF RESPONDENT SAID YES TO ONE INCIDENT, ASK Q19A (GO THROUGH ONE LOOP).

IF RESPONDENT SAID YES TO ONE OR TWO INCIDENTS, ASK Q19B ABOUT THOSE INCIDENTS (GO THROUGH TWO LOOPS).

IF RESPONDENT SAID YES TO THREE OR MORE INCIDENTS, ASK Q19D TO DETERMINE FIRST INCIDENT (GO THROUGH 1ST LOOP). THEN ASK Q19E FOR MOST RECENT INCIDENT (GO THROUGH 2ND LOOP). THEN ASK Q19F FOR MOST SERIOUS INCIDENT (GO THROUGH 3RD LOOP).

ONLY ONE INCIDENT: You said that... [INCIDENT FROM DUMMY]? I'd like to ask you some questions about that incident. GO TO 20a. THEN GO TO Q27A.

IF ONLY TWO INCIDENTS: Which of these incidents happened to you first? [RECORD FIRST INCIDENT FROM DUMMY]? NOW I'd like to ask you some questions about that first incident. GO TO 20a FOR 1ST LOOP. THEN ASK Q19C.

19c. [RECORD SECOND INCIDENT FROM DUMMY]? Now I'd like to ask you some questions about the most recent/other incident. GO TO 20a FOR 2ND LOOP. THEN GO TO Q27a.

IF THREE OR MORE INCIDENTS: Which of these incidents happened to you first? [RECORD FIRST INCIDENT FROM DUMMY]? Now I'd like to ask you some questions about that first incident. GO TO 20a FOR 1ST LOOP. THEN ASK Q19E.

19e. Which of these incidents happened to you most recently? [RECORD MOST RECENT INCIDENT FROM DUMMY]? Now I'd like to ask you some questions about that most recent incident. GO TO 20a FOR 2ND LOOP. THEN ASK Q19F.

19f. Would you consider any of the other incidents that you told me about to be more serious or worse than the two incidents we just talked about?

Yes.....1

No.....2 SKIP TO Q.27A

19g. How many?

One. 1

Two.....2

Three or more...3

19h. Why (was it/were they) more serious Or worse?

19i. Which of the incidents was the most serious or worst? [RECORD INCIDENT FROM DUMMY]? Now I'd like to ask you some questions about that incident. GO TO 20a FOR 3RD LOOP. THEN GO TO 27A.

20[PHYSICAL ASSAULT INCIDENT SERIES LOOP - Up to three times]
[* DUMMY INDICATOR OF TYPE OF INCIDENT BEING REPORTED]

20b. Was this (most recent incident) a single incident or a series of incidents where the same person did similar things over a period of days, weeks, or months?

Series of events.....1

Single event.....--2 SKIP TO Q20d

[VOL] Not sure.....3 SKIP TO Q20d

[VOL] Refused.....4 SKIP TO Q20d

20j. During this (these) incident(s) were you ever afraid that you might be seriously injured or even killed?

Yes.....-1

No.....-.-.-.-2

[VOL] Not sure.....3

[VOL] Refused.....4

H. Other Potentially Traumatic Events

8a. We've just been talking about events that happen to many people. Now we'd like to talk about events that may be extraordinarily stressful or disturbing -- things that may not happen often but when they do they can be frightening, upsetting, or distressing to almost everyone. During your life, have any of the following types of things happened to you?

| 0 No | 1 Yes |

8d: (FOR EACH "YES" RECORDED IN Q8A, ASK:) Did you ever think you might be killed or seriously injured during this/these event(s)

| 0 No | 1 Yes |

8a1, 8d1. A serious accident at school, in a car or somewhere else?

8a2, 8d2. A natural disaster such as a tornado, hurricane, flood, major earthquake, or similar natural disaster?

8a3, 8d3. Any other situation in which you were seriously injured or suffered physical damage?

8a4, 8d4 . Any other situation in which you feared you might be killed or seriously injured?

8a6, 8d6 . Any other extraordinarily stressful situation or event?

I. General Life Stressors

7. Now I am going to read you a list of experiences that happen to some people at one time or another. I'd like you to tell me which of these have happened to you during the last year, since [MONTH] a year ago.

- | | |
|--|----------|
| a. Moving to a new home | 0 No 1 |
| Yes | |
| b. Changing to a new school | 0 No 1 |
| Yes | |
| c. Serious illness or injury of family member | 0 No 1 |
| Yes | |
| d. Parents separated or divorced | 0 No 1 |
| Yes | |
| e. Mother/father lost job | 0 No 1 |
| Yes | |
| f. Death of a family member | 0 No 1 |
| Yes | |
| g. Death of a close friend | 0 No 1 |
| Yes | |
| j.. Serious illness or injury of close friend | 0 No 1 |
| Yes | |
| l. New stepmother or stepfather | 0 No 1 |
| Yes | |
| n. Losing a close friend | 0 No 1 |
| Yes | |
| o. Having to repeat a school grade | 0 No 1 |
| Yes | |
| q. Major personal illness or injury | 0 No 1 |
| Yes | |
| t. Being suspended from school | 0 No 1 |
| Yes | |
| u. Getting at least one failing grade on a report card | 0 No 1 |
| Yes | |

APPENDIX B: Coding Team Materials and Protocols

Coding Team Procedures

Researcher will provide instructions then leave area to avoid influencing outcomes.

One task to be done at a time, there is a separate sheet for each coding task. Each team member should individually code each item. When all members are done, forms should be turned into chair. Chair will identify any items where there are disagreement and group will discuss. If consensus can be reached, document consensus, if disagreement persists note disagreement and which members voted for each outcome.

Coding Team Tasks

1. Identify general stressors that may overlap with PTSD criterion A1
2. Identify general stressors that are interpersonal in nature – involve major disruption of family or interpersonal relationship
3. Review PTSD DSM IV symptoms, identify any that don't correspond to specific PTSD DSM IV symptoms
4. Review PTSD DSM IV symptoms , identify any that overlap with symptoms of Major Depressive Disorder (MDD) or Generalized Anxiety Disorder (GAD)

Coding team qualifications

Minimum masters in mental health related field with experience with DSM diagnostic criteria

The original study asked participants about a wide range of stressors. The current study is looking at stressors that do and do not meet the criteria for a potentially traumatic event according to the current DSM-IV. There are a core group of items that were designed specifically to meet the criterion A1 definition. However there are others that may include experiences that would meet this definition as well as other experiences. The goal of this coding task is to identify general stressors that may also meet PTSD criteria A1.

PTSD DSM-IV criteria A1 requires that a person “has experienced, witnessed, or been confronted with an event or events that involve actual or threatened death or serious injury, or a threat to the physical integrity of oneself or others”

Please indicate if the following stressors could in some cases or under some circumstances meet the A1 criterion (yes or no)

- Moving to a new home
- Changing to a new school
- Serious illness or injury of a family member
- Parents separated or divorced
- Mother/father lost job
- Death of a family member
- Death of a close friend
- Serious illness or injury of close friend
- New stepmother or stepfather
- Losing a close friend
- Having to repeat a school grade
- Major personal illness or injury
- Being suspended from school
- Getting at least one failing grade on a report card

The current study proposes that interpersonal stressors may impact adolescents differently than stressors that do not include a focus on relationships. Please classify the below stressors as interpersonal or other types of stressors.

- _____ Moving to a new home
- _____ Changing to a new school
- _____ Serious illness or injury of a family member
- _____ Parents separated or divorced
- _____ Mother/father lost job
- _____ Death of a family member
- _____ Death of a close friend
- _____ Serious illness or injury of close friend
- _____ New stepmother or stepfather
- _____ Losing a close friend
- _____ Having to repeat a school grade
- _____ Major personal illness or injury
- _____ Being suspended from school
- _____ Getting at least one failing grade on a report card

The current study uses a measure for post traumatic distress that includes 21 items. It is possible that one or more of these items don't correspond directly to the DSM-IV criteria for PTSD. There are 17 DSM-IV symptoms for PTSD. Symptoms can be and are in some cases asked about more than one time. The words in the items are meant to be friendly to adolescents and describe symptoms. Please identify if each below item corresponds (matches) clinically with a symptom in the DSM-IV or not with a yes or no – DSM-IV symptoms are listed on the right

ITEMS

- | | |
|---|--|
| <p><input type="checkbox"/> You had trouble concentrating or keeping your mind on what you were doing – even when you tried to concentrate</p> | <p><input type="checkbox"/> You felt a lot worse when you were in a situation that reminded you of something that had happened in the past</p> |
| <p><input type="checkbox"/> You lost interest in activities which usually meant a lot to you</p> | <p><input type="checkbox"/> You found yourself reacting physically to things that reminded you of something that had happened in the past</p> |
| <p><input type="checkbox"/> You felt you had to stay on guard much of the time</p> | <p><input type="checkbox"/> The way you think about or plan for the future was changed by something that happened to you in the past</p> |
| <p><input type="checkbox"/> You deliberately tried very hard not to think about something that had happened to you</p> | <p><input type="checkbox"/> Have you ever had a flashback, that is have you ever had an experience in which you imagined that something that happened in the past was happening all over again</p> |
| <p><input type="checkbox"/> You had difficulty falling asleep or staying asleep</p> | <p><input type="checkbox"/> We've talked about distressing experiences that you may have had. Have you ever felt that there were parts of any such experience that you couldn't remember</p> |
| <p><input type="checkbox"/> You stopped caring about activities in your life that used to be important to you</p> | |
| <p><input type="checkbox"/> Unexpected noises startled you more than usual</p> | |
| <p><input type="checkbox"/> You kept having unpleasant memories, or seeing them in your mind</p> | |
| <p><input type="checkbox"/> You had repeated bad dreams or nightmares</p> | |
| <p><input type="checkbox"/> You went out of your way to avoid certain places or activities which might remind you of something that happened to you in the past</p> | |
| <p><input type="checkbox"/> You deliberately tried to avoid having any feelings about something that happened to you in the past</p> | |
| <p><input type="checkbox"/> You felt cut off from other people or found it difficult to feel close to other people</p> | |
| <p><input type="checkbox"/> It seemed you could not feel things anymore or that you had much less emotion than you used to</p> | |
| <p><input type="checkbox"/> You found yourself suddenly feeling very anxious, fearful or panicky</p> | |
| <p><input type="checkbox"/> Little things bothered you a lot or could make you very angry</p> | |
| <p><input type="checkbox"/> Disturbing memories kept coming into your mind whether you wanted to think of them or not</p> | |

DSM-IV PTSD symptoms

The traumatic event is persistently re-experienced in at least one of the following ways:

1. Recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions. Note: in young children, repetitive play may occur in which themes or aspects of the trauma are expressed.
 2. Recurrent distressing dreams of the event. Note: in children, there may be frightening dreams without recognizable content
 3. Acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur upon awakening or when intoxicated). Note: in children, trauma-specific reenactment may occur.
 4. Intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.
 5. Physiologic reactivity upon exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event
- Persistent avoidance of stimuli associated with the trauma and numbing of general

responsiveness (not present before the trauma), as indicated by at least three of the following:

1. Efforts to avoid thoughts, feelings, or conversations associated with the trauma
2. Efforts to avoid activities, places, or people that arouse recollections of the trauma
3. Inability to recall an important aspect of the trauma
4. Markedly diminished interest or participation in significant activities
5. Feeling of detachment or estrangement from others
6. Restricted range of affect (e.g., unable to have loving feelings)
7. Sense of foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)

Persistent symptoms of increasing arousal (not present before the trauma), indicated by at least two of the following:

1. Difficulty falling or staying asleep
2. Irritability or outbursts of anger
3. Difficulty concentrating
4. Hyper-vigilance
5. Exaggerated startle response

One of the concerns in the current study is that there may be overlap between PTSD symptoms and symptoms of depression or anxiety. Please read each of the below items on the left and mark if you believe it overlaps (is the same as) any of the symptoms on the right – for each symptom, if you believe there is an overlapping symptom on the right, indicate yes, if not indicate n

Items

- You had trouble concentrating or keeping your mind on what you were doing – even when you tried to concentrate
- You lost interest in activities which usually meant a lot to you
- You felt you had to stay on guard much of the time
- You deliberately tried very hard not to think about something that had happened to you
- You had difficulty falling asleep or staying asleep

- You stopped caring about activities in your life that used to be important to you
- Unexpected noises startled you more than usual
- You kept having unpleasant memories, or seeing them in your mind
- You had repeated bad dreams or nightmares
- You went out of your way to avoid certain places or activities which might remind you of something that happened to you in the past

- ___ You deliberately tried to avoid having any feelings about something that happened to you in the past
- ___ You felt cut off from other people or found it difficult to feel close to other people
- ___ It seemed you could not feel things anymore or that you had much less emotion than you used to
- ___ You found yourself suddenly feeling very anxious, fearful or panicky
- ___ Little things bothered you a lot or could make you very angry
- ___ Disturbing memories kept coming into your mind whether you wanted to think of them or not
- ___ You felt a lot worse when you were in a situation that reminded you of something that had happened in the past
- ___ You found yourself reacting physically to things that reminded you of something that had happened in the past
- ___ The way you think about or plan for the future was changed by something that happened to you in the past
- ___ Have you ever had a flashback, that is have you ever had an experience in which you imagined that something that happened in the past was happening all over again
- ___ We've talked about distressing experiences that you may have had. Have you ever felt that there were parts of any such experience that you could not remember?

Major Depression Symptoms

- 1) depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful). Note: In children and adolescents, can be irritable mood
- 2) markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others)

- 3) significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day. Note: In children, consider failure to make expected weight gains.
- 4) insomnia or hypersomnia nearly every day
- 5) psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down)
- 6) fatigue or loss of energy nearly every day
- 7) feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick)
- 8) diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others)
- 9) recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide

Generalized anxiety symptoms

- 1) Excessive anxiety and worry (apprehensive expectation) that the person finds difficult to control
- 2) restlessness or feeling keyed up or on edge
- 3) being easily fatigued
- 4) difficulty concentrating or mind going blank
- 5) irritability
- 6) muscle tension
- 7) sleep disturbance (difficulty falling or staying asleep, or restless unsatisfying sleep)

APPENDIX C: Coding Team Outcome – Unique Symptoms of PTSD

The coding team identified 8 of the 21 PTSD symptom items as potentially overlapping with at least one symptom of Major Depressive Disorder or Generalized Anxiety Disorder with the remaining 13 symptom items being unique to PTSD.

The following items were noted to potentially overlap with a symptom of Major Depression or Generalized Anxiety Disorder:

1. You had trouble concentrating or keeping your mind on what you were doing – even when you tried to concentrate
2. You lost interest in activities which usually meant a lot to you
3. You felt you had to stay on guard much of the time
4. You had difficulty falling asleep or staying asleep
5. You stopped caring about activities in your life that used to be important to you
6. It seemed you could not feel things anymore or that you had much less emotion than you used to
7. You found yourself suddenly feeling very anxious, fearful or panicky
8. Little things bothered you a lot or could make you very angry

The following items were coded as PTSD unique and thus utilized to develop the modified PTSD measure designed to control for comorbidity with Major Depression and Generalized Anxiety disorders

1. You deliberately tried very hard not to think about something that had happened to you
2. Unexpected noises startled you more than usual
3. You kept having unpleasant memories, or seeing them in your mind
4. You had repeated bad dreams or nightmares
5. You went out of your way to avoid certain places or activities which might remind you of something that happened to you in the past
6. You deliberately tried to avoid having any feelings about something that happened to you in the past
7. You felt cut off from other people or found it difficult to feel close to other people
8. Disturbing memories kept coming into your mind whether you wanted to think of them or not
9. You felt a lot worse when you were in a situation that reminded you of something that had happened in the past
10. You found yourself reacting physically to things that reminded you of something that had happened in the past

11. The way you think about or plan for the future was changed by something that happened to you in the past
12. Have you ever had a flashback, that is have you ever had an experience in which you imagined that something that happened in the past was happening all over again
13. We've talked about distressing experiences that you may have had. Have you ever felt that there were parts of any such experience that you could not remember