

A Comparative Analysis of the Children's Future Orientation Scale Ratings of Traumatized
Urban Youth with and without Posttraumatic Stress Disorder

Rebecca A. Rialon

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ABSTRACT

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This study examined the future orientation, or attitudes about the future, of traumatized youth with and without Posttraumatic Stress Disorder (PTSD) relative to the future orientation of a non-traumatized comparison group. Participants included youth between 6 and 17 years of age who were previously evaluated for a larger trauma study at Bellevue Hospital Center in New York City. Youth presenting with major comorbid psychiatric disorders were excluded from participation. Child diagnostic interviews identified 30 youth with PTSD, 62 traumatized youth without PTSD, and 40 non-traumatized controls. Children and adolescents completed the *Children's Future Orientation Scale*, a multi-dimensional self-report measure assessing future thinking regarding having a family, social relationships, work, as well as general life outlook. Statistical analyses indicate that the total future orientation ratings of youth with PTSD were significantly lower than the aggregate ratings of traumatized youth without PTSD and non-traumatized controls. Youth with PTSD had substantially lower expectations about future social relations and more pessimistic general expectations about the future than controls. On the other hand, the traumatized groups did not significantly differ with regard to future socialization expectations. Moreover, traumatized youth without PTSD had considerably more negative future social expectations relative to the controls. Though these results offer preliminary support for the DSM-IV contention that PTSD is associated with negative expectations about the future, deficits in future orientation were not exclusive to diagnostic status and varied as a function of

the type of future expectation. Future research should strive to compare youth with PTSD to youth with other psychiatric disorders in order to increase our understanding of future expectation across diagnostic categories and increase the external validity of empirical findings.

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Dedication

To Nonni, in loving memory.

Though you passed early on in the completion of this work, you were with me every step of the way. Your strength, courage, and love for God and family will never be forgotten.

La vita e' bella.

Chapter I

HISTORY OF POSTTRAUMATIC STRESS DISORDER

Traumatic experiences and their aftermath are not new phenomena. People have been subjected to various forms of life threatening events such as wars, accidents, natural or industrial disasters, acts of criminal victimization, and other violent deeds throughout history. While some survivors of traumatic experiences may experience little to no emotional aftereffects, for others, the outcome of these events is more pervasive, involving the development of long-term physiological and psychological problems. Included within this context are symptoms such as recurrent and intrusive distressing recollections or dreams of the event, persistent avoidance of stimuli associated with the trauma, increased startle response, and a sense of foreshortened future, which can currently be classified as Posttraumatic Stress Disorder (PTSD; American Psychiatric Association, 2000). Prior to the establishment of Posttraumatic Stress Disorder (PTSD) as a diagnostic classification in the third edition of the *Diagnostic and Statistical Manual of Mental Disorders* in 1980 (*DSM-III*; American Psychiatric Association), several individuals had documented the effects of overwhelming experiences on the body and mind. These written accounts have collectively helped shape the diagnostic criteria for PTSD as they exist today.

Beginning in the 17th century, anecdotal evidence involving trauma exposure and responses began to appear in the literature. One of the earliest records denoting the emotional effects of trauma exposure dates back to 1666 from diarist Samuel Pepys (Daly, 1983). In his account, Pepys recounts the reaction he suffered following the Great Fire of London in 1666, a catastrophe that resulted in substantial loss of property and in marked disorganization in the city. He wrote, “it is strange to think how to this very day I cannot sleep a night without great terrors of the fire; and this very night could not sleep to almost two in the morning through thoughts of

the fire” (quoted in Daly, 1983, p. 66). Pepys’ diary also suggests that he manifested mild depersonalization, as well as some characteristic guilt about saving himself and his property (known as “survivors’ guilt”) while the homes of so many others was made to wreckage.

A more formal appraisal of the psychophysiological effects of massive trauma arose in the nineteenth century (Ramsay, 1990). Da Costa (1871), an American physician treating casualties of the American Civil War (1861-1865), described increased arousal, irritability, and elevated heart rate in soldiers exposed to combat. This cluster of symptoms came to be known as “Da Costa’s Syndrome” or “Soldiers Irritable Heart,” and was felt to reflect a physiological disturbance related to the exposure to stress of combat (Trimble, 1981). Such suffering throughout history and over the course of many wars was known variously as soldiers’ heart, battle fatigue, shell shock, combat neurosis, combat exhaustion, and even pseudocombat fatigue (Shay, 1994).

As railroad travel increased in popularity during the Industrial Revolution, the occurrence of traumatic events involving transportation accidents also grew in number. Railway accident survivors often suffered from what was commonly referred to as “railway spine”, a condition characterized by neurological symptoms (e.g., limb numbness) accompanied by increased irritability, fretfulness, emotional instability, and difficulty concentrating (Trimble, 1981). In 1865, the celebrated author Charles Dickens described suffering from symptoms of anxiety, memory, and concentration problems, irritability, hyperarousal, disturbed sleep, sudden alarm, nightmares, dissociation, and multiple somatic complaints following his involvement in a train accident (Turnbull, 1998a). Several weeks after the incident, Dickens recorded:

“I am not quite right within, but believe it to be an effect of the railway shaking...Driving in Rochester yesterday I felt more shaken than I have since the accident. I cannot bear railway

traveling yet. A perfect conviction, against the senses, that the carriage is down on one side...comes upon me with anything like speed, and is inexpressibly distressing” (Quoted in Trimble, 1981).

Two decades later, surgeon Herbert Page (1885) argued that symptoms of railway spine were psychological in origin, resulting in physiological malfunctioning of the nervous system. He coined the term “nervous shock” to replace railway spine, claiming that fear and alarm invoked by the traumatic experience of a railway accident was “itself sufficient” (quoted in Trimble, 1981, p. 29) to produce the persistent symptoms so often observed in railway accident survivors. Putnam (1883) further contended that many of these cases such as railroad spine syndrome could be identified as hysterical neuroses.

Toward the end of the 19th century and before the great wars of the 20th century, experiencing anxiety as a reaction to life-threatening events was increasingly recognized as a psychological response to tremendous stress. The German neurologist Oppenheim observed and labeled individuals’ reactions to severe stress “traumatic neurosis” (1892; cited by Kraepelin, 1896). Kraepelin himself, the nineteenth century German nosologist, subsequently coined the term “schreckneurose,” or fright of neuroses, to describe a psychiatric condition “composed of multiple nervous and psychic phenomena arising as a result of severe emotional upheaval or sudden fright which would build up great anxiety; it can therefore be observed after serious accidents and injuries, particularly fires, railway derailments or collisions” (Kraepelin, 1896, translated by Jablensky, 1985, p. 737). The most salient point drawn from Kraepelin’s work is that the term traumatic neurosis emerged with the growing recognition of the emotional impact of highly stressful events (Figley, 1993).

Psychological Responses to War-Related Trauma

With the onset of the First World War in the early twentieth century, a large number of individuals were subjected to military trauma and war-related tragedies. During World War I (WWI), British military physicians used the term *shell shock* to denote the dazed, disoriented state many soldiers experienced during combat or shortly thereafter, and attributed the condition to unseen physiological damage caused by exploding artillery shells (Scott, 1990). However, physicians also noted similar symptoms among soldiers who had not been subjected to artillery barrages. Mott (1919) contended that while *shell shock* was derived from the belief that combatants' reactions were due to pathological changes in the nervous system caused by soldiers' proximity to exploding missiles, emotional shock was in fact the cause of the tremor, fatigue, headache, insomnia, extreme sensitivity to sudden noises or bright lights, terrifying dreams, inability to concentrate, and diminished libido he observed in a majority of so-called shell shock victims.

Also with the context of the Great War, Ernest Southard (1919) described the psychiatric morbidity of 529 WWI soldiers who suffered from "shell shock", and concluded that this condition was indeed of psychological origin. In one account, Southard described the reaction of a French corporeal who was buried after a shell hit his trench. He noted that the man's "pulse was variable; at rest it stood at 60. If a table nearby were struck suddenly, it would go up to 120" (p. 309). In another case study, a 28-year-old infantry sergeant reported that, "shell dropped on the dug-out and killed the other chaps. I have not slept properly since this. If I go to sleep, I wake up seeing people killed, shells dropping, and all kinds of horrid dreams about the war" (p. 446). Southard also noted the sergeant presented with a significant startle response, as he was observed to "jump at the least sound" (p. 446).

Given his observations during WWI, Myers (1940) concluded that “emotions of extreme horror or fear” (p. 36) precipitated the shell shock experienced by thousands of combat soldiers. Many of their symptoms, in addition to those that had previously been observed by Mott (1919), included irritability, emotional outbursts, depression, loss of appetite, sweating, and rapid pulse. For example, an officer who had been subjected to heavy fire “became abnormally irritable...was found to be very depressed, with loss of...appetite and sleep, and ...tremulous hands” (Myers, 1940, p. 48). Overall, it may be argued that it was the catastrophe of the First World War (1914) that forced the reality of psychological trauma upon the public consciousness irrespective of the nature or severity of the event that precipitated the trauma (Hermann, 1992).

Abram Kardiner (1941), a psychiatrist who treated American veterans of the First and Second World Wars, was the first individual to systematically define posttraumatic stress for U.S. audiences. Kardiner believed that the traumatic stress reactions he observed in combat veterans were no different from those exhibited by civilian survivors of natural disasters, and used the term “traumatic neurosis” to refer to the set of symptoms he recognized as common to all extreme stressors. According to Kardiner, traumatic neurosis was characterized by five “constant features,” regardless of the nature or severity of the event that precipitated its onset (1941, p. 86). These features included: a fixation on the trauma, redundant and persistent dreams about the trauma, hypersensitivity to sensory stimuli, aggressive or violent emotional outbursts, and impaired general functioning due to such symptoms of loss of interest in work, distractibility, tremors, and a restricted range of affect. He emphasized that such physiological arousal occurs not only to auditory stimuli, but also to temperature, pain, and sudden tactile stimuli as well. “These patients cannot stand being slapped in the back abruptly; they cannot tolerate a misstep or a stumble. From a physiologic point of view there exists a lowering of the

threshold of stimulation; from a psychological point of view a state of readiness for fright reactions” (p. 95).

Grinker and Spiegel (1945) published a prominent series of clinical case studies on thousands of U.S. Army Air Force personnel and found that the majority of soldiers’ exposed to combat stress exhibited symptoms of severe anxiety, sleep disturbance, difficulty concentrating, and vivid flashbacks. They identified operational fatigue as a set a symptoms they observed most frequently in combat soldiers “with nervous reactions” (Grinker & Spiegel, 1945, p. 212). These symptoms included irritability and aggressive behavior, sleeplessness, startle reaction, depression, difficulty concentrating, preoccupation with combat experiences, nightmares, and battle dreams.

In one case study performed by Grinker and Spiegel (1945), a 23-year-old fighter pilot who had “narrowly escaped death” (p. 85) on two occasions, once when his plane was caught in the explosion of his own bomb, and again when he nearly flew straight into the ridge of a mountain, was described as follows:

“He began to dread going on missions...He would lie awake at night, tense and anxious, and think about flying. He kept seeing the mountain suddenly flash in front of his field of vision. If he fell asleep, he dreamed about his plane had been disabled and was falling...During the day, when he was at leisure, it was impossible to relax. He stopped playing cards with his friends because he could not concentrate (Grinker & Spiegel, 1945, p. 86).

In *Men Under Stress*, Grinker and Spiegel (1945) further described the physical symptoms of soldiers in an acute posttraumatic state. These included, “flexor changes in posture, hyperkinesis, ‘violently propulsive gait,’ tremors at rest, mask-like faces, cognitive rigidity,

gastric distress, urinary incontinence, mutism, and a violent startle reflex” (Van der Kolk, Bessel, & Saporta, 1993, p. 217). They also drew attention to the similarity between many of these symptoms and those of diseases of the extrapyramidal motor system, which is responsible for the coordination of motor movement (Van der Kolk, Bessel, & Saporta, 1993).

Also within the context of WWII, numerous mental health practitioners documented the psychological impact of both air raids and forced evacuation, respectively, on children living in Europe at the time. The term “raid shock” (Burt, 1943; Mons, 1941) was used to describe the “great damage” (Mons, 1941, p. 625) observed in some children’s psychological functioning following their exposure to “even a single ‘harmless’ air raid” (Mons, 1941, p. 625). In a related study, Bodman (1941) examined 8,000 British school children ages 9 months to 13 years following their exposure to a severe air raid on the Children’s Hospital in Bristol, and documented “persistent signs of strain” (p. 486) that included nightmares, hypersensitivity to trauma-related stimuli (e.g., sirens, gas masks), nervousness, sleep disturbance, and enuresis. Likewise, Carey-Trefzer (1949) sought to determine the extent to which youth who attended a child guidance clinic in London during and shortly after the war suffered from nervous symptoms. Of the 212 children treated at the clinic, 55% exhibited general anxiety, 33% exhibited withdrawn behavior, 31% suffered from school difficulties, 30% engaged in more aggressive behavior, and 20% exhibited sleep disturbances that had been precipitated by wartime exposure.

In another study, Alcock (1941) documented “psychoneurotic disorders” (p. 121) and educational difficulties in 25% and 17% of cases, respectively, in a sample of 420 children who had been referred to a child guidance clinic in rural England for psychological investigation following their forced evacuation from London. Psychoneurotic disorders included anxiety,

depression, and general nervousness, while educational difficulties consisted primarily of the inability to concentrate. Similarly, Brander (1943) observed anxiety, “strong depressive reactions” (p.315), and night terrors in Finnish children following their forced evacuation from frontier zones during the Russo-Finnish War. One year after the war ended, Brander observed post-wartime exposure effects that included war-themed play and physiological reactivity to war-related stimuli. For instance, upon hearing sirens, children often “interrupted their play immediately, to return pale and trembling to their homes” (Brander, 1943, p. 319).

PTSD and the Diagnostic and Statistical Manual of Mental Disorders

A very large development in the chronology of PTSD occurred in 1952. At that time, the American Psychiatric Association’s (APA) Committee on Nomenclature and Statistics published the first edition of its physician's desk reference for psychiatrists, the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-I). Drawing on the work of Kardiner (1947) and other psychiatrists who served in the military during the Second World War, the DSM-I contained the entry "gross stress reaction", which was described as temporary and separated into those due to “civilian or combat catastrophe” (p. 40). More specifically, the diagnosis of gross stress reaction was designated to describe the “acute symptom response” (APA, 1952, p. 40) of an individual who has been exposed to “severe physical demands or extreme emotional stress, such as in combat or in civilian catastrophe (fire, earthquake, explosion, etc.)” (APA, 1952, p. 40). The editors said the reaction could occur among soldiers in combat, even among those who showed no previous history of mental problems. They distinguished this condition from neurosis or psychosis and described it as a temporary condition produced by extreme environmental stress. The reaction, they concluded, should disappear after individuals were removed from stressful situations.

This psychiatric category departed from relevant research on two points. Grinker and Spiegel (1945), who studied the reactions to combat by soldiers in the Second World War, had noted that many reactions did not occur on the battlefield but erupted afterwards. Their study, as well as the work of Kardiner, also revealed that symptoms could persist for months or even years. These observations suggested a need to recognize "delayed" and "chronic" components of gross stress reaction. Intended to serve only as a temporary diagnosis, gross stress reaction was to be replaced by a "more definitive diagnosis" (APA, 1952, p. 40) in cases where symptoms failed to recede when the situational stress diminished.

In 1965, the APA had begun work on the second edition of the Diagnostic and Statistical Manual (DSM-II) with the goal of modernizing the American psychiatric nomenclature and bringing it "into line" with the international system of classification (Scott, 1993, p. 33). The dominant view of war neurosis within the APA at the time was expressed in the writings of psychiatrist Peter Bourne, which culminated in his 1970 book, *Men, Stress, and Vietnam*. Bourne had served in Vietnam during 1965 and 1966 as a team member from the Walter Reed Army Institute of Research where he studied psychiatric casualties among United States troops (Scott, 1993).

During both the Second World War and Korean War, military leaders considered war neurosis a significant problem and they fretted that similar rates of depletion would occur in Vietnam (Scott, 1993). However, less than five percent of the total evacuations out of Vietnam between 1965 and 1967 were for psychiatric reasons. By comparison, Bourne noted, the flow of soldiers out of the Army on psychiatric grounds during the Second World War at one point exceeded the numbers of new recruits being inducted (Scott, 1993). During early phases of the Korean War, psychiatric casualties accounted for nearly one-fourth of all evacuations from the

battlefield. In Vietnam, business was so slow that Bourne (1970, pp. vii-viii) "elected to spend part of [his] time investigating areas quite removed from combat itself." Bourne attributed the lower rates of emotional breakdown in Vietnam to two factors: the evolution of empirically grounded conceptions of war neurosis, and the implementation by the military of treatment techniques in the combat zone.

In the early 1960's, American, German, Israeli, and Norwegian researchers studied the impact of chronic stress to which WWII concentration camp survivors had been exposed (Kinston & Rosser, 1974). Alternately dubbed "concentration camp syndrome," "post-KZ syndrome," and "survivor syndrome," commonly observed symptoms included anxiety, nightmares, insomnia, excessive startle response, loss of concentration, and chronic depression with guilt and isolation (Kinston & Rosser, 1974). Eitinger (1962), who interviewed 100 Norwegian survivors of the Nazi concentration camps, showed difficulty adapting to normal life, even after as many as twelve-years after the war. More specifically, he found that 85 of the 100 "presented with chronic fatigue, reduced concentration, and increased irritability" (Saigh, 1992). Furthermore, most of these cases "experienced painful associations that could occur in any connection whatsoever, from seeing a person stretching his arms and associating this with his fellow prisoners hung up by their arms under torture, to seeing an avenue of trees and visualizing long rows of gallows with swinging corpses" (as cited by Saigh, 1999, p. 3).

Other researchers during this period documented the effects of stress on disaster survivors. Leopold and Dillon (1963) examined seamen who survived the collision and subsequent explosion of the Mission San Francisco gasoline tanker and Elma II freighter in the Delaware River in March of 1957. They assessed the psychological effects of the disaster both immediately following the collision and again four years later and were struck by "the almost

monotonous similarity of the psychological patterns” (p. 919) they observed at the latter point in time. Of the 34 men examined at the time, an overwhelming majority reported mood, sleep, and affect disturbances that included restlessness, depression, phobic reactions, feelings of isolation, and hostility toward others. Leopold and Dillon (1963) further reported that a majority of collision survivors that subsequently resumed their work following the disaster suffered disabling psychiatric symptoms that subsequently resulted in their leaving their jobs or working reduced hours. For years following the explosion, those who continued to work reported feeling anxious, nervous, and fearful at sea.

Modlin (1967) coined the term “postaccident anxiety syndrome” to describe the state of chronic anxiety he observed in patients referred for psychiatric evaluation following their experience of “frightening and potentially life-threatening” (p. 1009) accidents, including car collisions and work-site explosions. Symptoms of this syndrome included anxiety, restlessness, fatigability, insomnia, hypersensitivity to noise and commotion, impaired concentration and memory, repetitive nightmares in which the patient re-experienced the accident, sexual inhibition, and social withdrawal.

The APA published the DSM-II in 1968, which now included previously unspecified disorders and omitted several that had appeared in DSM-I (Scott, 1993). One of the dropouts was “gross stress reaction”. In lieu of the former classification, the diagnosis of “transient situational disturbance” was introduced and denoted “transient disorders of any severity (including those of psychotic proportions) that occur in individuals without any underlying mental disorders and that represent an acute reaction to overwhelming environmental stress” (APA, 1968; p. 48). However, the transient situational disturbance classification did not include operational criteria for formulating a psychiatric diagnosis (Saigh & Bremner, 1999).

Posttraumatic stress reactions were also described as being temporary or short-lived in the DSM-II. Assigned to the category of transient situational disturbances, “acute reaction[s] to overwhelming environmental stress” (APA, 1968, p. 49) occurring in “individuals without any apparent underlying mental disorders” (APA, 1968, p. 49) were indicated by the diagnosis of *adjustment reaction*. If symptoms persisted after the stress was removed, this diagnosis was to be replaced by one of a more permanent nature. Whereas both the DSM-I and DSM-II recognized that exposure to extreme stress may induce significant psychological distress, neither of these first two editions specified operational criteria to be used in diagnosing posttraumatic stress reactions (Saigh & Bremner, 1999).

Shortly after the introduction of the DSM-II, Burgess and Holmstrom (1974) published an influential paper on the “rape trauma syndrome.” Though this was not an example of war or a natural disaster, it rather described the effects of an individual human crime perpetrated upon another. The authors found that in the acute phase, there was general physical soreness from the attack, tension headache, sleep disturbance, genitourinary disturbances, fear, anger and guilt. The long-term phase was associated with rape-related nightmares, avoidance, fear and sexual dysfunction (Saigh, 1992). Thus, it can be argued that there is evidence for the symptom relationship between rape trauma syndrome and the DSM-II equivalent of transient situational disorder.

In 1976, Titchener and Kapp interviewed survivors of the 1972 Buffalo Creek disaster to assess the psychological effects stemming from the collapse of an enormous dam that flooded the Buffalo Creek Valley in southern West Virginia. A traumatic neurotic syndrome was diagnosed in 80% of the survivors. Specifically, Titchener and Kapp (1976) observed “disabling psychiatric symptoms” (p. 296) in an overwhelming majority of survivors that included

emotional outbursts, emotional numbness, loss of interest in former hobbies and sports, hallucinations and delusions, severe sleep disturbances and nightmares, haunting visual memories of blackened bodies and body parts, reenactments of the trauma, a sense of isolation, and feelings of alienation. These symptoms were evident up to two years after the disaster.

PTSD and the DSM-III, DSM-III-R, and the DSM-IV

The term Posttraumatic Stress Disorder (PTSD) was officially introduced in the DSM-III (APA, 1980). According to this system of classification, PTSD was indicated by the “development of characteristic symptoms following a psychiatrically traumatic event that is generally beyond the realm of normal human experience” (APA, 1980, p. 236). The inclusion of PTSD in the DSM-III arose from the consensus that the nature and intensity of the stressor was the primary etiologic factor determining the symptoms that people develop in the setting of extreme adversity (McFarlane, 1989). Unlike its predecessors, the DSM-III provided specific criteria for stressors responsible for the diagnosis. The essential feature of PTSD was described as “the development of characteristic symptoms following a psychologically traumatic event that is generally outside the range of normal human experience” (APA, 1980, p. 236). The DSM-III indicated that the “stressor producing this syndrome would evoke significant symptoms of distress in most people and is generally outside the range of such common experiences as simple bereavement, chronic illness, business losses, or marital conflict” (APA, 1980, p. 236). The adoption of this perspective thereby acknowledged that divergent stressors (e.g., sexual assault, war-related events, serious accidents, or disasters) could induce comparable patterns of psychiatric morbidity (Saigh & Bremner, 1999). In addition, two subtypes of PTSD were recognized: acute and delayed onset.

Following the formal acknowledgment of PTSD in the DSM-III, researchers and clinicians documented the disorder in youth victims of war, accidents, and terrorist attacks. For example, Saigh (1987b, 1988, and 1989a) determined that Lebanese children and adolescents developed PTSD following their ongoing exposure to civil war-related attacks and explosions. Within the context of the Cambodian genocide, Kinzie and colleagues (1986) initiated a longitudinal study involving a community of Cambodian adolescents who had emigrated to the United States after being severely traumatized as children in the Pol Pot concentration camps. The authors reported that half of their sample met DSM-III PTSD criteria. PTSD was also diagnosed in young victims of terrorist attacks. For example, Pynoos and colleagues (1987) determined that a majority of survivors of a schoolyard sniper attack met DSM-III diagnostic criteria for PTSD. More specifically, researchers in this study investigated startle responses in seven childhood PTSD cases and six non-clinical controls. The results clearly indicated that the PTSD cases experienced a “significant loss of normal inhibitory modulation of startle response.” The authors proposed that the traumatic experiences the subjects had encountered (i.e., a school shooting incident) induced a long-term brainstem dysfunction. Similarly Schwarz and Kowalski (1991) documented PTSD in elementary school students who had witnessed a school shooting. Within the context of accident research, Stoddard, Norman, and Murphy (1989) investigated children and adolescents who had been admitted to pediatric burn center for reconstructive surgery after suffering severe burns. The authors determined that a significant proportion of their participants met DSM-III criteria for PTSD.

A number of treatment studies have demonstrated the efficacy of *in vitro* flooding in the treatment of PTSD, as diagnosed according to DSM-III criteria. For instance, Saigh (1987b)

described the successful treatment of a 14-year-old Lebanese boy who had been abducted and tortured by a Lebanese militia. Six months after the abduction, the boy met criteria for PTSD as measured by the DSM-III version of the Children's PTSD Inventory (Saigh, 1989b). Following a course of prolonged exposure therapy, the boy reported clinically significant reductions in distress relative to trauma-specific scenes that he was asked to imagine. Clinically significant reductions in distress were also apparent on standardized measures of anxiety and depression at posttreatment and follow-up.

DSM-III-R. Revisions of the DSM-III began in 1983 and the *Diagnostic and Statistical Manual of Mental Disorders, Third Edition Revised* (DSM-III-R) was published in 1987. Like the DSM-III, the revised version also indicated that PTSD might occur after a “psychologically distressing event that is outside the range of normal human experience” (APA, 1987, p. 247) (Criterion A). However, the DSM-III-R offered information relative to the development of PTSD and unique expression of symptoms by stress exposed children and adolescents. Newly introduced, age-specific features of PTSD included repetitive play reflecting aspects of the trauma, generalized nightmares, and a sense of a foreshortened future in young children. Also new to this edition of the DSM were symptoms of active and “persistent avoidance of stimuli associated with the trauma” (APA, 1987, p. 247).

With regard to DSM-III-R PTSD epidemiology research, Breslau and colleagues (1991) found that 11.3% of female and 6% of male young adult participants had a lifetime history of PTSD. Resnick, Kilpatrick, Dansky, Saunders, and Best (1993) found that 12.3% of respondents of a national telephone survey of women had a lifetime history of PTSD. In a similar vein, Kessler, Sonnega, Bromet, Hughes, and Nelson (1995) surveyed approximately 6,000 Americans between the ages of 15 and 54 and found that the lifetime prevalence of PTSD

in the total sample was 7.8%. With specific reference to youth, Giaconia and colleagues (1995) conducted a community survey of 384 adolescents aged 15 to 18 years. They determined that 15.5% of the traumatized adolescents and 6.3% of the overall sample met diagnostic criteria for DSM-III-R PTSD. In addition, youth with PTSD reported more internalizing, externalizing, interpersonal problems, and had higher rates of comorbid disorders relative to traumatized youth without PTSD and non-traumatized controls.

In a fourteen-year follow-up of Titchener and Kapp's (1976) Buffalo Creek study, Green and colleagues (1990) assessed the psychiatric morbidity of 120 adult survivors of the Buffalo Creek flood. These researchers found that thirty four (28.3%) individuals met the criteria of a current PTSD diagnosis despite the large time interval between. Furthermore, the researchers determined that had a formal DSM-III-R PTSD diagnosis been made in 1974, 53 (44.25%) of the total assessed in their sample would have met criteria for PTSD (Saigh, 1992).

Case-control investigations provide further information regarding the expression of *DSM-III-R* PTSD amongst individuals on various measures of functioning. For example, McLeer, Deblinger, Atkins, Foa, and Ralphe (1988) found that sexually abused children who met DSM-III-R criteria for PTSD exhibited significantly more externalizing and internalizing behaviors on the CBCL compared to sexually abused children without PTSD. Using DSM-III diagnostic criteria, other researchers documented PTSD in young victims of physical abuse (Deblinger, McLeer, Atkins, Ralphe, & Foa, 1989; Pelcovitz et al., 1994).

With regard to treatment studies in youth with PTSD, Deblinger, McLeer, and Henry (1990) administered a 12-session CBT treatment to 19 sexually abused females diagnosed with *DSM-III-R* PTSD. Pre- and post-treatment assessments of PTSD symptoms revealed significant improvements across all PTSD subcategories (i.e., reexperiencing phenomena, avoidance

behaviors, and arousal symptoms) to the extent that none of the girls continued to meet DSM-III-R criteria for PTSD. In addition, the authors indicated that the participants reported significantly lower levels of state and trait anxiety, depressive symptoms, and internalizing and externalizing behaviors post-treatment.

DSM-IV. Following the publication of the DSM-III-R, The APA subsequently initiated a programmatic series of efforts toward the development of the fourth edition of the DSM in 1988 (Saigh & Bremner, 1999). Revisions were driven by the findings of an APA-sponsored workgroup on PTSD, which was comprised of leading researchers in the field. The workgroup identified a number of key questions concerning the diagnosis of PTSD. These included questions regarding the course, duration, and subtypes of PTSD, as well as the nature of the stressor criteria (Criterion A). Other issues addressed included the manifestation of PTSD symptoms in different victim groups, risk factors and community prevalence, the neurobiology of PTSD, and the classification of PTSD and its relation to simple phobia, dissociative disorders, and anxiety (Davidson & Foa, 1993; Saigh & Bremner, 1999). Notably, children below the age of 15 years were not included in the PTSD field trials (Kilpatrick & Resnick, 1993).

The diagnostic criteria for PTSD in the DSM-IV (APA, 1994) emerged from an extensive review of the literature, case-control studies, and clinical and community-based field trials sponsored by the National Institute of Mental Health. Central to the changes reflected in the DSM-IV PTSD criteria was the withdrawal of the Criterion A provision that the precipitating trauma be “outside the range of normal human experience” (APA, 1987, p. 247). Criterion A was revised to redefine exposure to a traumatic event as an incident in which 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 to oneself or others” (APA,

1994, p. 428). Criterion A was further revised to require that the person's response to the event involve “intense fear, helplessness, or horror (or in children, the response must involve disorganized or agitated behavior)” (Criterion A2) (APA, 1994, p. 428). Unlike previous versions, the DSM-IV added a new stipulation (Criterion E) that requires the duration of the symptoms listed under Criteria B, C, and D to be apparent for at least one month (Saigh & Bremner, 1999). Also, the DSM-IV included an additional diagnostic indicator (Criterion F) specifying that “the disturbance causes clinically significant stress or impairment” (APA, 1994, p. 468) in important areas of functioning, such as school, work, or social relationships (Saigh, Green, & Korol, 1996). The DSM-IV criteria for PTSD are presented in Table 1.

Since the publication of the DSM-IV, a number of epidemiological, empirical, and treatment studies have been conducted in youth. For example, Cuffe and his colleagues (1998) assessed the prevalence of PTSD using DSM-IV diagnostic criteria amongst a sample of 490 older adolescents ages 16 to 22 years. Based on participant responses to the Present Episode version of the Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS; Chambers et al., 1985), results indicated that the PTSD point prevalence rate amongst traumatized individuals was 12.4%. The overall current PTSD prevalence estimate in the total sample was 1.9%. Using a case-control methodology, Saigh, Yasik, Oberfield, Halamandaris, and Bremner (2006) reported that youth who met DSM-IV criteria for a diagnosis of PTSD as based on responses to the Children’s PTSD Inventory (CPTSDI; Saigh, 2003a) had significantly lower WISC-III (Wechsler, 1991) verbal scores relative to traumatized youth without PTSD and non-traumatized controls. Saigh et al. (2006) also found that there were no significant differences between the WISC-III verbal scores of the traumatized youth without PTSD and their non-clinical counterparts. Non-significant differences between groups were evident across

WISC-III performance measures.

Furthermore, several studies have described effective interventions for children and adolescents with PTSD as indicated by DSM-IV diagnoses. Of these, March, Amaya-Jackson, Murray, and Schulte (1998) tested the efficacy of a group-administered cognitive behavioral psychotherapy (CBT) protocol for child and adolescents diagnosed with PTSD based on a DSM-IV structured clinical interview (i.e., CAPS-CA; Newman et al., 2004). Results indicated that eight out of the 14 (57%) adolescents who completed the 18-week treatment no longer met DSM-IV criteria for PTSD immediately after treatment. In addition, 12 (86%) of 14 were free of PTSD at six-month follow-up.

In an investigation of war-traumatized youth, Geltman and colleagues (2005) reported that nearly one-fifth of their sample of young Sudanese refugees who emigrated to the United States after surviving a brutal civil war in their native country met DSM-IV diagnostic criteria for PTSD. Also using DSM-IV diagnostic criteria, a number of researchers have diagnosed PTSD in young survivors of earthquakes (Hsu, Chong, Yan, & Yen, 2002; Roussos et al., 2005) and hurricanes (Goenjian et al., 2001).

In recent years, DSM-IV-based PTSD diagnoses have been made in children who were hospitalized for injuries sustained in automobile accidents (Keppel-Benson, Ollendick & Benson, 2002; Stallard, Velleman & Baldwin, 1999; Zink & McCain, 2003). Using DSM-IV diagnostic criteria, researchers have also documented PTSD in seriously ill children and adolescents who have undergone radical medical procedures, such as organ transplants (Mintzer et al., 2005; Shemest et al., 2000), heart surgery (Connolly, McClowry, Hayman, Mahony & Artman, 2004), and pediatric cancer treatment (Butler, Rizzi, & Handwerker, 1996). Finally, a number of researchers have recently conducted studies involving young victims of terrorist attacks.

More specifically, several investigators examined the prevalence of probable PTSD¹ within the New York City (NYC) metropolitan area in the months following the terrorist attacks of September 11, 2001. Hoven et al. (2005) used group administrations of the *Diagnostic Interview Schedule for Children Predictive Scales* (Lucas et al., 2001) to evaluate 8,236 randomly selected NYC public school students in grades four through 12. These authors reported that 10.6% of the sample met criteria for a probable PTSD diagnosis six months after the WTC attacks. More recently, Saigh, Yasik, Mitchel, and Abright (2009) compared scores on the *Preschool Trauma Questionnaire* (Saigh, 2001) of a sample of NYC preschool children who were within a mile of the World Trade Center and directly exposed to potentially life threatening events to preschool children who were one to ten miles away and not directly exposed to life threatening events. While the number of traumatic experiences was moderately correlated with the number of PTSD symptoms, none of the trauma exposed children evidenced sufficient symptoms to warrant a probable PTSD diagnosis. Moreover, the mean number of PTSD symptoms reported for the trauma exposed group was not significantly greater than the mean number of symptoms reported for the children who were one to ten miles from the WTC and not exposed to traumatic events.

PSTD and the DSM-IV-TR

Currently, the diagnosis of PTSD is found among the anxiety disorders in the Text Revision of the DSM-IV (DSM-IV-TR; APA, 2000). The goals of the text revision included correcting any factual errors that were identified in the DSM-IV text, ensuring that all of the information in the DSM-IV was still up-to-date, and reflecting new information available since

¹ The term probable PTSD was used instead of PTSD as all of the post September 11, 2001 investigations that were reviewed did not identify PTSD cases through the use of face-to-face individually administered tests with items that correspond to all of the DSM-IV PTSD diagnostic criteria (APA, 1994).

the DSM-IV literature reviews were completed in 1992. In addition, the APA wanted to make improvements that would enhance the educational value of the DSM-IV and to update the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes. Most of the changes from the DSM-IV to the DSM-IV-TR pertain to the Associated Features and Disorders; Specific Culture, Age, and Gender Features; Prevalence, Course; and Familial Pattern section of the text (APA, 2000). For a number of disorders, the Differential Diagnosis section also was expanded to provide more comprehensive differentials. Given that there were no changes to the PTSD section for the DSM-IV-TR, the DSM-IV-based definition of PTSD will be used and referenced in the present study.

Chapter Summary

Experiencing trauma seems to be an essential part of being human. For centuries, clinicians, researchers, and civilians have chronicled the enduring physical and psychological symptoms that develop in some individuals following their exposure to extremely stressful incidents. Beginning in the 1900's, a growing interest in child psychiatry led mental health practitioners to make reference to posttraumatic psychiatric morbidity in stress-exposed youth as well as adults. Although identified by a host of terms prior to 1980, the same set of symptoms has characterized responses to various types of trauma throughout history. These symptoms include irritability, emotional instability, intrusive recollections of the trauma, sleep disturbance, and general impaired functioning. PTSD was first formally recognized as a clinical disorder in the DSM-III in 1980. However, it was not until the DSM-III-R was published in 1987 that the diagnostic criteria for PTSD made specific reference to the expression of the disorder in children and adolescents. Extensive, empirically driven revisions were made to the PTSD classification prior to the publication of the DSM-IV in 1994. However, the clinical and community-based

field trials that culminated in the DSM-IV PTSD diagnostic criteria did not involve youth below the age of 15 years. Thus, empirically based information regarding the expression of PTSD among children and adolescents is needed to further inform theory and practice.

Table 1

DSM-IV Diagnostic Criteria for Posttraumatic Stress Disorder (309.81)

A. The person has been exposed to a traumatic event in which both of the following were present:

1. the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others.
2. the person's response involved intense fear, helplessness, or horror. **Note:** In children, this may be expressed instead by disorganized or agitated behavior.

B. The traumatic event is reexperienced in at least two 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 young 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. physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.

C. Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) 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.
7. sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)

Table 1

DSM-IV Diagnostic Criteria for Posttraumatic Stress Disorder (309.81) (continued)

D. Persistent symptoms of increased arousal (not present before the trauma), as indicated by at least two of the following:

1. difficulty falling or staying asleep.
2. irritability or outbursts of anger.
3. difficulty concentrating.
4. hypervigilance.
5. exaggerated startle response.

E. Duration of the disturbance (symptoms in Criteria B, C, and D) is more than one month.

F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Specify if:

Acute: if duration of symptoms is less than 3 months

Chronic: if duration of symptoms is 3 months or more

Specify if:

With Delayed Onset: if onset of symptoms is at least 6 months after the stressor

Note. From the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (pp. 428), by the American Psychiatric Association, Washington, D.C.; American Psychiatric Association. Copyright 1994 by the American Psychiatric Association. Reprinted with permission.

Chapter II

CHILD AND ADOLESCENT POSTTRAUMATIC STRESS DISORDER:

EPIDEMIOLOGY, COMORBIDITY, AND RISK FACTORS

Epidemiology refers to the “study of health and morbidity in human populations” (Saigh, Yasik, Sack, & Koplewicz, 1999, p. 18), focusing specifically on how, when, and where these problems occurs. In general, epidemiological reviews examine the prevalence—or the total number of cases—of a disorder or disease within groups of people at a given time, as well as the concomitant association between two or more disorders. Such reviews also typically discuss key risk factors for the development of a disorder. The current chapter examines the epidemiology of posttraumatic stress disorder (PTSD) with respect to diverse populations of children and adolescents. To achieve this, information regarding the frequency of trauma exposure among youth in the United States is introduced, followed by a description of community-based surveys examining the prevalence of PTSD among children and adolescents. Additionally, clinical studies involving youth who were exposed to war-related events, criminal victimization, serious accidents, and natural disasters are presented. The remainder of the chapter highlights the point prevalence of comorbid psychiatric disorders commonly observed among youth with PTSD, and discusses several risk factors associated with the disorder.

In preparing this review, literature searches were conducted using the electronic databases PsycINFO, Psych Articles, PubMed, MedLine, and PILOTS, covering both U.S. and international studies assessing the epidemiology of PTSD after individual traumatic stressors. The search criteria included the use of the primary descriptors of “posttraumatic stress disorder” or “PTSD” and “child or adolescent” or “youth,” and separate secondary descriptors of “criminal victimization,” “war,” “natural disasters,” “accidental trauma,” and “motor vehicle accidents” in

order to identify articles involving youth ages 2 to 20 years presenting with PTSD. Articles were also retrieved from previously written chapters regarding the epidemiology of child-adolescent PTSD by Brewin, Andrews, and Valentine, 2000, and Saigh, Yasik, Sack, and Koplewicz (1999) that were not included in this literature review.

General Population Studies

More than two-thirds of persons in the general population may experience a significant traumatic event at some point in their lives, and up to one fifth of people in the United States may experience such an event in any given year (Norris, 1992; Breslau, Davis, Andreski, and Peterson, 1991; Resnick et al., 1993; Kessler et al., 1995; Breslau et al., 1998). In 2005, the American Red Cross reported that their representatives responded to 72,883 disasters across the country and noted that fire victims accounted for 92% of the disasters populations that they served. In regard to motor vehicle accidents, the New York State Department of Motor Vehicles reported that in 2006, 10.3% of motor vehicle accident victims were children age 17 and under. In total, 7,867 children aged 17 and under were killed or seriously injured in car accidents that year. Finally, the United States Bureau of Justice (2007) reported in the 2004 *National Crime Victimization Survey* that 24 million United States residents, ages 12 and older, were victims of violent and/or property crimes. Higher rates of victimization were reported for adolescents aged 12 to 19 years than for adults. Males were reported to be more likely to be victims of violent crimes than females; however, females were indicated to be more likely to report having been the victims of rape.

As was seen in the previous chapter, exposure to traumatic events can lead to the development of varying rates of PTSD in adults. According to the DSM-IV (APA, 1994), the prevalence of PTSD ranges from 1% to 14% in the population at large. The updated DSM-IV-TR

(APA, 2000) stipulated an 8% lifetime prevalence estimate amongst the general adult population in the United States. However, neither version of the *Diagnostic and Statistical Manual of Mental Disorders* has specified PTSD prevalence rates with regard to youth populations or people living outside the United States. Both the DSM-IV and DSM-IV-TR provide varying prevalence estimates for groups who may be at increased risk for the development of PTSD (i.e., “survivors of rape, military combat and captivity, and ethnically or politically motivated internment or genocide,” APA, 2000, p. 466). Among studies assessing PTSD in adults, Resnick et al. (1993) reported a lifetime prevalence rate of PTSD of 12.3% in a telephone survey of a US national probability household sample of adult women. Breslau and colleagues (1991) in a sample of young adults found that 11.3% of women and 6% of men had a lifetime history of PTSD. Additionally, little is known about the risk for posttraumatic stress disorder across different types of trauma exposure in children (Copeland, Keeler, Angold, & Costello, 2007). Given this background, the present chapter considers information about rates of exposure to various traumatic events, community-based estimates of PTSD, clinically derived estimates of PTSD, comorbidity, and risk factors that may contribute to the development of the disorder in children and adolescents.

Prevalence of Exposure to Traumatic Events in Youth Populations

Traumatic events are common and are related to psychiatric impairment in childhood. While many studies have assessed PTSD in children following specific stressors, very few community-based studies have assessed child and adolescent exposure to a full range of potentially traumatic events (Copeland et al., 2007). Copeland and colleagues (2007) examined the developmental epidemiology of potential trauma and posttraumatic stress (PTS) in a longitudinal community sample of 1420 children age 9, 11, and 13 years. Traumatic events,

PTS, risk factors and DSM-IV disorders were assessed from child and parent reports on the Child and Adolescent Psychiatric Assessment (Angold & Costello, 2000) annually to 16 years of age. Results indicated that more than two-thirds of children reported at least one traumatic event by 16 years of age, with 13.4% of those children developing some PTS symptoms. The most common traumatic events reported were witnessing or learning about a traumatic event. Few PTS symptoms or psychiatric disorders were observed for individuals experiencing their first event, and any effects were short-lived. Violent or sexual trauma was associated with the highest rates of symptoms.

Given the paucity of community-based studies examining the prevalence of PTSD among children and adolescents (Giaconia et al., 1995), an increased effort has been put forth toward investigating prevalence estimates, in both large epidemiological studies as well as government surveys, following youth exposure to specific types of traumas. For example, Finkelhor, Ormrod, Turner, and Hamby (2005) used the *Developmental Victimization Survey* (DVS; Finkelhor et al., 2005) to examine exposure to 34 forms of victimization experiences in a nationally representative sample of 2,030 children and youth ages 2 to 17 years. In addition to exposure to various acts of criminal victimization, the DVS assessed exposure to assaults by peers and siblings, nonsexual assaults to genitals, dating violence, bias and hate crimes, and property thefts. Findings showed widespread exposure to victimization incidents, with 71% exposed to one or more victimization incidents in the past year. According to further endorsements made to the Juvenile Victimization Questionnaire (JVQ; Finkelhor et al., 2005), nearly 70% of victimized children experienced multiple exposures, with an average of three different kinds of victimization reported.

Similarly, the *National Survey of Adolescents* (NSA; Kilpatrick & Saunders, 1997), a

telephone survey of a nationally representative sample of 4,023 American youth between the ages of 12 and 17, estimated that 17.4% had experienced a serious physical assault and 8.1% a sexual assault; 39.4% had witnessed one or more incidents of serious interpersonal violence. In the *National Comorbidity Survey* (NCS), Kessler and colleagues (1995) reported that 60.7% of American males and 51.2% of females aged 15 to 24 reported exposures to one or more traumatic events. Breslau and colleagues' (2004) epidemiological study of a cohort of urban youth in a large U.S. city found that by the age of 23 years, the lifetime occurrence of exposure to any trauma was 82.5%, with males (87.2%) more likely to be exposed than females (78.4%). Bell and Jenkins (1993) conducted a survey of 1,011 students from four high schools and two middle schools in Chicago. Youth reported experiencing events such as: being shot at (10.9%), threatened with a knife (22.7%) or a gun (17%), stabbed (4.3%), shot (3.2%), and being sexually assaulted (2.5%). Many also reported having witnessed a stabbing (34.6%), shooting (39.4%), or killing (25.3%).

Community-Based Surveys Examining Child-Adolescent PTSD Prevalence Rates

Given that the rates of child and adolescent exposure to traumatic events is high, it is important to recognize that youth who experience such extreme stress may be at risk for developing PTSD. Many community-based studies have also reported child-adolescent prevalence rates of PTSD following exposure to a variety of traumatic events. In a longitudinal study examining PTSD prevalence rates at ages 9, 15, and 18 in a community-based sample of 382 adolescents, Giaconia et al. (1995) found that 43% of the participants experienced at least one traumatic event by age 18 (as based on *DSM-III-R* traumatic event criteria). Based on administrations of the National Institute of Mental Health *Diagnostic Interview Schedule* (DIS-III-R; Robins et al., 1989), the authors indicated that 14.5% of the stress-exposed adolescents

met criteria for a lifetime diagnosis of PTSD, which comprised 6.3% of the total sample. Results further revealed higher PTSD prevalence rates for rape (50.0%) relative to physical assault (12.0%) and natural disaster (0.0%).

In another community study, Perkonigg, Kessler, Storz, and Wittchen (2000) assessed lifetime and 12-month prevalence of traumatic events and *DSM-IV* PTSD, as well as risk factors and comorbidity patterns, in a representative community sample ($N = 3021$, aged 14 to 24 years). Traumatic events and PTSD were assessed with the Munich Composite International Diagnostic Interview (M-CIDI; Wittchen & Pfister, 1997). In total, 21.4% of the respondents reported having experienced at least one A1 event at some time in their life. However, only 17% of the total sample also qualified for the A2 entry criterion for *DSM-IV* PTSD, qualifying traumatic events by acknowledging that experiencing these events also caused horror and anxiety. Among these, 7.8% met all of the diagnostic criteria for PTSD, resulting in a lifetime prevalence of 1.3%.

Kilpatrick et al. (2003) documented the prevalence of PTSD in a nationally representative probability sample of 3,161 participants ranging in age from 12 to 17 years. The authors reported that 4.8% of the overall sample met *DSM-IV* (APA, 1994) criteria for PTSD, as based on the results of telephone administrations of a modified version of the National Women's Study (NWS) PTSD Module (Kilpatrick, Resnick, Saunders, & Best, 1989). Furthermore, when controlling for the presence of comorbid disorders, such as a Major Depressive Episode (MDE) and substance abuse disorder, only 1.4% ($n = 55$) met diagnostic criteria for PTSD only. More recently, Breslau, Lucia, and Alvarado (2006) conducted a longitudinal study of 713 youth of divergent socioeconomic backgrounds. The authors administered the DIS-III-R (Robins et al., 1989) to study participants at ages six, eleven, and seventeen, respectively. Results indicated a

lifetime prevalence of 75.9% for trauma exposure in the sample. Rates of exposure adverse (traumatic) events were significantly higher for youth living in urban areas (86.0%) relative to suburban (65.3%) settings. Further, males reported exposure to significantly more traumatic events than females (79.2% versus 72.9%, respectively). Lifetime PTSD prevalence was 8.3% for the entire sample.

Finally, Storr, Ialongo, Anthony, and Breslau (2007) longitudinally assessed exposure to traumatic events and PTSD prevalence amongst an urban sample of youth. In the initial phase of their study, 2,311 first graders from 19 public schools within the same district were administered the PTSD module of the Composite International Diagnostic Interview (CIDI; World Health Organization, 1997). Follow-up evaluations occurring fifteen years later with 1,698 young adults (794 males, 904 females; mean age = 21) from the original sample indicated a lifetime PTSD prevalence rate of 8.8%. Furthermore, the lifetime prevalence of exposure to a DSM-IV (APA, 1994) qualifying traumatic event within the sample was 82.5%. Here, traumatic events were categorized into two categories: assaultive violence (e.g., rape, sexual assault other than rape, and badly beaten) and non-assaultive violence (e.g., serious motor vehicle accident, natural disaster, and life threatening illness). Results indicated 47.2% of participants experiencing one or more traumatic events involving assaultive violence, and 91% of individuals experiencing assaultive violence also experienced at least one non-assaultive traumatic stressor as well.

When taken together, the community based surveys reveal prevalence rates for child-adolescent exposure to traumatic events that ranged from 21.4% to 82.5%. Lifetime PTSD prevalence rates for the entire samples ranged from 1.3% to 8.8%. Given the outcomes of the community based surveys and government statistics that were considered, it may be said that children and adolescents in the United States are at a high risk for being exposed to traumatic

events. It is also important to note that exposure to one traumatic event is a risk factor for subsequent exposures (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995) and individuals who experience the types of events discussed thus far may develop PTSD.

Empirical Studies by Stressor Type

Many studies have utilized clinical samples to determine the prevalence rates of PTSD following various, specific types of trauma exposure. Much of the recent work in this area has focused on child-adolescent PTSD prevalence rates following war-related traumas, criminal victimizations (i.e., shooting, physical assault, sexual assault), natural disasters and serious accidents. PTSD prevalence rates for these categories are considered in the following sections.

War-Related Studies of Child-Adolescent PTSD. Recent studies of child and adolescent psychopathology following war-related traumatic experiences, such as terrorist attacks, air strikes, genocide, and the long journeys of refugees, have yielded important information regarding the epidemiology of PTSD. Many current studies have examined prevalence rates of PTSD for youth exposed to violence in the Middle East (e.g., Almqvist & Broberg, 1999; Ahmad, Sofi, Sundelin-Wahlsten, & von Knorring, 2000; Saigh, Mroueh, & Bremner, 1997) while others considered similar populations in Southeast Asia and Africa (e.g., Bayer, Klasen, & Adam, 2007; Sack, et al., 1994; Schaal & Elbert, 2006).

Middle Eastern Studies. During a brutal war in Lebanon (1975-1991), the country's political, social, and economic systems were shattered as Lebanese people were exposed to periodic and often unpredictable outbursts of violence, including air raids, street combat, shelling of neighborhoods, and displacement of entire communities. In view of this, Saigh and his colleagues (1988, 1989a, 1989b) led several investigations involving Lebanese adolescents and children affected by the conflict. Saigh (1988) administered a structured clinical interview based

on *DSM-III* criteria to 11 war-traumatized Lebanese students enrolled at the American University of Beirut. He observed that nine (81.8%) of the students noted symptoms that would have warranted an acute PTSD diagnosis 316 days after trauma exposure, and one individual (9%) presented with sufficient symptoms to warrant a PTSD diagnosis. The following year, Saigh (1989a) administered the Children's PTSD Inventory (CPTSDI; Saigh, 1989b) to 92 Lebanese adolescents exposed to similar war-related trauma. Assessment results indicated that 27 (29.3%) of adolescents presented with symptoms warranting a diagnosis of PTSD. Similarly, using the CPSTDI, Saigh (1989b) observed a PTSD point prevalence of 32.5% in a sample of 840 pre-adolescent Lebanese youth.

In a later study, Saigh, Mroueh, and Bremner (1997) administered the *DSM-III* (APA, 1980) version of the Children's Posttraumatic Stress Disorder Inventory (CPTSDI; Saigh, 1989) to 95 non-referred Lebanese students enrolled in six English-speaking Lebanese secondary schools. The authors reported that highly stressful incidents (e.g., bombings, terrorist attacks, artillery fire) had been taking place on a regular basis when the data was collected. Saigh and his colleagues observed that 14 (46.7%) of these stress-exposed adolescents met *DSM-III* criteria for PTSD, representing 14.7% of the entire subject pool.

Similarly, Almqvist and Broberg (1999) examined the psychological adjustment of 50 Iranian refugees (36 boys and 14 girls) aged 4 to 8 years who had resettled in Sweden with their families. The examiners administered author-derived semi-structured clinical interview based on *DSM-IV* (APA, 1994) PTSD criteria to each child and a parent three and a half years after having left Iran. The authors reported that the participants experienced traumatic events such as air raids or attacks by long range missiles and witnessing a parent being assaulted (Almqvist & Brandell-Forsberg, 1995). Results indicated that 18% of the children met full PTSD criteria, and

another 18% percent presented with severe clinical symptoms, but did not meet full criteria for a PTSD diagnosis.

Ahmad and colleagues (2000) assessed PTSD prevalence in Kurdish youth following the “Anfal” Iraqi military operation. For much of 1988, the Iraqi military occupied northern Iraq to eradicate the Kurdish population. As the military had been given orders to kill men aged 15 to 60, many Kurds found themselves fleeing for the Turkish border. Five years after the occupation, the authors administered the DSM-III-R (APA, 1987) version of the Child PTSD-Reaction Index (CPTSD-RI; Frederick & Pynoos, 1988) and the Posttraumatic Stress Symptoms in Children (PTSS-C, Ahmad et al., 2000) to 45 youth (24 males; 31 females). Ahmed and his colleagues reported that 87% of the children had PTSD.

In regards to Israeli youth, Schwarzwald, Weisenberg, Waysman, Solomon, and Klingman (1993) assessed PTSD prevalence through administrations of the DSM-III (APA, 1980) version of the CPTSD-RI (Frederick & Pynoos, 1988). The authors examined 492 children in the fifth, seventh, and tenth grades exposed to ongoing missile attacks during the Persian Gulf War. Three-hundred ten (63%) of the youth lived in areas that experienced direct missile hits; 182 (37%) participants did not experience any direct hits. Results indicated that fifth graders living in direct hit areas developed significantly higher rates of PTSD (25.4%) than both seventh (3.4%) and tenth (1.6%) graders living in equally dangerous environments. No differences were reported for youth living in no-hit zones. The authors reported that this trend was maintained at a one-year follow up (Schwarzwald, Weisenberg, Solomon, & Waysman, 1994).

In 2000, the Al Asqa Intifada, also known as the “Uprising”, brought violence, rioting, and bombing to the entire Gaza Strip (Thabet, Abed, and Vostanis, 2002). In efforts to examine the psychological reactions of children exposed to these events, Thabet et al. (2002) administered

the CPTSD-RI (Frederick & Pynoos, 1988) to 91 youth ages nine to eighteen who had endured bombardment and home demolition. Fifty-four (59%) of these children reported clinically significant posttraumatic stress reactions. Similarly, Qouta, Panamaki, and Sarraj (2003) interviewed Palestinian children ages six to sixteen years living in a bombardment area. Based on results of PTSD-RI administrations, 65 (53.7%) of the 121 children presented with clinically severe PTSD symptoms.

More recently, Lavi and Solomon (2005) also examined PTSD prevalence rates among three different groups of Israeli youth aged 11 to 15 years. The authors administered the DSM-III-R (APA, 1987) version of the CPTSD-RI (Pynoos et al., 1987) to 740 boys and girls living in the Israeli cities of Jerusalem, Gilo, or Jewish settlements in disputed territories. Results indicated that youth living in the disputed territories reported experiencing significantly more terrorist attacks ($M = 10.3$) than youth living in either Jerusalem ($M = 2.3$) or Gilo ($M = 3.4$). Furthermore, it was reported that youth living in the settlements had significantly higher rates of PTSD (27.6%) than both the Jerusalem youth (12.4%) and those living in Gilo (11.2%). Khamis (2005) assessed Palestinian youth residing in East Jerusalem or the West Bank who were under constant threat of exposure to military fighting. In total, 523 males and 477 females ages 12 to 16 were administered the PTSD module of the structured clinical interview for the DSM-IV (SCID-I; First, Spitzer, Gibbon, & Williams, 1994). A sub-group of 54.7% of the children reported experiencing some form of war-related trauma consistent with the DSM-IV PTSD traumatic event criterion. Among the stress-exposed subgroup, 62.3% reportedly had PTSD. Khamis further indicated that 34.1% of the entire sample had PTSD.

Finally, Elbedour, Onwuegbuzie, Ghannam, Whitcome, and Hein (2007) assessed PTSD among Palestinian children and adolescents living in the Gaza strip during the Second Uprising

of 2000. Youth in this study reported experiencing traumatic events such as witnessing a friend or family member being injured or killed, seeing their home being demolished, being shot or physically assaulted, and being exposed to the firing of missiles. PTSD was assessed through administrations of the DSM-IV (APA, 1994) version of the Posttraumatic Stress Disorder Inventory (PTSD-I; Watson, Juba, Manifold, Kucala, & Anderson, 1991). Elbedour and his colleagues (2007) reported a PTSD prevalence rate of 68.9%.

Southeast Asia. Research has also examined the prevalence of child-adolescent PTSD following war-related events in Southeast Asia. Many of these studies have investigated the psychological aftermath following the Khmer Rouge and Pol Pot takeover of Cambodia during the late 1970's (1975-1979). During this period, the Khmer Rouge and Pol Pot regimes attempted to restore Marxism amongst the nation and subsequently perpetrated horrific acts of war and genocide (Mollica, Donelan, Tor, Lavelle, Ellias, Frankel & Blendon, 1993). Thirteen years after the end of the Pol Pot regime, Sack, Clarke, and Seeley (1996) administered the Epidemiologic Version of the Schedule of Affective Disorders and Schizophrenia for School-Age Children (K-SADS-E; Puig-Antich, Orvaschel, Tabrizi, & Chambers, 1983) to 209 Cambodian adolescent refugees ages 13 to 25 years living in the Portland, Oregon, and Salt Lake City, Utah. Participants reported witnessing the execution of family members, in addition to extensive exposure to starvation, familial separation, and slave labor in work camps. Sack and his colleagues observed a PTSD point prevalence of 18.2% ($n = 38$) and a lifetime prevalence of 21.5% ($n = 45$).

In a related effort, Hubbard, Realmuto, Northwood, and Masten (1995) assessed 59 Cambodian refugees residing in Minnesota. The participants, who ranged in age from 16 to 25 years, reported enduring similar traumatic experiences as refugees in the Sack et al. (1994) study.

Based on administrations of the Structured Clinical Interview for the DSM-III-R Non-Patient Version (SCID-NP; Spitzer & Williams, 1986), the authors observed a PTSD point prevalence of 24% and a 59% lifetime prevalence rate within their sample.

Rwandan Children. Between the month of April and July 1994, 800,000 Rwandans lost their lives in the midst of intense fighting between the Hutu and Tutsi ethnic groups (UNICEF, 2007). Dyregrov, Gupta, Gjestad, and Mukanoheli (2000) investigated the prevalence of PTSD in a sample of 1830 youth who were exposed to these events. Approximately 13 months after fighting, the authors administered a revised children's version of the Impact of Event Scale (IES-R; Dyregrov & Yule, 1995) reflecting DSM-IV criteria for PTSD. Based on this research, 79% of the survivors showed moderate to severe posttraumatic stress reactions (Dyregrov & Yule, 1995).

Ten years after the Rwandan genocide, Schaal and Elbert (2006) administered the DSM-IV version of the Composite International Diagnostic Interview (CIDI; World Health Organization, 1997) to 68 youth and young adults between the ages of 13 to 23 years living in child-headed households. Endorsements on the CIDI revealed that all of the participants experienced at least one trauma-related re-experiencing symptom. Fifty-seven percent experienced at least three avoidance or numbing symptoms and 62% reported two or more increased arousal symptoms. As a group, 44% of the participants met full criteria for PTSD.

Similarly, Bayer, Klasen, and Adam (2007) examined child victims of civil war fighting in Africa's Great Lakes Region. The authors assessed 169 former child soldiers who had been placed in rehabilitation centers in Uganda or the Democratic Republic of the Congo. The participating 141 boys and 28 girls ranged in age from 11 to 18 years. The authors reported that the participants spent an average of 38 months as child soldiers and had been demobilized on

average for two months. The children reportedly experienced a variety of types of trauma such as witnessing shootings, beatings, and sexual assaults; 54.4% reported that they had killed others. Participants were assessed through administrations of the DSM-III-R version of the CPTSD-RI (Pynoos et al., 1987) and 34.9% evidenced scores that are suggestive of PTSD.

With reference to the tribal conflicts in the Sudan region, Geltman and colleagues (2005) examined PTSD prevalence in a sample of Sudanese refugee minors who had resettled into foster care programs in the United States. These authors observed that 48 (20%) of 241 youth met diagnostic criteria for PTSD based on endorsements on the Harvard Trauma Questionnaire (HTQ; Mollica, Caspi-Yavin, Bollini, Truong, Tor, & Lavelle, 1992).

The aforementioned war-related studies reported PTSD prevalence rates ranging from 14.7% to 87%. Table 2.1 presents data regarding prevalence of PTSD among children and adolescents following exposure to war-related traumatic events.

Table 2.1

Child-adolescent PTSD rates following war related traumas

Study	Measure(s)	Gender	Mean Age	Elapsed Time	PTSD Prevalence
<i>Middle East Conflicts</i>					
Saigh, Mroueh, & Bremner (1997)	CPTSDI	487 males 47 females	17.5 years	<i>M</i> = 4.2 yrs.	46.7% (stress exposed) 14.7% (overall sample)
Schwarzwald et al. (1993)	CPTSD-RI	227 males 265 females	Grades 5, 7, and 10	not reported	Direct missile hit: <i>males/females</i> 25.4%/22.4% (Grade 5) 3.4%/7.9% (Grade 7) 1.6%/7.0% (Grade 10)
Almqvist & Bromberg (1999)	DSM-IV based clinical interview	29 males 10 females	5.83 years	3.5 years	18%
Ahmad et al. (2000)	CPTSD-RI PTSS-C	24 males 21 females	12.3 years 12.4 years	5 years	87%
Khamis (2005)	DSM-IV based clinical interview	523 males 477 females	14.8 years	not reported	34.9%
Lavi & Solomon (2005)	CPTSD-RI	358 males 371 females	11.5 – 15 years	not reported	27.6% (disputed territories) 12.4% (Jerusalem) 11.2% (Gilo)
Elbedour et al. (2007)	CPTSD-I	121 males 108 females	17.13 years	not reported	68.9%

Table 2.1.

Child-adolescent PTSD rates following war related traumas (continued)

Pat-Horenczyk et al. (2007)	UCLA PTSD Reaction Index	315 males 380 females	14.8 years	22 months of recurrent attacks	13.6% (direct exposure) 7.7% (near-miss) 7.6% (overall sample)
<i>Southeast Asian Conflicts</i>					
Sack et al. (1994)	K-SADS-E	104 males 105 females	19.8 years	13 years	18.2% (current) 21.5% (lifetime)
Hubbard et al. (1995)	DSM-III-R Clinical Interview	29 males 30 females	19.5 years	15 years	24% (current) 59% (lifetime)
<i>African Conflicts</i>					
Dyregrov et al. (2000)	Impact of Events Scale	1545 males 1485 females	8-19 years	13 months	79%
Schaal & Elbert (2006)	CIDI	33 males 35 females	17.72 years	~10 years	44%
Bayer, Klansen, & Adam (2007)	CPTSD-RI	141 males 28 females	15.3 years	2.3 months	34.9%
Geltman et al. (2005)	Harvard Trauma Questionnaire	304 males/ females	unspecified	1 year	20%

Criminal Victimization Studies of Child-Adolescent PTSD. Researchers have also investigated rates of PTSD amongst child and adolescents victims of crime (i.e., shootings, muggings, armed robbery, gang violence, homicide or murder, and physical or sexual assault/abuse). For example, Pynoos and colleagues (1987) assessed the psychiatric morbidity of 159 school-aged children (5 to 13 years old) approximately one month after a sniper opened fire on a Los Angeles elementary school playground, killing one student and wounding thirteen others. Findings from administrations of the DSM-III-R version of the PTSD Reaction Index (PTSD-RI; Frederick & Pynoos, 1988) indicated that 60.4% of the sample met full diagnostic criteria for PTSD. Approximately fourteen months after the shooting, Nadar, Pynoos, Fairbanks and Frederick (1990) conducted follow-up administrations of the PTSD-RI with 100 children from the original sample and reported that 29% of the sample had PTSD at follow-up.

Similar events took place in an American upper-middle class suburban elementary school in 1988 (Schwarz & Kowalski, 1991). In the former case, a young woman with a history of psychiatric issues entered the Illinois school with several handguns, terrorizing and threatening many people before opening fire and killing two children. Schwarz and Kowalski (1991) administered the PTSD Reaction Index (PTSD-RI; Pynoos et al., 1987) to 64 children ages 5 to 14 years who were exposed to the shooting. In total, the prevalence of PTSD based on DSM-III-R criteria was assessed to be 27% among children 8 to 14 months later.

French researchers Vila, Porche, and Mouren-Simeoni (1999) evaluated 26 youth (ages 6 to 9.5) after being taken hostage by a gunman in their school. They were compared with 21 children from the same school who were not taken hostage (indirect exposure). A standardized clinical interview (K-SADS; Puig-Antich, Orvaschel, Tabrizi, & Chambers, 1980) and self-report questionnaires (State and Trait Anxiety Inventory for Children [STAIC; Spielberger,

1973] and Revised Impact of Event Scale [IES; Horowitz et al., 1979]) were administered at 2, 4, 7, and 18 months after the event. The authors found that after 2 months, 9 children (19.1%) had developed full posttraumatic stress disorder (PTSD) according to DSM-IV criteria, including two students who were indirectly exposed to the trauma. Four youth (8.5%) met diagnostic criteria for DSM-IV PTSD after 4 months, and 3 children (7.7%) qualified for the diagnosis at the 7-month follow-up. PTSD was observed in only two youth (3.7%) at 18 months following the original event.

Several researchers have also examined the prevalence of youth exposure to violence in urban communities (Fitzpatrick & Boldizar, 1993; Mazza & Reynolds, 1999; Ozer & McDonald, 2006; Jaycox et al., 2002). For example, Fitzpatrick and Boldizar (1993) collected data from 221 low-income African-American youth ages 7 to 18 years living in urban housing projects in Alabama. Measures included a set of questionnaires adapted from the National Institute of Mental Health Screen Survey of Exposure to Community Violence (Richters, 1990) and a revised version of the Purdue Posttraumatic Stress Scale (Figley, 1989) reflecting DSM-III-R (APA, 1987) criteria for PTSD. The authors concluded that being victimized and witnessing violence were significantly related to the reporting of PTSD symptoms. More specifically, results of the diagnostic evaluation indicated that 27% ($n = 54$) of the sample met diagnostic criteria for PTSD. Further, 70% of the respondents indicated being directly exposed to a traumatic event and 85% reported witnessing one or more violent acts.

Two teams of researchers (Berman, Kurtines, Silverman, & Serafini, 1996; Berton & Stabb, 1996) examined the prevalence of PTSD among urban high school students who had been exposed to violent neighborhood crimes. Berman and colleagues administered the PTSD-RI to 96 adolescents aged 14 to 18 years in the Miami metropolitan area. Trauma exposure in this

sample included experiencing or witnessing a mugging, knife attack, shooting, suicide, or murder, or having seen a dead body. The authors reported that 34.5% of the sample presented with DSM-III-R PTSD. Similarly, Berton and Stabb (1996) administered the DSM-III-based Keane PTSD Scale (Keane, Malloy, & Fairbank, 1984) and Civilian Mississippi PTSD Scale (CM-PTSD; Berton & Stabb, 1995) to 103 high school juniors. Results of their study concluded that 29% of the sample met criteria for PTSD.

More recently, Jaycox and colleagues (2002) assessed PTSD by administering the Child PTSD Symptom Scale (Foa et al., 2001) to 1,004 immigrant children (ages 8 to 15) years residing in Los Angeles. Results indicated that 49% of the participants were reportedly victims of community violence, and 80% of the sample had witnessed some other form of violence in the past year. Overall, the authors reported that 29.4% of the sample met DSM-IV criteria for PTSD.

In a similar vein, Foster, Kupermine and Price (2004) studied exposure to violence in 149 African-American, lower income, and urban 11- to 16-year-old adolescent members of various *Boys and Girls Clubs* in a major metropolitan area. Participants completed the Children's Exposure to Community Violence Checklist (CECV; Richters & Martinez, 1993) and the DSM-IV (APA, 1994) version of the Trauma Symptom Checklist for Children (TSCC; Briere, 1996). Results from the self-report measure indicated that respondents reported experiencing or witnessing at least one act of violence. Probable PTSD prevalence rates included 11.8% for girls and 11.5% for boys. In another study assessing PTSD symptomatology following chronic exposure to community violence, Horowitz, McKay, and Marshall (2005) interviewed 28 urban youth (ages 8 to 17 years) who encountered frequent gang and domestic violence. Based on these children's responses to the UCLA PTSD Index, 50% met criteria for DSM-IV PTSD.

Whereas the criminal victimization studies reviewed thus far indicated PTSD prevalence in children and adolescents following exposure to events that were non-sexual in nature, many community studies, however, have suggested that experiencing rape and sexual assault leads to higher rates of PTSD in youth than other traumas (Giaconia et al., 1995; Kessler et al., 1995; Norris, 1992; Resnick et al., 1993). Along these lines, Merry and Andrews (1994) assessed 66 New Zealand youth between the ages of 4 to 16 years at 12 months after the disclosure of sexual abuse. Based on parental administrations of the Diagnostic Interview Schedule for Children (DISC; Shaffer, Fisher, Piacentini, Schwab-Stone, & Wicks, 1989), Merry and Andrews reported that 18.2% of abused children met DSM-III-R (APA, 1987) for PTSD. In a similar study, McLeer, Callaghan, Henry, and Wallen (1994) observed a higher PTSD prevalence rate among their sample of 26 sexually abused children ages 6 to 16 years. Specifically, 42.3% of youth assessed were assigned a diagnosis of PTSD based on endorsements on the KSADS-E (Orvaschel, 1994). Similarly, Wolfe, Sas, and Wekerle (1994) found that 48.9% of sexually abused participants in their study met diagnostic criteria for PTSD. These authors had administered an unstructured DSM-III-R PTSD checklist to 90 sexually abused children with a mean age of 12.4 years.

Ackerman, Newton, McPherson, Jones and Dykman (1998) examined three cohorts of abused children ages seven to thirteen years. Within their sample of 204 youth, 127 children reported being sexually abused, 43 children physically abused, and 34 children reported experiencing both physical and sexual abuse. Based on child and caregiver administrations of the Revised Diagnostic Interview for Children and Adolescents (DICA-R; Reich et al., 1995), 34% of the sample met *DSM-III-R* criteria for PTSD. The authors added that the children who

had been both physically and sexually abused had a higher prevalence of PTSD (55%) relative to the participants who had been sexually abused (32%) or physically abused (26%).

In a related effort, Ruggiero, McLeer, and Dixon (2000) administered the KSADS-E (Orvaschel, 1994) to 80 children aged 6 to 16 years within 30 and 60 days following the disclosure of sexual abuse. These investigators observed that 36.6% of the overall sample had developed DSM-III-R PTSD. Similarly, Silva, Alpert, Munoz, Singh, Matzner, and Dummit (2000) compared PTSD prevalence rates following sexual or physical abuse, as well as the witnessing of domestic violence. Fifty-nine youth between the ages of 3 and 18 years were referred to the study via an inner-city outpatient clinic. The participants received administrations of the child version of the Structured Clinical Interview for DSM-IV Disorders (Kid-SCID; Matzner, Silva, Silvan, Chowdhury, & Nastasi, 1997). With reference to sexual abuse, Silva and his coauthors reported that 15% of these cases developed PTSD. It was further reported that 21% of physically abused youth had PTSD, and 17% of the youth that witnessed serious domestic violence met criteria for the disorder. In addition, Linning and Kearney (2004) examined a sample of maltreated youth ages 8 to 17 years who were living in homeless shelter facilities in Nevada and Idaho. These children reported being physically and/or sexually abused within the past two years. According to endorsements on the Children's PTSD Inventory (Saigh, 1997), 67.3% of the youth sample met DSM-IV criteria for PTSD.

D'Augelli, Grossman, and Starks (2006) examined PTSD prevalence rates following verbal, physical, and sexual assaults among lesbian, gay, and bisexual youth. The assaults reported in this study were allegedly perpetrated as a result of the victims' sexual orientation. The authors assessed 528 lesbian, gay, or bisexual youth between the ages of 15 to 19 years during a two-year period. In addition to completing the Brief Symptom Inventory (BSI;

Derogatis, 1993) and the Trauma Symptom Checklist (TSC; Briere, 1996), participants received administrations of the PTSD module of the NIMH Diagnostic Interview Schedule for Children (DISC; Shaffer et al., 1989). The results indicated that 9% of participants who experienced either physical or sexual assaults met criteria for a DSM-IV PTSD diagnosis.

Finally, Broman-Fulks, Ruggiero, Green, Kilpatrick, Danielson, Resnick, and colleagues (2007) utilized results from the National Survey of Adolescents (NSA) to examine the prevalence of PTSD following sexual assault. Of the 4,023 adolescents who participated in the survey, 321 (8.2%) reported that they experienced at least one sexual assault. A semi-structured interview that included the National Women's Study PTSD Module (Kilpatrick et al., 1989) assessed PTSD status using the DSM-IV (APA, 1994) criteria. Data were reported for non-disclosers (i.e., victims who did not disclose their assault history before the evaluation), short-delay disclosers (i.e., victims who disclosed the assault within one month of the incident) and long-delay disclosers (i.e., victims who waited longer than one month before disclosing the assault). Results indicated that 24% of non-disclosers, 22% of short-delay disclosers, and 13% of long-delay disclosers developed PTSD.

Examined collectively, PTSD point prevalence estimates ranged from 9% to 67.3% across the criminal victimization studies reviewed, including those involving physical and sexual assault cases. Table 2.2 presents a summary of the epidemiological studies examining the occurrence of PTSD among children and adolescents relative to various forms of criminal victimization.

Table 2.2.

Child-Adolescent PTSD rates following criminal victimization

Study	Measure(s)	Gender	Mean Age	Elapsed Time	PTSD Prevalence
<i>Various Traumas</i>					
Fitzpatrick & Boldizar (1993)	Purdue Posttraumatic Stress Scale	102 males 119 females	11.9 years	not reported	27%
Berman, Kurtines, Silverman, & Serafini, (1996)	PTSD-RI	(N = 96)	14 – 18 years	not reported	34.5%
Berton & Stabb (1996)	CM-PTSD Keane PTSD Scale	21 male 78 females	17 years	not reported	29%
Foster, Kupermine, & Prince (2004)	TSCC	84 males 62 females	13.2 years	not reported	11.5% (males) 11.8% (females)
<i>School Shootings</i>					
Pynoos et al. (1987)	CPTSD-RI	80 males 79 females	5 – 13 years	1 month 14 months	60.4% 29%
Schwarz & Kowalski (1991)	Reaction Index	32 males 32 females	8.6 years	8-14 months	27%
Vila, Porche, & Mouren-Simeoni (1999)	K-SADS	13 males 9 females	6 – 9.5 years	2 months 4 months 7 months 18 months	19.1% 8.5% 7.7% 3.8%

Table 2.2.

Child-Adolescent PTSD rates following criminal victimization (continued)

Physical and Sexual Assault

Merry & Andrews (1994)	DISC-2	11 males 55 females	8 years	12 months	18.2%
McLeer, Callaghan, Henry, & Wallen (1994)	K-SADS-E	24 males 25 females	9.7 years	not reported	42.3%
Wolfe, Sas, & Wekerle (1994)	DSM-III-R checklist	21 males 69 females	12.4 years	not reported	48.9%
Ackerman, Newton, McPherson, Jones, & Dykman (1998)	DICA-R	73 males 131 females	7 – 13 years	at least 4 weeks	34% (overall sample) 31.8% (sexual abuse) 25.4% (physical abuse) 51.9% (both)
Silva et al. (2000)	Kid-SCID	39 males 20 females	9.9 years	not reported	15% (sexual abuse) 21% (physical abuse) 17% (domestic violence)
Linning & Kearney (2004)	C-PTSDI	22 males 33 females	12.7 years	2 years	67.3%
D'Augelli, Grossman, & Starks (2006)	TCS	275 males 253 females	17 years	not reported	9% (stress-exposed)
Broman-Fulks et al. (2007)	NWS PTSD Module	(N = 4,023)	15.2 years	not reported	24% (non-disclosers) 22% (short-delay disclosers) 13% (long-delay disclosers)

Disaster/Accident Studies of Child-Adolescent PTSD. Disasters (e.g., floods, transportation accidents) are often unexpected or uncontrollable traumatic events that can affect large populations, causing injury, death, and destruction. In one survey of US residents, 13 percent of the sample reported a lifetime exposure to a natural or human-generated disaster (Burkle, 1996). Reports from the National Comorbidity Survey (Breslau et al., 1998) indicated approximately 15 percent of women and 19 percent of men experience a natural disaster at least once their lifetime. Given the potential for loss of livelihood and loved ones following disasters, survivors are at increased risk for experiencing a wide range of physical and psychological distress, including posttraumatic stress disorder (Norris, Friedman, & Watson, 2002; Ziaaddini, Nakhaee, & Behzadi, 2009).

PTSD has been a focus in a research on post-disaster psychopathology in the past two decades. Many adult studies have shown PTSD to be the most prevalent type of psychiatric morbidity after disasters (Bromet & Dew, 1995; Davidson, 1995; Green, Lindy, Grace, & Leonard, 1992; Sharan, Chaudhary, Kavathekar, & Saxena, 1996). A number of researchers have also examined the posttraumatic stress reactions in youth following natural disasters and accidents, such as earthquakes, hurricanes, fires, and motor vehicle accidents (Pynoos, Goenjian, Tashjian et al., 1993, Laor, Wolmer, Kora, Yucel, Spirman, & Yazgan, 2002; Kolaitis et al., 2003; McDermott, Lee, Judd, & Gibbon, 2005; Jones-Alexander, Blanchard, & Hickling, 2005; Yule, Bolton, Udwin, Boyle, O’Ryan, & Nurrish, 2000).

Earthquakes. With reference to earthquakes, Pynoos and colleagues (1993) examined the frequency and severity of post-traumatic stress symptoms in 231 children between the ages of 8 and 16 living in three cities at increasing distances from the epicenter of the devastating 1988 earthquake in Armenia. The degree to which each city was affected by the earthquake varied.

Specifically, Spitak, a city very near the earthquake's epicenter, experienced significant structural damage and loss of life; Gumri, located 20 miles from the epicenter, was relatively less damaged; and Yerevan, the city furthest from the epicenter (47 miles), was the least affected. Results of administrations of the DSM-III-R-based clinical interview and the Children's PTSD Reaction Index (CPTSD-RI; Frederick, Pynoos, & Nader, 1992) revealed that 78 of the 111 (70.3%) youth evaluated with both measures met DSM-III-R criteria for PTSD. The authors also observed a dose response effect between the proximity of the city to the epicenter and frequency of DSM-III-R PTSD diagnoses, whereby 91.4% of youth sampled in Spitak, 90.9% in Gumri, and 37.2% in Yerevan had PTSD.

Two-and-a-half years after the 1988 Armenian earthquake, Najarian, Goenjian, Pelcovitz, Mandel, and Najarian (1996) instituted a follow-up study to assess lifetime rates of PTSD in Spitak, Gumri, and Yerevan. Seventy-four trauma-exposed children ages 11 to 13 years were given the PTSD module of the DICA-R, which indicated that PTSD was most prevalent in youth who continuously resided in the city of Gumri (33%). They went on to report DSM-III-R PTSD base rates of 28% among those who had relocated to the less damaged city of Yerevan, and 4% among those who permanently resided in Yerevan.

In response to a 1999 earthquake in Taiwan, Hsu, Chong, Yang, and Yen (2002) examined adolescent PTSD prevalence rates six weeks after the disaster struck. The earthquake reportedly caused 2,415 deaths and 11,205 injuries, and destroying more than 100,000 homes (Hsu et al., 2002). The authors administered the Symptom Checklist 90-Revised (SCL-90-R; Derogatis, Lipman, & Covi, 1992) and the *DSM-IV* (APA, 1994) version of the Children's Interview for Psychiatric Syndromes (ChIPS; Rooney, Fristad, Weller, & Weller, 1999) to 323

students (121 males, 182 females) aged 12 to 14 years who lived near the epicenter of the earthquake. Results indicated a PTSD prevalence rate of 21.7%.

In a similar study, Laor and colleagues (2002) examined two cohorts of traumatized youth following the 1999 earthquake in East Marmara, Turkey. The participants were assigned to high, medium, or low impact groups based on the distance of their homes from the earthquake's epicenter. A high-exposure cohort consisted of 202 children who were displaced to a prefabricated village after the earthquake destroyed their homes. A low-exposure cohort consisted of 101 children who were residents of a city located approximately 300 miles from the earthquake's epicenter. Sixty-three (20.8%) of the 303 children reported severe to very severe DSM-III-R PTSD symptoms based on administrations of the Child PTSD Reaction Index (CPTSD-RI; Pynoos et al., 1993).

Along these same lines, Kolaitis and colleagues (2003) examined 115 fourth, fifth, and six grade students attending elementary schools near the epicenter of the 1999 earthquake occurring near Athens, Greece. According to endorsements made to the DSM-III-R-based Children's PTSD Reaction Index (CPTSD-RI; Pynoos et al., 1987) administered six months after the earthquake, 16.5% of the youth sample reported severe PTSD symptoms. Three to four months after the disaster, Roussos, Goenjian, Steinberg, and colleagues (2005) assessed 1,937 students between the ages of 9 and 18 years using the UCLA PTSD Reaction Index (Pynoos et al., 1987). The authors reported 4.5% of the sample met *DSM-IV* criteria for PTSD.

Ziaaddini, Nakhaee, and Behzadi (2009) assessed traumatic reactions in all 466 high school students ($M = 15.9$ years) living in Bam, Iran, ten months after a significant earthquake struck the city in December 2003. The earthquake, which measured at 6.3 on the Richter Scale, caused injury to 30,000 and killed more than 26,000 people. According to endorsements on the

Structured PTSD questionnaire and the Davidson Trauma Scale (Davidson, Tharwani, & Connor, 2001), the reported PTSD prevalence rate in the sample was 66.7%.

Hurricanes and floods. In 1998, Hurricane Mitch dropped historic amounts of rainfall upon the Central American countries of Honduras, Guatemala, and Nicaragua. Deaths due to catastrophic flooding and landslides made it the second deadliest Atlantic hurricane in history; nearly 11,000 people were killed with over 11,000 left missing by the end of 1998 (Hellin, Haigh, & Marks, 1999). The flooding caused extreme damage, estimated at over \$5 billion, and left 2.7 million people homeless or missing in all (Williamson, Hertzfeld, Cordes, & Logsdon, 2001). Six months after the Category Five storm, Goejian et al. (2001) studied 158 Nicaraguan adolescents in three different cities, each of which were affected to varying degrees. As in their previous study (Goejian et al., 1995), authors administered the DSM-III-R (APA, 1987) version of the CPTSD-RI (Pynoos et al., 1987) to assess PTSD. Results were consistent with 1995 study; point prevalence rates for the most, second most, and least affected cities were 90%, 55%, and 14%, respectively.

Tsunamis. A very severe earthquake measuring a magnitude of 8.9 on Richter scale struck northern Sumatra on December 26th, 2004, with subsequent tsunami waves that resulted in the deaths of 250,000 people, devastating India and seven other nearby countries (John, Russell, & Russell, 2007). One area particularly affected by this disaster was southern India, which reported approximately 40,000 homes lost and 196,000 people affected. John, Russell, and Russell (2010) studied five hundred twenty-three juvenile survivors (between ages 5 and 18) of the tsunami residing in Tamil Nadu to determine the prevalence of PTSD. The Impact of Event Scale and Child Behavior Checklist Post-traumatic Stress Disorder-Tamil Revised Version (CBCL-PTSD-TRM; Russell, Balakrishnan & Russell, 2005) were used to assess PTSD. The

authors observed a prevalence of 70.7% for acute PTSD and 10.9% for delayed onset PTSD. PTSD was more prevalent among girls and more severe among adolescents exposed to loss of life or property.

Piyavhatkul, Pairojkul, and Suphakunpinyo (2008) also studied the prevalence of psychiatric disorders in children affected by the Asian tsunami in the Ranong province of Southern Thailand 10 months after the disaster. The sample consisted of 47 boys and 47 girls, aged 1 to 18 years, who were affected by the tsunami. Youth were interviewed using a semistructured diagnostic interview (*unspecified*) and PTSD checklist reflecting DSM-IV criteria. Results indicated that 31 (33%) of the 94 children had PTSD. PTSD was also significantly associated with the child's age and exposure to the traumatic events.

Wildfires. Several researchers (McFarlane, 1987; Jones, Ribbe, Cunningham, Weddle, & Langley, 2002; McDermott et al., 2005; Langley & Jones, 2005) have assessed PTSD in youth following traumatic bushfires. Among these studies, Jones and colleagues (2002) examined the emotional impact of destructive wildfires on children living in Southern California.

Administrations of the DICA-R revealed that two (9%) of the 22 children in their sample met DSM-III-R criteria for PTSD. Similarly, Langley and Jones (2005) examined 206 trauma-exposed ninth graders approximately 10 months after wildfires swept through northern and central Florida in 1998 and severely damaged their schools. Using the PTSD-RI (Frederick, Pynoos, & Nadar, 1992), Langley and Jones found that 2.0% of adolescents exhibited severe to very severe DSM-IV PTSD symptoms.

Six months following the devastating wildfires of the Australian Capital Territory in 2003, McDermott and colleagues (2005) initiated a school-based screening of psychological reactions to the disaster. PTSD responses were assessed in 222 school children and adolescents

(mean age =12.5 years; age range = 8 to 18 years) affected by the fires using the Post Traumatic Stress Disorder Reaction Index (PTSD-RI). Youth endorsements to the self-report measure indicated that approximately 9% ($n = 20$) met DSM-IV criteria for PTSD.

Motor Vehicle Accidents. Estimates predict that at least 5% of youth are involved in a Motor Vehicle Accident (MVA) in their lifetime, which can often lead to physical injury and the development of PTSD. Among the studies assessing child-adolescent PTSD prevalence rates following motor vehicle accidents, DiGallo, Barton, and Parry-Jones (1997) assessed 49 youth ages 5 through 18 years who presented at hospitals following motor vehicle accidents. Assessments were completed 12 to 15 weeks after the reported incidents. PTSD was assessed through administrations of the *DSM-III-R* (APA, 1987) version of the CPTSD-RI (Pynoos et al., 1987). The authors indicated that 49% of the participants had scores that reflected full PTSD criteria.

Other researchers have reported more modest rates of PTSD following MVAs. Specifically, Zink and McCain (2003) examined 143 youth injured in serious MVAs via administrations of the PTSD module of the DICA (Reich et al., 1992). Authors reported *DSM-III* PTSD point prevalence rates of 18% and 10% at two and six-months post-accident, respectively. In a similar vein, Meiser-Stedman, Yule, Smith, Glucksman, and Dalgeish (2005) examined 106 children aged 10 to 16 years who were admitted to a hospital emergency room following motor vehicle accidents. All of the participants were interviewed within four weeks of their accident and six months later. Acute Stress Disorder at time one and PTSD at time two were assessed through administrations of the DSM-IV-based child version of the Anxiety Disorders Interview Schedule (ADIS; Silverman & Albano, 1996). The authors reported that 19.4% of the children

met criteria for an Acute Stress Disorder diagnosis at time one and 12.5% met criteria for PTSD at time two.

With further reference to motor vehicle accidents, Landolt, Vollrath, Timm, Gnehm, and Sennhauser (2005) examined 68 crash victims (37 males, 31 females) between 6 and 14 years of age. The children were assessed using the DSM-III-R (APA, 1987) version of the CPTSD-RI (Pynoos, et al., 1987) four to six weeks following their accidents and then again 12-months later. PTSD point prevalence estimates of 16.2% and 17.6% were reported for the initial assessment and at follow-up, respectively.

In a case-control study, Jones-Alexander, Blanchard, and Hickling (2005) compared 21 youth who had experienced a recent MVA to 14 controls that had never been in a MVA. According to endorsements on the Children's PTSD Inventory (Saigh, 1995) and the DICA-R, 23% ($n = 8$) of the total sample met DSM-IV criteria for PTSD.

Finally, Schafer, Barkmann, Riedesser, and Schulte-Markwort (2006) administered the DSM-IV (APA, 1994) based Diagnostic Interview of Psychiatric Symptoms (DIPS; Unnewehr, Schneider, & Margraf, 1995) to 72 German children aged 8 to 18 years who were also involved in motor vehicle accidents. Assessments were completed both at one week and three months after the accidents. Following the first interview, 11% of the children met PTSD criteria except for Criterion E, which states the symptoms must be present for at least one month. The authors reported that 0% of the children met full criteria for PTSD at three months.

Transportation Accidents. Using the Clinician-Administered PTSD Scale (CAPS; Nader et al., 1996), Yule et al. (2000) examined emotional responses of teenage survivors of the 1988 Jupiter cruise ship sinking in Greece. Results indicated that 90% of youth met criteria for a diagnosis of PTSD six-months after the disaster. Additionally, follow-up assessments revealed

that 111 (51.7%) of the 217 total participants assessed in the study presented at PTSD at some point during a period of five to eight years after the sinking.

In a similar study, Mirzamani, Mohammadi, and Besharat (2006) used the DSM-III-R-based Posttraumatic Stress Disorder Symptom Scale (PSS; Foa et al., 1993) to assess PTSD prevalence in 19 child survivors of a 2002 boat sinking in Tehran City, Israel. Results indicated 84.2% of the children evidenced PTSD 18 months after the accident. A comparable PTSD base rate of 89.5% was observed when investigators used a DSM-IV-based psychiatric interview to derive the diagnosis.

Among the natural disasters or accident studies that were considered, PTSD prevalence rates ranged from 0% to 90%. The notable disparity in post-disaster PTSD rates has been attributed mainly to methodological differences, including differences in the magnitude of the disasters chosen for study, the time elapsed between the onset of the disaster and data collection, and the methods of sampling and case detection used (Shinfuku, Wang, & Sugiyama, 1998). Ultimately, these findings highlight that a significant number of children involved in disasters and serious accidents may be severely psychologically affected by their trauma. Table 2.3 presents a summary of research examining the incidence of PTSD following natural disasters and accident-related traumas.

Table 2.3

Child-Adolescent PTSD rates following natural disasters or accidents

Study	Measure(s)	Gender	Mean Age	Elapsed Time	PTSD Prevalence
Natural Disasters					
Pynoos et al. (1993)	DSM-III-R Clinical Interview	not reported (N = 111)	12.8 years	1.5 years	70.3%
Najarian et al. (1996)	DICA-R 37 females	37 males 11-13 years	2.5 years		33% (High Exposure) 28% (Relocated) 4% (Low Exposure)
Goenjian et al. (2001)	CPTSD-RI	81 males 77 females	13 years	6 months	90% (Hi-Impact) 5% (Med-Impact) 14% (Lo-Impact)
Hsu et al. (2002)	SCL-90-R ChIPS	121 males 182 females	13.3 years	6 weeks	21.7%
Laor et al. (2002)	DSM-III-R Reaction Index	135 males 168 females	8.5 years	4 – 5 months	20.8%
Langley & Jones (2005)	PTSD-RI	82 males 124 females	14.5 years	10 months	2%
McDermott et al. (2005)	PTSD-RI	(N = 222)	12.5 years	6 months	9%
Bokszczanin (2007)	Revised Civilian PTSD Scale	213 males 320 females	11 – 21 years	28 months	17.7%

Table 2.3

Child-Adolescent PTSD following natural disasters or accidents (continued)

John, Russell, & Russell (2007)	CBCL-PTSD-TRV	(N = 523)	5 – 18 years		70.7% (Acute) 10.9% (Delayed Onset)
Piyavhatkul, Pairojkul, & Suphakunpinyo (2008)	DSM-IV Clinical Interview	47 males 47 females	1 – 18 years	10 months	33%
Jones et al. (2002)	DICA-R IES	8 male 14 female	9.1 years	6 weeks	9%
Motor Vehicle Accidents					
DiGallo, Barton, & Parry-Jones (1997)	CPTSD-RI	38 males 19 female	10.2 years	12 – 15 weeks	49%
Zink & McCain (2003)	DICA-R			2 and 6 months	18%; 10%
Jones-Alexander, Blanchard, & Hickling (2005)	CPTSD-RI DICA-R	11 males 10 females	12.7 years	1 month	23%
Meiser-Stedman et al. (2005)	ADIS	60 males 33 females	mean age = 13.9 years	6 months	12.5%
Landolt et al. (2005)	CPTSD-RI	37 males 31 females	6.5 – 14.5 years	4 – 6 weeks 12 months	16.2% 17.6%

Table 2.3

Child-Adolescent PTSD rates following natural disasters or accidents (continued)

Schafer et al. (2006)	DIPS	42 males 30 females	mean age = 13.6 years	1 week 3 months	0% 0%
Transportation Accidents					
Yule et al. (2000)	CAPS	not reported		6 months 5-8 years	90% 51.7% (follow-up)
Mirzanani, Mohammadi, & Besharat (2006)	PSS	not reported		18 months	84.2%

Comorbidity of PTSD with Other Psychiatric Disorders

A growing number of clinical and community studies have found that posttraumatic stress disorder is associated with high rates of concurrent psychiatric disorders (Faustman & White, 1989; Kulka et al., 1990). This comorbidity has important implications for the classification of PTSD and for the assessment and treatment of afflicted populations (Fairbank, Schlenger, Saigh, & Davidson, 1995). First, high rates of comorbid diagnoses challenge the conceptualization of PTSD as a distinct diagnostic entity (e.g., March, 1990). Second, the presence of multiple diagnoses impacts on assessment, requiring clinicians to make complex decisions regarding differential diagnoses. Finally, comorbidity complicates the course of treatment, necessitating additional interventions, and a complex, hierarchical approach to setting targets for change (Pitman et al., 1991).

Data from epidemiologic surveys indicate that the vast majority of individuals with PTSD meet criteria for at least one other psychiatric disorder and a substantial percentage have three or more other psychiatric diagnoses (Brady, Killeen, Brewerton, & Lucerini, 2000). For example, in the National Comorbidity Survey, a lifetime history of at least one other psychiatric disorder was found in approximately 80% of all men and women with lifetime PTSD (Kessler et al., 1995). Given this data, a substantial amount of research has been done which examines the prevalence of comorbid conditions (e.g., substance abuse, affective disorders [MDD], and anxiety disorders) in adults with PTSD (Pfefferbaum, 1997; APA, 1994; Rundell, Ursano, Holloway, & Silberman, 1989; Davidson & Foa, 1991, Green, Lindy, & Grace, 1985; Amir, Kaplan, & Kotler, 1996; Jamil, Nassar-McMillan, & Lambert, 2006; Kessler et al. 1995). Using data from the National Comorbidity Survey, Kessler and his colleagues (1995) reported that among men and women with PTSD, lifetime prevalence of comorbid disorders was approximately 48% for major

depressive disorders, 22% for dysthymia, 16% for generalized anxiety disorder, 30% for simple phobia, and 28% for social phobia. Women exhibited greater lifetime prevalence of panic disorder (12.6% to 7.3%) and agoraphobia (22.4% to 16.1%) while men exhibited greater lifetime prevalence of alcohol abuse/dependence (51.9% to 27.9%), drug abuse/dependence (34.5% to 26.9%), and conduct disorder (43.3% to 15.4%).

Considerably fewer studies have examined the prevalence rates of comorbid disorders in children and adolescents with PTSD. Much of the earlier research in this area has directed efforts toward examining PTSD and concurrent psychiatric diagnoses in Cambodian youth survivors or refugees of war-related traumas. For instance, Kinzie and colleagues (1986) administered the Schedule for Affective Disorders and Schizophrenia (SADS; Spitzer & Endicott, 1979) to a sample of Cambodian adolescents who were severely traumatized in the Pol Pot concentration camps as children. These authors reported that 85% of their sample met diagnoses for both PTSD and unspecified depressive disorders and 35 percent had unspecified anxiety disorders. Additionally, 15% of youth in this study presented with comorbid PTSD and panic disorder. In a follow-up assessment conducted three years later, Kinzie et al. (1989) also employed the SADS and found that in 27 of the 40 original Khmer adolescents, 7.7% of those with PTSD continued to have comorbid panic disorder. Comorbid affective disorders were reported to occur in 76.9% of youth with PTSD or 37% of the overall sample.

In a six-year follow-up study, Sack et al. (1993) administered the K-SADS-E to the original group of Khmer refugees assessed by Kinzie and colleagues (1986) and reported that none of the subjects with PTSD met criteria for conduct disorder, substance-related disorders, or major psychoses. However, 60 percent of the subjects met criteria for major depression and 15 percent met criteria for unspecified anxiety disorders. In a similar vein, Sack and colleagues

(1994) assessed a random sample of Khmer adolescents using the *DSM-III-R* K-SADS (Puig-Antich, Orvaschel, Tabrizi, & Chambers, 1980) and found that current PTSD was not associated with comorbid conduct disorder, substance use, or adjustment disorders. Results further indicated a point prevalence of 10.5% among Cambodian youth with PTSD and panic disorder. These authors also noted that adolescents with current PTSD were 4.3 times more likely to experience comorbid depression and 3.5 times more likely to present with an unspecified comorbid anxiety disorder. In another study involving Cambodian survivors of the Pol Pot trauma, Hubbard et al. (1995) used the SCID to assess comorbid disorders and observed that major depression, generalized anxiety disorder, and social phobia were respectively observed in 21 percent of the sample.

More recently, Perkonig and colleagues (2000) administered the Munich Composite International Diagnostic Interview (M-CIDI; Wittchen & Pfister, 1997) to a group of adolescents and young adults and found that, in total, 87.5% of all PTSD had at least one additional diagnosis, and 77.5% had two or more additional diagnoses. Additionally, in most comorbid PTSD cases, depressive disorders (68.5%), agoraphobia with or without panic disorder as well as substance abuse or dependence (70.6%) were occurring simultaneously or were secondary. Kilpatrick, Ruggiero, Acierno, Saunders, Resnick, and Best (2003) documented the prevalence of PTSD and comorbid disorders in a large national probability sample of adolescents. Based on telephone administrations of the National Women's Study PTSD and Depressive Disorders Modules (Kilpatrick, Resnick, Saunders, & Best, 1989) authors reported that 62% of PTSD cases (47% of male PTSD positives, 70.6% of female PTSD positives) also met criteria for a major depressive episode (MDE). In addition, approximately 1.5% of the total sample met criteria for both PTSD and substance abuse/disorder. Further observations revealed that the 12-month

incidence of substance abuse/disorder in males with PTSD was 29.7% and 24.2% for females with PTSD.

Furthermore, as PTSD frequently presents with the classical features of attention-deficit hyperactivity disorder (ADHD) (e.g., hyperactivity, impulsivity, restlessness, irritability, and distractibility) (Cuffe, McCollough, & Pumariega, 1994; Famularo, Fenton, Kinscherff, & Augustyn, 1996; Linning & Kearney, 2004; McLeer, Callaghan, Henry, & Wallen, 1994; Merry & Andrews, 1994), several studies have also examined the co-occurrence of PTSD and ADHD in groups of traumatized children in addition to other psychiatric disorders. Famularo and colleagues (1996) represented that 37% of severely maltreated children who received *DSM-III-R* PTSD diagnoses via endorsements on the DICA-C-R also received an ADHD diagnosis. Twenty-four percent of PTSD cases in this study also presented with comorbid CD or ODD. Additionally, these authors indicted a prevalence rate of 39% of PTSD and comorbid anxiety disorders, and 32% of unspecified comorbid mood disorders.

In their study investigating psychological distress in maltreated and physically/sexually abused youth, Linning and Kearney (2004) observed a comparable rate of PTSD/ADHD comorbidity to that reported in Famularo et al.'s (1996) investigation. Results of semistructured clinical interviews using the ADIS-C (Silverman & Albano, 1995) revealed 35.1% of the youth who met DSM-IV criteria for PTSD also met criteria for ADHD. These authors also observed that 18.4% of their sample received diagnoses of PTSD and panic disorder, and 35.1% of PTSD cases also met for separation anxiety disorder. McLeer and colleagues (1994) reported that 23.1% of sexually abused cases presented with comorbid PTSD and attention-deficit hyperactivity disorder (ADHD) via endorsements on the K-SADS-E. Moreover, 15.4% presented

with PTSD and conduct disorder, and 11.5% presented with PTSD, ADHD, and conduct disorder. Notably, the rates of ADHD and conduct disorder were significantly higher than those found in the non-sexually abused children.

In sum, consistent with the research findings regarding adults with PTSD, children and adolescents with PTSD may also experience high rates of comorbid disorders. The most common comorbid diagnoses are depressive disorders, substance use disorders, and other anxiety disorders. Based on the extant literature considered in this chapter, rates of comorbid anxiety disorders and PTSD ranged from 7.7% to 18.4% (panic disorder), 35% to 41.6% (separation anxiety disorder), and 35% to 83% (unspecified anxiety disorders). With regard to the comorbid incidence of affective disorders and PTSD, research revealed rates ranging from 13% to 79% (MDD or MDE) and 32% to 85% (unspecified mood disorders). Rates of comorbid ODD/CD ranged from 0% to 25%. Finally, the rate of comorbid substance abuse/disorders and PTSD in adolescent populations was 1.5% to 67.8%. Table 2.4 presents an overview of the epidemiological data involving comorbidity.

Table 2.4

Prevalence of Comorbid Psychiatric Diagnoses with Child-Adolescent PTSD

Study	Diagnostic Measure	Prevalence of Comorbid Disorder with PTSD
<i>Physical/Sexual Assault and Maltreatment</i>		
McLeer et al. (1994)	K-SADS-E	23.1% (ADHD) 18.4% (Panic Disorder) 11.5% (ADHD and Conduct Disorder)
Merry & Andrews (1994)	DISC-2	25% (ADHD) 41.6% (Separation Anxiety Disorder) 16.7% (Major Depressive Disorder) 25% (Oppositional Defiant Disorder)
Famularo et al. (1996)	DICA-C-R	39% (Unspecified Anxiety Disorders) 37% (ADHD) 32% (Unspecified Mood Disorders) 24% (ODD or Conduct Disorder)
Lipschitz et al. (1999)	DICA-R	33.3% (ADHD) 25% (Alcohol Abuse) 62.5% (Oppositional Defiant Disorder) 37.5% (Conduct Disorder)
Linning & Kearney (2004)	ADIS-C	35.1% (ADHD) 35.1% (Major Depressive Disorder) 35.1% (Separation Anxiety Disorder) 18.4% (Panic Disorder)
<i>Various Traumas</i>		
Perkonigg et al. (2000)	M-CIDI	68.5% (depressive disorders) 70.6% (agoraphobia with or without panic disorder as well as substance abuse or dependence)
Kilpatrick et al. (2003)	National Women's Study PTSD and MDD modules	62% (Major Depressive Episode) 1.5% (Substance Abuse Disorder in entire sample)

Table 2.4

*Prevalence of Comorbid Psychiatric Diagnoses with Child-Adolescent PTSD (continued)***War-Related Trauma**

Kinzie et al. (1986)	SADS	15% (Panic Disorder) 85% (Unspecified Depressive Disorders) 35% (Unspecified Anxiety Disorders)
Kinzie et al. (1989)	SADS	7.7% (Panic Disorder) 37% (Unspecified Affective Disorders)
Clarke et al. (1993)	DICA-R	13.5% (Major Depressive Disorder)
Sack et al. (1993)	K-SADS-E	0.0% (Conduct Disorder) 15% (Unspecified Anxiety Disorders) 60% (Major Depressive Disorder)
Sack et al. (1994)	K-SADS-E	10.5% (Conduct Disorder) 10.5% (Panic Disorder)
Hubbard et al. (1995)	SCID	21% (Major Depressive Disorder) 21% (Generalized Anxiety Disorder) 21% (Social Anxiety Disorder)

Risk Factors for PTSD

Based on the review of epidemiological literature presented in this chapter, it is clear that exposure to various traumatic events can lead to the development of PTSD in children and adolescents. It seems necessary, therefore, to further explore variables that may determine or predict whether a child will develop PTSD as well as factors that may contribute to the severity of symptoms in youth diagnosed with the disorder. The following risk factors for PTSD in youth were identified through an examination of studies herein: (a) intensity of exposure to traumatic event; (b) time interval between exposure and diagnostic evaluation; (c) type and mode of stressor; (d) duration and frequency of exposures; (e) age; (f) gender, (g) race/ethnicity; (h) parental psychopathology; (i) resettlement stress or relocation; (j) pre- and post-exposure to traumatic stress; and, (k) relationship between victims and perpetrators. Saigh and Bremner (1999) also reported on similar risk factors in their comprehensive review of the child-adolescent PTSD literature. Examining the potential risk factors associated with PTSD may have important implications for understanding the ways in which traumatic events and other variables interact in the development of psychiatric disorders in general and PTSD in particular. This process may further lead to increased prevention efforts and influence treatment prognosis.

Severity of Exposure. A robust finding in much of the PTSD research has been a linear dose-response curve between intensity, or severity, of the trauma and the later development of PTSD. For example, Schwarzwald and colleagues (1994) reported that Israeli youth who resided in areas hit by Scud missiles had a higher prevalence of PTSD (24.9%) than youth who resided in areas that avoided the bombardment (12.9%). Likewise, Pat-Horenczyk, Schiff and Doppelt (2007) reported that Israeli students who directly witnessed a war-related terrorist attack had a

PTSD prevalence rate of 13.6%, whereas those who experienced a near-miss exposure had a lower rate of 7.7%.

Other studies have commented on the association between PTSD and the perceived threat or harm to self as well as perceived loss following stress exposure. For instance, Hsu and colleagues (2002) stated that the incidence of PTSD was significantly higher in students who incurred physical injury (43.2%) following an earthquake relative to those who did not (12.9%). PTSD was also greater in participants who lost family members living in their homes (58.3%) as compared to individuals who lost family members residing elsewhere (20.3%). Kolaitis et al. (2003) and Roussos et al. (2005) similarly reported that being injured and experiencing home damage were significant predictors of PTSD in youth following the 1999 earthquake near Athens, Greece. Schaal and Elbert (2006) reported that 61% of the Rwandan children who witnessed a parent die from horrific genocide developed PTSD as compared to 33% of the children who did not witness the death of their parents.

In addition, Jones et al. (2002) and Langley and Jones (2005) reported that children who lost their homes in a wildfire presented with significantly more PTSD diagnoses than children who experienced a low degree of loss. McDermott et al. (2005) indicated that the children who perceived a threat to their own life or to the lives of family members during Australian wildfires experience higher levels of PTSD relative to children who experienced lesser threats. Findings from hurricane studies also reveal that the intensity of exposure to a hurricane and the extent of life threat were predictive of PTSD (Garrison, Weinrich, Hadin, Weinrich, & Lang, 1993; LaGreca et al., 1996).

Within the context of stressor severity, several studies have reported that an individual's physical distance to the traumatic event is of significance for the development of PTSD in

children. Post-disaster based studies involving the assessment of child-adolescent populations following catastrophic events such as earthquakes and hurricanes have indicated that degree of exposure strongly predicted severity of children's posttraumatic stress reaction (Goenjian et al., 1995, 2001; Laor et al., 2002). Goenjian and his colleagues (1995, 2001) reported that children whose homes were in close physical proximity to the epicenter of an earthquake or the eye of a hurricane, respectively, experienced higher rates of PTSD as compared to children living further away. Comparable findings were also reported by Laor et al. (2002), who observed that children living 300 miles from the epicenter of an earthquake in Marmara, Turkey, had significantly lower rates of PTSD than directly exposed youth living in a town at the earthquakes epicenter.

Regarding crime-related trauma, Pynoos and his colleagues (1987) found that the development of PTSD in individual school children was significantly related to their physical proximity during a sniper attack on their school playground. Children present on the playground as shots were fired had a higher incidence of probable PTSD (94.3%) than children who were in the school building (88.9%), at home (44.2%), or on vacation (45.1%) at the time of the attack. On the other hand, several studies observed nonsignificant associations between the intensity of stress exposure and the development of PTSD in children and adolescents. Koplewicz et al. (1994) reported that level of stress exposure was not predictive of PTSD as prevalence rates among youth who experienced high and low life threat during the World Trade Center bombing were comparable (66% and 69%, respectively). Shaw et al. (1995) failed to observe a significant difference between the prevalence estimates of the youth residing in high and low exposure areas to Hurricane Andrew. Also contrary to expectations, Zink and McCain (2003) and Jones-Alexander et al. (2005) observed that the relationship between the intensity of the stress exposure and PTSD was not significant among children involved in motor vehicle accidents (MVAs).

Three other studies found that stressor severity (Saigh et al., 2002) and physical injury status (DeVries, Kassam-Adams, Canaan, Sherman-Slate, Gallagher, & Winston, 1999; Landolt et al., 2005) also did not predict PTSD.

Time Interval. There was great variation across studies reviewed with regard to the time duration between trauma exposure and psychological assessment of youth. Pynoos et al. (1987) reported that while 60.4% of youth presented with PTSD at one month following exposure to a school-based shooting, only 29% of the sample met criteria for PTSD 14 months later. Similarly, Saigh (1988) reported that nine (75%) war-exposed Lebanese youth in his sample had developed PTSD by 37 days post-trauma, and only one (8.3%) of these individuals continued to meet PTSD criteria at a follow-up 316 days after experiencing the trauma. Sack et al. (1993) observed that PTSD prevalence rates in Cambodian refugees decreased from 50% to 48% to 38%, respectively, at five-, eight-, and eleven-year follow-up assessments. Koplewicz et al. (1994) reported that 68.2% and 54.5% percent of children exposed to the World Trade Center bombing had PTSD at three and nine months post-bombing. Similarly, Vila and colleagues (1999) indicated that 15.4% of the youth taken hostage during a school-based shooting had PTSD two months following the incident, but reported that the rate dropped to 3.8% 18 months after the event. Conversely, Landolt et al. (2005) reported that while 16.2% of youth who experienced a MVA had PTSD 4 to 6 weeks after the incident, 17.6% had PTSD at the 12-month follow-up. Ultimately, the majority of these studies suggest that PTSD rates are higher relative to the point in time when trauma was experienced.

Type and Mode of Stress Exposure. The manner in which the traumatic event was experienced may also present as a risk factor. Saigh (1991) reported that 25.2%, 55.6%, 5.6%, and 13.5% of the 230 stress-exposed Lebanese youth that met criteria for PTSD had been

traumatized through direct experience (e.g., being shot), observation (e.g., witnessing the execution of a parent or sibling), information transmission (e.g., learning about the traumatic experiences of a parent or sibling) or combinations thereof. Ackerman et al. (1998) reported that children who reported having experienced both sexual and physical abuse evinced to higher rates of PTSD (54.9%) relative to individuals experiencing either sexual abuse (31.8%) or physical abuse (22.4%) alone. Lawyer and colleagues (2006) observed a greater rate of PTSD among sexually assaulted youth (20.3%) than physically assaulted adolescents (15.1%). Furthermore, children who are sexually abused or are exposed to serious domestic violence seem to develop PTSD at a higher rate than children who have been physically maltreated, or suffered parental neglect (Famularo, Fenton, & Kinscherff, 1993).

Duration and Frequency of Stress Exposure. Wolfe et al. (1994) reported that sexually abused children who were maltreated for more than one year had higher prevalence rates of PTSD relative to children who experienced similar abuse for less than one year. Similarly, Berton and Stabb (1996) indicated that self-reports of ongoing exposure to domestic or community violence directly related to the prevalence of PTSD. Ruggiero et al. (2000) added that increased frequency and duration of sexual abuse significantly predicted PTSD in a sample of sexually abused youth. Linning and Kearney (2004) also represented that longer periods of maltreatment were significantly associated with increased PTSD rates. With reference to war traumas, children's duration of captivity was positively correlated with the risk for PTSD (Ahmad et al., 2000).

With regard to the frequency of trauma exposure, Horowitz et al. (1995) determined that multiple trauma exposures was associated with a higher prevalence of PTSD among a sample of urban youth. The number of traumatic experiences among war-exposed youth reportedly has

been predictive of PTSD among Lebanese (Macksoud & Aber, 1996), Israeli-Palestinian (Thabet & Vostanis, 1999), and Rwandan youth (Schaal & Elbert, 2006). Schaal and Elbert (2006) indicated that children who were exposed to three or more war-related traumas were at greater risk for developing PTSD than children who were exposed to a single traumatic event. Conversely, Bayer et al. (2007) reported that PTSD was not predicted by the duration of time spent as child soldiers during African civil wars.

Age. The literature presented in this chapter revealed inconsistent findings relative to the age of youth as a risk factor for PTSD. Some studies imply that older children are at a higher risk (Garrison et al., 1995; Schwartz & Kowalski, 1991), while others state that younger children might be more vulnerable to the development of the disorder. Wolfe et al.'s (1994) assessment of Canadian youth with documented histories of sexual abuse determined that youth above the age of 12 had a significantly higher prevalence of PTSD (56.5%) than younger children (32.1%). Ahmad et al. (2000) reported that Kurdish children who developed PTSD after experiencing military occupation and violence had a higher mean age than those who did not develop PTSD. Following an earthquake in Turkey, 56.3% of youth aged 7 to 11 years and 50% of 12 to 16 year olds had developed PTSD. However, no children (0%) aged six and younger were observed to have clinically significant posttraumatic stress symptoms.

Conversely, Schwarzwald et al. (1993) indicated that 5th graders who experienced a Scud missile attack were more likely than 7th and 10th graders to develop PTSD (25.4%, 3.4%, and 1.6%, respectively). These results were maintained one year later when the children were 6th, 8th and 11th graders (Schwarzwald et al., 1994). Further, Bokszczanin (2007) noted that younger boys were more likely to develop PTSD after a tragic flood than older boys. The author suggested that because many of the older boys were involved in post-flood recovery they may

have subsequently experienced greater feelings of self-control than those not involved in recovery efforts. Finally, a number of victimization studies reported nonsignificant differences in the distribution of children with PTSD by age (Landolt et al., 2005; Lavi & Solomon, 2005; Schaal & Elbert, 2006).

Gender. Results regarding the role of gender as a risk factor for PTSD in epidemiological studies have also been inconsistent. Fitzpatrick and Boldizar (1993) reported that criminally victimized females reported PTSD symptoms in a greater number and severity than males. In a study by Perkonigg and colleagues (2000), the risk of experiencing traumatic events as well as for PTSD was found to be significantly associated with being female. With reference to war-related traumas, Schaal and Elbert (2006) reported that females exposed to the horrors of the Rwandan genocide developed PTSD at greater rates than males (60% versus 27%, respectively), and Pat-Horenczyk et al. (2007) indicated that females were significantly more likely to present with probable PTSD than males (9.5% versus 5.4%, respectively) following consistent threat to missile attacks. D'Augelli et al. (2006) noted that more female (15%) than male (4%) victims of sexual orientation victimization developed PTSD. In addition, girls were up to three times more likely to suffer from PTSD than boys following a 2003 earthquake in Iran (Ziaaddini, Nakhaee, and Behzadi, 2009).

On the other hand, Khamis (2005) reported that Palestinian male students who were exposed to consistent violence had a higher prevalence of PTSD (20%) relative to similarly exposed females (14.1%). Finally, it must be noted that many studies reported no significant gender differences in relation to the prevalence of child-adolescent PTSD (e.g., Hubbard, 1995; Realmuto et al., 1992; Saigh, 1988; Saigh et al. 1995, 1997; Schwarzwald et al., 1994; Ackerman

et al., 1998; Ahmad et al., 2000; Broman-Fulks et al., 2007; Elbedour et al., 2007; Foster et al., 2004; Goenjian et al., 1995; Seedat et al., 2004; Silva et al., 2000).

Although it is not clear that gender is a risk factor for PTSD per se (Rojas & Pappagallo, 2004), it is likely that gender plays some role in the development and expression of PTSD. More specifically, Shannon, Lonigan, Finch, and Taylor (1994) found that females exposed to Hurricane Hugo had significantly more internalizing symptoms (related to emotional processing and reactions to the trauma) while boys tended to show more externalizing symptoms.

Race/Ethnicity. In general, the research presented in this chapter yielded inconsistent data with regard to the relationship between race/ethnicity and PTSD in children. For instance, whereas LaGreca and colleagues (1996) reported that Hispanic and black youth had significantly higher levels of PTSD than Caucasian children following exposure to Hurricane Hugo, Shannon et al. (1994) and Garrison et al. (1993) demonstrated nonsignificant differences between these races. March and colleagues (1997) determined that African American children exposed to an industrial explosion had a higher prevalence of PTSD relative to Caucasian youth. Jones and colleagues (2002) found that being Mexican American predicted PTSD in youth following severe California wildfires. In addition, Galea and colleagues (2003) reported that Hispanics of Dominican or Puerto Rican origin (14.3% and 13.2%, respectively) were more likely than other Hispanics (6.1%) and non-Hispanics (5.2%) to report symptoms consistent with probable PTSD after the September 11 terrorist attacks.

Numerous studies have evidenced nonsignificant associations between ethnicity/race and the development of PTSD in youngsters. Crime related PTSD studies failed to report race and ethnicity as significant predictors of PTSD (Abram, Teplin, Charles, Longworth, McClelland, & Dulcan, 2004; Famularo et al., 1996; Lawyer et al., 2006; Linning and Kearney, 2004; Lipschitz

et al., 1999). Other empirical investigations assessing PTSD following natural disasters reported nonsignificant differences when race was examined as a factor (Garrison et al., 1993, Langley & Jones, 2005; Shannon et al., 1994, Shaw et al., 1995). Moreover, Zink & McCain (2003) as well as DeVries et al. (1999) observed that race and ethnicity were unrelated to the prevalence of PTSD in youth who underwent motor vehicle accidents. Ultimately, the influence of race and ethnicity on the risk of PTSD is complex and difficult to study due to differing definitions of race, ethnicity, and culture may across sources (Rojas & Pappagallo, 2004).

Parental Psychopathology. Some of the research in this chapter also suggested that the incidence of PTSD among stressed-exposed youth varied as a function of parental psychopathology. For example, McFarlane (1987) reported that children whose parents had PTSD were more likely to develop the disorder. Along the same lines, Jones et al. (2002) indicated that the number of PTSD symptoms reported by parents was significantly associated with the prevalence of PTSD among the children exposed to California wildfires. Sack et al. (1993) reported that Cambodian children whose parents also had PTSD evinced higher PTSD prevalence rates (22.3%) relative to children whose parents did not have the disorder (12.9%). The point prevalence of the disorder increased to 41.2% when both parents had PTSD. Sack et al. (1994) determined that the prevalence of PTSD increased as a function of parental psychopathology. When neither parent had PTSD, 12.9% of their offspring met diagnostic criteria. When one parent had the disorder, the prevalence rate increased to 23.3%. Furthermore, Koplewicz et al. (1994) reported a significant relationship between parental symptomatology and child-adolescent PTSD 9 months after the World Trade Center bombing. Ahmad et al. (2000) also reported a significant positive correlation between child and caregiver PTSD symptoms. Linning and Kearney (2004) reported that parental psychopathology (i.e., drug and alcohol

abuse) was significantly associated with PTSD prevalence rates among maltreated child victims. Finally, Khamis (2005) stated that children who reported high levels of anxiety in their homes following consistent exposure to war-related traumas were also more likely to exhibit PTSD symptoms.

Resettlement Stress or Relocation. Three studies reported that the living environment of children following exposure to a traumatic event might influence PTSD prevalence rates. First, Khamis (2005) reported that Palestinian youth who resided in refugee camps following exposure to war-related traumas experienced higher rates of PTSD (50%) relative to youth exposed to similar traumatic events and who were not living in refugee camps (31.5% - 33.2%). Schaal and Elbert (2006) reported that 56% of children who survived the Rwandan genocide and were living in child-headed households developed PTSD, relative to 32% of the Rwandan youth living in orphanages. Finally, Yorbik and his colleagues (2004) reported that children who were living with their family following a Turkish earthquake presented with fewer PTSD symptoms than children who had been separated from their families.

In contrast, Najarian et al. (1996) reported that the prevalence of PTSD among exposed youth who remained in Gumri (the epicenter) following a major Armenian earthquake (32%) was comparable to that of youth who were similarly exposed but immediately relocated to Yerevan due to the destruction of their homes (28%).

Pre- and Post-trauma Exposures. Some research presented within this chapter found that prior trauma, especially where PTSD developed, and the experience of post-trauma stressors increases individual susceptibility to repeated bouts of PTSD. Garrison et al. (1993) assessed children who survived Hurricane Andrew and reported that having a pre-hurricane history of exposure to extreme stress (i.e., abuse or assault) was predictive of PTSD. Lipschitz et al. (2000)

determined that an earlier history of child abuse and physical neglect were associated with significantly more PTSD among adolescent girls who had been exposed to various types of community violence. In terms of post-trauma experiences, Saigh (1988) reported a strong association between secondary exposures to traumatic war-related events and PTSD. Sack and his colleagues (1993) determined that Cambodian subjects experienced significantly more resettlement stress than counterparts who did not develop the disorder. In contrast, Jones et al. (2002) indicated that neither pre- nor post-wildfire stress exposure was predictive of PTSD.

Victim-Perpetrator Relationship. McLeer et al. (1988) reported that 75% of youth who were abused by their natural father developed the disorder. These authors also indicated that 25% of the subjects abused by trusted adults and 10% of those abused by a stranger evidenced PTSD. In considerable contrast, none of the children who were abused by an older youth met diagnostic criteria for the disorder. In a more recent investigation, Lawyer et al. (2006) compared the prevalence of PTSD between two cohorts of abused youth and indicated that PTSD estimates differed significantly as a function of the victim-perpetrator relationship. Among the first group of sexually abused children, 2.8% of youth experiencing assault by a stranger evinced PTSD. However, for participants whose perpetrators were recognized non-acquaintances, acquaintances, and family members, prevalence estimates were observed to be 27%, 25.9%, and 11.6%, respectively. Furthermore, PTSD was evident among 9.8% of acquaintance-assaulted adolescents within the second cohort of physically assaulted youth. Prevalence estimates were reported as 18.7%, 16.5%, and 17.8% among victims whose perpetrators were recognized non-acquaintances, acquaintances, and family members, respectively. Conversely, Ackerman et al. (1998) indicated that among young children who had not been sexually abused, the relationship between the child and perpetrator was not significantly related to a positive diagnosis of PTSD.

Summary

Risk factors for PTSD varied widely across the differing conditions presented in this section. However, while absolute risk factors cannot be clearly delineated, several broad factors have emerged as important in the development of PTSD in children and adolescents. It appeared that interpersonal trauma, such as sexual and physical abuse, and large-scale disasters in which personal trauma is involved (war in Cambodia) yield higher rates of PTSD. In this context it is possible that trauma type (e.g., sexually assault, natural disaster) interacts with various other factors (e.g., age, gender, trauma severity) to reveal differing susceptibilities to PTSD per type (Rojas & Pappagallo, 2004). With regards to personal characteristics, boys and girls may show their symptoms differently; age and developmental level may vastly influence the way children and adolescents perceive and react to trauma. Further investigations involving children and adolescents exposed to trauma are needed to more definitely determine the relative risk each factor confers.

Chapter Summary

Based on the review of extant literature presented within this chapter, it can be concluded that children and adolescents are frequently exposed to myriad of traumatic incidents. Although exposure to trauma alone might not be sufficient to induce PTSD in most youth, it seems clear that children and adolescents evidenced varying degrees of psychological morbidity after exposure to extremely stressful events.

Tables 2.1 – 2.3 present an overview of PTSD prevalence estimates by trauma type and reveal considerable variation within and between categories of stressors. Reports in this review indicated prevalence rates that ranged from 0% to 95% for stressors including war-related events, criminal victimization, natural disasters, and transportation and motor vehicle accidents. War-

related traumas had prevalence rates that ranged from 14.7% to 68.9%. Criminal victimization studies had prevalence rates that from ranged 9% to 63.5% and studies of disasters and accidents suggested rates from 0% to 90%.

The wide variation in reported PTSD prevalence rates in groups of children must be tempered with the understanding that differences in assessment measures used, sample characteristics, severity and type of exposure, time elapsed between assessment and trauma exposure as well as diagnostic criteria, may account for these differences. First, several different tests or methods were used to diagnose PTSD (e.g., non-structured interviews, structured clinical interviews, parental ratings, teachers, and self-report inventories) and many of the assessment vehicles that were employed have different or undetermined psychometric properties. It should also be noted that self-reports might be influenced by social desirability or misinterpretation of test questions (Kessler, Wittchen, Abelson, & Zhao, 2000). As such, psychometric variations relative to the specificity and sensitivity of the instruments that were used most probably significantly contributed to the observed variability.

The variability in the literature may also be explained in part by realizing that substantial differences were evident relative to the type and intensity of the precipitating stressors. Moreover, extensive variability was apparent relative to the duration between stress exposure and the assessment of PTSD (e.g., 1 week to 18 years). Sampling techniques also varied across studies. Analogously, a great deal of variability was apparent with respect to the demographic characteristics of the subjects that were sampled. Finally, as studies have demonstrated that PTSD status may change over time (e.g., Sack et al., 1993; Vila et al., 1999), the varying PTSD prevalence rates across the studies presented here may also be related to the elapsed time frame between trauma exposure and assessment. Finally, as three different sets of diagnostic criteria

have appeared in the formal nomenclature since 1980, it is reasonable to assume that the divergent diagnostic criteria may have contributed to variations in reported prevalence (Schwarz & Kowalski, 1991).

Furthermore, studies examining psychiatric comorbidity revealed that anxiety, depression, and externalizing behavior disorders such as ADHD and conduct disorder can often appear concurrently with PTSD in youth. Inasmuch as the presence of comorbid disorders may effect the treatment of PTSD, more research examining not only what disorders may appear with child-adolescent PTSD but also how they affect the presentation and development of the disorder is necessary (Saigh & Bremner, 1999).

Finally, studies examining risk factors associated with the development of child-adolescent PTSD revealed consistencies and inconsistencies in the literature. First, all studies examining the relationship between parent psychopathology and child PTSD indicated that the appearance of the former is predictive of the latter. Next, four of eleven studies observed intensity of trauma exposure to be predicative of the development of PTSD. A similar statement may be made in regards to the duration and number of exposures. Three of the four studies examining this question reported that the likelihood of developing PTSD increases with a longer duration of exposure to traumatic events. Inconsistencies were often noted in regards to both the relationship between gender and age, respectively, and PTSD. Specifically, six studies indicated that females develop PTSD at higher rates than males and one indicated the opposite. Most interesting, however, is that fourteen studies indicated no relationship between gender and PTSD. Finally, while three studies suggested that older children develop PTSD at greater rates than younger children, three indicated the opposite and three noted no relationship between age and PTSD.

In sum, through epidemiological research, it is apparent that a plurality of children and youth experience exposure to one or more traumatic events in their lifetimes. Yet, as Finkelhor and Jones (2004) have noted and as made evident through the inconsistencies in the literature presented herein, precisely estimating trends over time is an ongoing challenge. As such, there is a great need for prospective studies that enhance appreciation of the unique pathology of traumatized youth by providing much needed data that are essential to understand the complex associations between premorbid conditions, stress exposure, PTSD, comorbid disorders, and a variety of risk factors.

Chapter III

METHODOLOGY

As seen in Chapter II, PTSD has been documented in youth exposed to a wide range of violent and non-violent traumatic stressors. Multiple studies have noted symptoms of PTSD in subgroups of children and adolescents following exposure to stressors including war (Kinzie et al. 1989; Sack et al., 1993, 1994), violent crime (Pynoos & Eth, 1985), abuse (McLeer et al., 1994), natural disaster (Goenjian et al., 1995), human made disasters (Green et al., 1994; Pynoos et al., 1987), medical accidents and emergencies (Stoddard et al., 1989), and community violence (Kilpatrick et al., 2003). Relatively few studies, however, have addressed the posttraumatic distress that these youth experience, not to mention their future perceptions (e.g., Baker, 1990; Thabet & Vostanis, 1999, 2000; Thabet et al., 2002). Furthermore, limited information is available regarding the future orientation of traumatized children and adolescents with or without PTSD relative to a non-traumatized control group (Saigh et al., 1999).

According to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV-TR; American Psychiatric Association [APA], 2000), children with PTSD experience a “sense of foreshortened future” as demonstrated through their “diminished expectations of having a normal lifespan (e.g., does not expect to have a career, marriage, or children),” (APA, 2000, p. 467). Although the DSM-IV-TR includes a sense of foreshortened future as a diagnostic symptom of PTSD in youth, it is not entirely clear whether pessimism about the future is the outcome of PTSD or an independent reaction to exposure to extreme stress (Saigh, 1997). In addition, though the DSM-IV makes reference to the expression of PTSD in children and adolescents, it is important to note that the DSM-IV PTSD field trial (*see Chapter I*) did not involve subjects below the age of 15 years (Kilpatrick, Resnick, & Freedy, 1993;

Saigh & Bremner, 1999). This chapter therefore presents the rationale for an investigation that seeks to determine if traumatized youth with or without PTSD significantly differ from non-traumatized controls as denoted by the *Children's Future Orientation Scale* (CFOS; Saigh, 1995). This study further addresses the gap in the literature by reviewing background information related to the development of a foreshortened future as a symptom of PTSD. In addition, a statement of the problem, the purpose of the study, need, and methods are presented.

Background Information

Future orientation has been defined as one's expectations and the degree to which one is thoughtful about their future. This definition draws from Nurmi (1991), where future orientation is a multidimensional concept that includes such dimensions as planning, realism, and a sense of control. Future orientation is important for adolescents because it is related to decisions about one's education, career, and family (Havighurst, 1972; Nurmi, 1991; Seginer, 1988). Future orientation is also positively related to academic achievement. For example, Zimbardo and Boyd (1999) reported that grade point average and hours of studying per week were positively related to future orientation in a study of college students. Israelashvili (1997) also found that 5th through 12th grade students' future expectations were positively related to school adjustment and school membership.

Future orientation also may play an important role as a protective factor in promoting resiliency for youth facing adversities related to low SES. For instance, Wyman, Cowen, Work, and Kerley (1993) concluded that thinking about the future or having a positive future orientation was related to enhanced socioemotional development and school adjustment in a longitudinal study of 136, 9- to 11-year-old children living in poverty. In another study, Wyman (1992) and colleagues found that positive expectations for the future were related to resilient children.

Pessimism about the future has been a diagnostic symptom of posttraumatic stress disorder (PTSD) for the last 23 years (American Psychiatric Association, 1987). Lenore Terr (1983) introduced the notion that traumatized children may have pessimistic views about the future in a longitudinal study examining posttraumatic reactions in victims of the 1976 school bus hijacking in Chowchilla, California. Terr reported that kidnappers “commandeered 26 children and their school bus driver at gunpoint, drove them about for 11 hours in two blanked vans, and buried them alive for 16 hours in a truck trailer...” (p. 1543). All children escaped and survived. Following a series of interviews occurring four years after the incident, Terr observed “23 of the 25 victims suffered from severe philosophical pessimism, the sense that their futures would be greatly limited” (p. 1547). She also observed that these children “expected an unusually short lifespan or a future disaster, or they were unable to envision marriage, children, or career. Some evaded answers to questions about their futures, but when pinned down, they revealed their profoundly limited life expectations...” (p. 1547). Specifically, she reported that the children in question believed they would live six or seven years less than other children that were not affected by the event (Terr, 1983). Terr also represented “it is my clinical impression that depressed children do not exhibit the same sense of foreshortened future” (p. 1547). Terr acknowledged, however, “further studies may indicate whether philosophical pessimism is a finding specific to psychic trauma” (p. 1547). Given the theoretical and clinical implications of Terr’s landmark research, the *Diagnostic and Statistical Manual of Mental Disorders Third Edition-Revised* (DSM-III-R; APA, 1987) subsequently included a “sense of foreshortened future, e.g., does not expect to have a career, marriage, or children, or a long life” (p. 250) as a diagnostic symptom of PTSD.

Whereas the DSM-III-R significantly contributed to research and practice, the criteria for PTSD in this manual were identified on the basis of clinical observations without the provision of a field trial. In contrast, the work group that formulated the diagnostic criteria for PTSD in the DSM-IV (APA, 1994) carried out a field trial involving 400 treatment-seeking traumatized participants (mean age: 41.4 years) and 128 adult community residents (mean age: 35.7 years) (Kilpatrick et al., 1998). These investigators used PTSD modules from the *Structured Clinical Interview for the DSM-III-R* (Spitzer, Williams, & Gibbon, 1987) and the Diagnostic Interview Schedule (Robins, Helzer, Croughan, & Ratcliff, 1981) to diagnose cases. Within this context, future orientation symptoms evidenced the following kappa coefficients relative to meeting criteria for a current PTSD diagnosis: sensitivity (.54), specificity (.85) positive predictive power (.66), and negative predictive power (.77). Given these outcomes, a “sense of foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)” (p. 428) was retained as a diagnostic symptom of PTSD in the DSM-IV (APA, 1990). The DSM-IV-TR further indicates that, “In children, the sense of a foreshortened future may be evidenced by the belief that life will be too short to include becoming an adult” (p. 466).

Despite the inclusion of a “foreshortened future” as PTSD diagnostic criterion C7 in the DSM-III-R, DSM-IV, and DSM-IV-TR, very few empirical studies have compared the future expectations of traumatized youth with or without PTSD to non-traumatized counterparts. The limited research in this area has highlighted that traumatized youth exhibiting symptoms of PTSD commonly express uncertainty about their futures, view their futures as limited, and develop pessimistic expectations of other people and life in general (e.g., Dyregrov and Raundalen, 1987; Saigh, 1997; Terr, 1991). Along with Terr (1983), Janet Newman (1976) was among the earlier researchers to describe foreshortened future expectations in child and

adolescent trauma victims. Newman and her team from the University of Cincinnati evaluated "psychic impairment" in 600 child and adult survivors following the collapse of a dam in Buffalo Creek, West Virginia in 1971 (Newman, 1976). This disaster resulted in the loss of 125 lives (Green, Korol, & Grace et al., 1991). As PTSD was not a formal diagnosis at the time, Newman's assessment of the children indicated that the surviving children exhibited shortened future orientation and a number of symptoms characteristic of PTSD as denoted by the DSM-IV (Grace et al., 1991).

Studies involving war-exposed youth in the Middle East have also documented increased negative expectations (Lavi & Solomon, 2005; Schwarzwald, Weisenberg, Solomon, & Waysman, 1997; Solomon & Lavi, 2005). Viewed in this context, Schwarzwald, Weisenberg, Solomon, and Waysman (1997) examined attitudes about the future among a sample of Israeli children following the first Gulf War. The authors assessed 310 children who resided in areas that were hit by Scud missiles and 182 children who resided in areas that were not hit by missiles. Schwarzwald et al. reported that children with high levels of PTSD symptoms reported more negative expectations about the future as denoted by responses to open ended questions about their future. Similarly, Solomon and Lavi (2005) administered the *Children's Future Orientation Scale* (CFOS; Saigh, 1995) to 740 Israeli adolescents who resided in Israel or in Jewish settlements within disputed areas and observed that PTSD symptoms were inversely related to expectations about future employment and social interactions. In a related effort, Lavi and Solomon (2005) administered the CFOS to 245 Palestinians residing in disputed territories and 300 Israeli-Palestinian adolescents in Israel. While nonsignificant correlations were reported between measures of trauma exposure and the CFOS among the Israeli-Palestinians, significant

negative correlations were observed between trauma exposure and the future expectations of Palestinian adolescents who resided in the disputed areas.

Statement of the Problem

Although these studies suggest that traumatized individuals evidence pessimistic attitudes about the future, a number of concerns are evident. Initially, Terr's (1983) observations were based on unstructured interviews and this form of assessment is susceptible to information variance (Spitzer, Endicott, Robins, 1978). In a similar vein, the Newman outcomes were obtained through the use of "fantasy eliciting techniques" (i.e., a form of projective testing) and information about the reliability and validity of her assessment procedure was not reported. Moreover, it is not known if the children in the Terr or Newman investigations had PTSD as diagnostic information was not reported. In addition, the Israeli and Palestinian studies did not compare groups with or without PTSD. Given that trauma exposure may not lead to PTSD (Kulka, Schlenger, & Fairbank et al., 1990; Sack, Clarke, & Kinney et al., 1995), it is not clear if the reported pessimism about the future was a symptom of PTSD or a symptom of trauma exposure without PTSD. It is also of concern to observe that all of the studies that were reviewed did not control for the potentially confounding effects of comorbid disorders. It is of significance to note that children with PTSD frequently have attention deficit hyperactivity disorder (ADHD), conduct disorder (CD), major depressive disorder (MDD), and or substance dependence (Saigh, Sack, Yasik, & Koplewicz, 1999) and that these disorders have been associated with negative expectations about the future (Andersen & Limpert, 2001; Dodge, 1993; Hillebrand & Marsden, 2001; Kaidar, Wiener, & Tannock, 2003). Accordingly, it is not clear if the reported negative expectations were due to PTSD or a combination of PTSD and comorbid disorders. Given these

issues, the conceptualization and measurement of future foreshortening as a diagnostic symptom of PTSD warrants further clarification.

Purpose of the Study

The purpose of the present study is to investigate attitudes about the future, as measured by the Children's Future Orientation Scale (CFOS; Saigh, 1995), of traumatized youth with PTSD to the CFOS scores of youth who did not develop PTSD following traumatic events. This study also aims to compare the CFOS scores of traumatized youth with and without PTSD to the scores of a non-traumatized control group. In order to achieve this, a data set from a study that was approved by the respective institutional review boards of the Graduate Center of the City University of New York, Bellevue Hospital, and Teachers College, Columbia University were analyzed.

Significance of the Study

A comparative analysis of the psychological adjustment, particularly the future orientation, of traumatized youth with and without PTSD relative to non-clinical controls may offer a number of significant theoretical and clinical benefits.

Theoretical Significance. Empirical information regarding the future orientation of traumatized youth with or without PTSD would help to establish if pessimism about the future varies as a function of diagnostic status. In effect, this study may highlight whether pessimism about the future is associated with PTSD or exposure to extreme stress. The anticipated outcomes could lend empirical support for the DSM-IV-TR contention that children and adolescents with PTSD may exhibit a "sense of a foreshortened future" (APA, 2000). On the other hand, the outcomes could serve to demonstrate that the DSM-IV-TR assertion may be inaccurate. Clearly, these outcomes may be of interest to scientists who are involved in the study

of systems of classification. Additionally, as children with major comorbid disorders that are associated with pessimism about the future will be excluded, this study will offer a unique perspective about the future orientation of traumatized youth with or without PTSD.

Clinical Significance. Examined from a clinical perspective, participants received free comprehensive psychiatric and psychological evaluations. The results of these evaluations were intended to denote the presence or absence of psychiatric morbidity and provided a wealth of information regarding participants' affective and behavioral functioning. The test outcomes were incorporated into individualized psychological reports that will be given to parents/guardians. The provision of these reports, coupled with referrals for mental health services, may have served to offset the serious consequences that are associated with PTSD and a number of frequently comorbid disorders. In addition, "pessimism about the future has been associated with negative mental health and educational outcomes" (Dubow, Arnett, Smith, & Ippolito, 2001; Nurmi, 1991). Therefore, information about the CFOS scores of participants with PTSD may also have provided useful information that was incorporated in planning and evaluating age-appropriate treatments targeting these specific emotional vulnerabilities in youth with PTSD.

Hypotheses

Rationale for Hypotheses 1 – 10. Given the number of studies reporting that children and adolescents with PTSD evidenced significantly lower self-concept and academic achievement, and significantly higher levels of anxiety and depression (Saigh, 1989; Saigh, Mroueh, Zimmerman, & Fairbank, 1995; Saigh, Yasik, Oberfield, & Halamandaris, 2002; Saigh, Yasik, Oberfield, & Halamandaris, 2008) relative to traumatized youth without PTSD and non-traumatized controls, it is expected that youth with PTSD will evidence more negative attitudes

about the future as denoted by the CFOS. More specifically, the following hypotheses will be tested:

Hypotheses 1 – 10.

H₀1: Children and adolescents with PTSD will have significantly lower CFOS Total scores than traumatized youth without PTSD.

H₀2: Children and adolescents with PTSD will have significantly lower CFOS Work scores than traumatized youth without PTSD.

H₀3: Children and adolescents with PTSD will have significantly lower CFOS Family scores than traumatized youth without PTSD.

H₀4: Children and adolescents with PTSD will have significantly lower CFOS Social scores than traumatized youth without PTSD.

H₀5: Children and adolescents with PTSD will have significantly lower CFOS Omnibus scores than traumatized youth without PTSD.

H₀6: Children and adolescents with PTSD will have significantly lower CFOS Total scores than non-traumatized youth without PTSD.

H₀7: Children and adolescents with PTSD will have significantly lower CFOS Work scores than non-traumatized youth without PTSD.

H₀8: Children and adolescents with PTSD will have significantly lower CFOS Family scores than non-traumatized youth without PTSD.

H₀9: Children and adolescents with PTSD will have significantly lower CFOS Social scores than non-traumatized youth without PTSD.

H₀10: Children and adolescents with PTSD will have significantly lower CFOS Omnibus scores than non-traumatized youth without PTSD.

Rationale for Hypotheses 11 – 15. The literature comparing the emotional distress or psychiatric morbidity of traumatized youth without PTSD to non-traumatized controls has failed to observe significant differences amongst these groups on measures of anxiety, depression, academic achievement, and self-concept on non-diagnostic measures of functioning (Saigh, 1989; Saigh, 1991; Saigh, Mroueh, Zimmerman, & Fairbank, 1995; Saigh, Yasik, Oberfield, & Halamandaris, 2002; Saigh, Yasik, Oberfield, & Halamandaris, 2008). In view of this, it is anticipated that the future expectations of traumatized youth without PTSD, as denoted by CFOS scores, will not significantly differ from the future expectations of their non-traumatized counterparts. To address this point, the following hypotheses will be examined:

Hypotheses 11 – 15.

H₀11: Traumatized children and adolescents without PTSD will not have significantly different CFOS Total scores relative to non-traumatized controls.

H₀12: Traumatized children and adolescents without PTSD will not have significantly different CFOS Work Domain Composite scores relative to non-traumatized controls.

H₀13: Traumatized children and adolescents without PTSD will not have significantly different CFOS Family Composite scores relative to non-traumatized controls.

H₀14: Traumatized children and adolescents without PTSD will not have significantly different CFOS Social Composite scores relative to non-traumatized controls.

H₀15: Traumatized children and adolescents without PTSD will not have significantly different CFOS Omnibus Composite scores relative to non-traumatized controls.

In effect, it is expected that reduced future orientation will be associated with PTSD and not with trauma exposure in the absence of PTSD. It is also expected that reduced future

orientation among youth with PTSD will be evident across the different dimensions of the CFOS.

Research Design

This study involved a three-group case-control design. Designation to the PTSD-positive group, the traumatized PTSD negative group, or the non-traumatized control group denoted the independent variable. Child ratings on the CFOS represented the dependent variable. The PTSD positive, traumatized PTSD negative, and the non-traumatized control groups included a minimum of 21 cases, as Cohen’s (1992) power analysis tables indicate that a minimum of 21 cases per cell are required to specify a large effect in a three-group case control design. A schematic representation of the research design is presented in Figure 1.

Figure 1

Schematic Representation of the Research Design

Children’s Future Orientation Scale	PTSD positives	Traumatized PTSD negatives	Non-Traumatized Controls
CFOS Total score			
CFOS Work Composite			
CFOS Family Composite			
CFOS Social Composite			
CFOS Omnibus Composite			

Participant Sample

Participants included youth aged 6 to 18 years drawn from an existing data set of a study that was approved by the Teachers College Internal Review Board (IRB), Bellevue Hospital IRB, and the IRB of the Graduate School of the City University of New York. Bellevue Hospital

practitioners from the Hospital's Adolescent Clinic, Pediatric Consultation- Liaison Psychiatry Clinic, Pediatric Emergency Room, and the Pediatric Crime Victim's Program referred 230 cases that presented following traumatic experiences to the investigators. Parental or guardian consent and child assent was obtained for 161 (70%) cases. Of this number, 52 (32.3%) were excluded due to: head injury ($n = 24$), limited English proficiency ($n = 10$), positive history of child abuse or neglect ($n = 2$), and WISC-III Full Scale IQs of 69 or less ($n = 16$). Of the remaining 109 cases, 41 (37.6%) met criteria for PTSD and 68 (62.4%) did not. Among the PTSD group, eight cases were excluded because they met criteria for MDD and one case was excluded because he met criteria for substance dependence. Among the traumatized PTSD negative group, two cases met criteria for MDD, one had ADHD, and two had conduct disorder. These cases were also excluded.

The parents or guardians of 280 potentially non-traumatized youth who presented at a Bellevue clinic providing routine medical services to children were invited to enroll their children in the study. Parent or guardian consent to participate and child assent was provided by 78 (28%) of the cases. Five cases reported that they experienced traumatic incidents indicative of the DSM-IV PTSD Criterion A1 and were included in the 230 traumatized referrals. Thirty-two (41%) were excluded for the following reasons: head injury ($n = 2$), limited English proficiency ($n = 15$), current psychopharmacological treatment ($n = 8$), and WISC-III Full Scale IQs in the deficient range ($n = 7$). None of the non-traumatized youth received a DICA-R diagnosis for MDD, ADHD, CD, substance dependence, or psychotic symptoms. None of these cases had a life-threatening illness.

The recruitment process led to the identification of 32 PTSD, 63 traumatized PTSD negatives, and 41 non-traumatized controls. Exploratory data analysis was conducted to

investigate the distribution of the CFOS Total and subscale scores within the experimental groups. A stem and leaf procedure identified four cases (2 PTSD, 1 traumatized PTSD negative, and 1 non-traumatized control) that evidenced extreme CFOS Total and/or greater than one subscale and were subsequently excluded from the data analysis. As such, the final sample consisted of 30 PTSD, 62 traumatized PTSD negatives, and 40 controls. The age range for participants was 7.08 to 18.42 years ($M = 13.28$, $SD = 2.84$). Overall, 75 males and 57 females participated. All youth received administrations of the diagnostic, stressor severity, and dependent measures. The parents or guardians marked the Hollingshead *Four-Factor Index of Social Status* (Hollingshead, 1975) questionnaire.

Information regarding the demographic characteristics of the selected sample is reported in Table 3 in Chapter IV. In a similar vein, information regarding the type and frequency of traumatic events is reported in Table 4 in Chapter IV. More specifically, Table 4 lists the different types of PTSD Criterion A1 traumatic events that were reported by the PTSD and traumatized PTSD negative groups, and also presents PTSD Criterion AI traumatic events by gender. With reference to frequency of exposure to traumatic events, 43.3% of participants in the PTSD positive group reported exposure to a single traumatic event, 46.7% reported exposure to two traumatic events, and 10.0% reported exposure to more than two traumatic events. With reference to the traumatized PTSD negatives, 75.8% reported exposure to a single traumatic event, 17.7% reported exposure to two traumatic events, and 6.5% reported exposure to more than two events.

PTSD Inclusion Criteria. To be included in a PTSD group, participants must have been between the age of 6 and 18 years, and received two independent PTSD clinical diagnoses from by a board-certified child psychiatrist and a licensed psychologist, as well as two independent

PTSD diagnoses as determined by administrations of the Children's PTSD Inventory (Saigh, 2003a) by doctoral-level graduate psychology students.

Non-traumatized Control Group. In order to be included in the study as a non-traumatized control case, participants must have ranged in age from 6 to 18 years and received two independent negative PTSD clinical diagnoses from by a board-certified child psychiatrist and licensed psychologist, as well as two independent negative PTSD diagnoses as determined by two administrations of the Children's PTSD Inventory (Saigh, 2003a). Additionally, verbatim responses to the Children's PTSD Inventory trauma exposure questions must not have reflected the DSM-IV Criterion A1 definition of trauma exposure², as judged by two independent psychiatrists or psychologists.

Exclusionary Criteria. Youth with a history of abuse or neglect were not included in the study, given that these individuals may experience ongoing distress due to court proceedings and/or placements in the foster care system (McLeer, Callaghan, Henry, & Wallen, 1994; Merry & Andrews, 1994). In this study, history of abuse and neglect was defined by the New York State Family Court Act, Article 10, Section 1012 (1970), which states that it is a felony for a "parent or guardian or other persons legally responsible for a child's care to inflict or allow to be inflicted on a child physical injury... which causes or creates a substantial risk of death, or serious or protracted disfigurement, or protracted impairment of physical or emotional health or... commits or allows to be committed, a sex offense against a child..." (p. 300). Individuals who were assaulted sexually or physically by a parent or guardian were excluded from this study

² *DSM-IV-TR* Criterion A1 specifies that during exposure to a traumatic event, "1) the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others," and "2) the person's response involved intense fear, helplessness, or horror" (APA, 2000, p. 467).

and individuals who were assaulted sexually or physically by anyone other than a parent or guardian were included.

In addition, individuals with Wechsler Intelligence Scale for Children, Third Edition (WISC-III; Wechsler, 1991) Full Scale IQs (FSIQ) scores of 69 or less were excluded from this study, as Saigh (2003) reported that individuals with WISC-III FSIQ scores at or below 69 (known as the *deficient* IQ range) experienced difficulty understanding PTSD diagnostic test questions and produced inconsistent responses. Youth who are not able to speak or understand English also will be excluded from this study. As disorders including ADHD, Conduct Disorder, substance abuse or dependence, and Major Depressive Disorder (MDD) are commonly diagnosed with PTSD (Sack et al., 1994; Saigh, Yasik, Sack, & Kopelwicz, 1999) and are associated with increased psychopathology (Armstrong & Costello, 2002; Hinshaw, 2002; Reynolds, 1994), youth with these disorders were excluded from this study in order to control for the potentially confounding effects of comorbidity. These comorbid disorders will be determined through administrations of the Diagnostic Interview Schedule for Children and Adolescents (DICA-R; Reich, Leacock & Shanfeld, 1994). Individuals who have a history of significant head trauma, psychotic symptoms, and who take medication that could impact cognitive functioning were also excluded.

Diagnostic Measures

Children's PTSD Inventory. The Children's PTSD Inventory (CPTSDI; Saigh, 2003a, 2003b) is a structured clinical interview that directly corresponds to the DSM-IV criteria for PTSD. The instrument is designed for use with youth aged 6 through 18 years. The Children's PTSD Inventory is comprised of five subtests that assess potential exposure to extreme stress and situational reactivity, re-experiencing symptoms, avoidance and numbing symptoms, increased

arousal symptoms, and level of distress. These subtests are scored dichotomously as based on the DSM-IV diagnostic criteria. With regard to the current study, diagnoses of Acute PTSD, Chronic PTSD, and Delayed Onset PTSD will be identified as PTSD positive cases.

With regard to the CPTSDI's internal consistency estimates, Saigh (2003b) reported an alpha of .95 at the diagnostic level. Interrater reliability for the Children's PTSD Inventory yielded a 98% agreement between raters; interrater estimates were also high on all subtests ($\kappa > .75$). An inter-rater intraclass correlation coefficient (ICC) of .98 and an inter-rater reliability kappa of .96 were reported at the diagnostic level. Analysis of test-retest reliability evinced 97.6% agreement at the diagnostic level. A test-retest kappa of .91 and an ICC of .90 were calculated at the diagnostic level. Evidence for concurrent validity of the Children's PTSD Inventory was obtained using clinician-derived diagnoses as well as diagnoses established through administrations of the Structured Clinical Interview for the DSM-IV (SCID; First, Gibbon, Williams, & Spitzer, 1996) and the Diagnostic Interview for Children and Adolescents-Revised (DICA-R; Reich, Leacock, & Shanfield, 1995) PTSD modules. Overall, moderate to high levels of sensitivity (.84-.92), specificity (.93-.98), positive (.63-.98) and negative (.95-.99) predictive power, and diagnostic efficiency (.93-.95) were reported.

Diagnostic Interview for Children and Adolescents-Revised (DICA-R; Reich et al., 1995). The DICA-R is a semi-structured interview consisting of modules that assess Axis I psychopathology in youth based on *DSM-IV* criteria. In order to identify comorbid conditions, participants in this study received individual administrations of the MDD, ADHD, conduct disorder (CD), substance dependence, and psychotic symptoms modules by a trained interviewer. According to Reich (2000), test-retest kappa coefficients for the MDD module ranged from .55 to .80. Test-retest kappas for the ADHD module ranged from .32 to .59 and a coefficient of .92

was reported for the conduct disorder module. Further, test-retest kappas for the substance dependence module ranged from .66 to 1.00 and a kappa of .76 was indicated for the psychotic symptoms module (Reich, 2000). Sensitivity coefficients of .82, .85, .92, 1.00, and 1.00 for the MDD, ADHD, conduct disorder, substance dependence, and psychotic symptoms modules were reported, respectively (Reich, personal communication, February 5, 2001), as well as specificity coefficients of .72, .73, .71, .80, and .72 for each respective module.

Clinical Interviews. Participants received two independent clinical interviews by one of two board-certified child psychiatrists and or a licensed psychologist. The psychiatrists had 21 and 9 years of post-residency experience and the psychologist had 23 years of postdoctoral experience. The clinicians interviewed the participants and determined if they had been exposed to traumatic incidents that were commensurate with the DSM-IV PTSD Criterion A1 definition and if their reported symptoms met criteria for PTSD. The examiners used the DSM-IV PTSD criteria to guide their efforts.

Diagnostic Agreement. In terms of diagnostic agreement for the unstructured PTSD clinical interviews, the clinicians agreed on the diagnostic status of 129 out of 132 cases (*kappa* = .94). Agreement between clinician-derived diagnoses and the diagnoses that were derived by administrations of the *Children's PTSD Inventory* (Saigh, 2005) was evident among 125 of the 132 cases (*kappa* = .86) examined. For the seven cases wherein diagnostic discordance occurred, case conferences were held to discuss reported diagnostic symptoms and final diagnostic decisions were reached through a consensual process. It was concluded that each of these cases met criteria for PTSD.

Socioeconomic Status Measure

Hollingshead Four Factor Index of Social Position (Hollingshead, 1975) was used to determine subjects' socioeconomic status (SES). The index is based on four factors: education, occupation, sex, and marital status. The status score for an individual or nuclear family is calculated according to directions outlined in Hollingshead (1975). In the Hollingshead system, information on parental education and occupation is combined to generate one status score for an individual or nuclear family unit. Each parent or guardian is assigned an education score and an occupation score, based on education level completed and current work status. Education and occupation scores range from 1 to 7 and 1 through 9, respectively, and are positively correlated with years of education and income level. These scores are then weighted to obtain a single score for each parent or guardian. Weighted scores range between 8 and 66 points, such that "the higher score of a family or nuclear unit, the higher the status its members are accorded by other members of our society" (Hollingshead, p. 17). Hollingshead sets forth five ranges of computed scores, indicating five social strata with the highest scores assigned to Class I, and the lowest scores assigned to Class V.

In a study of the measure's reliability and validity, Cirino et al. (2002) found moderate (.73) to high (.95) inter-rater reliability coefficients for the Hollingshead Four Factor Index of Social Position. The authors reported 89% agreement and a Pearson product-moment correlation of .91. Convergent validity estimates ranged from .42 to .92 when the Hollingshead scores were correlated with the Socioeconomic Index of Occupations (Nakao & Treas, 1992) scores (Cirino et al., 2002).

Stressor Severity Measure

Severity of Psychosocial Stress Scale: Children and Adolescents (SPSS-CA; APA, 1987). This 6-point Likert-type index is intended for use in formulating stressor severity ratings. The scale offers specific examples to facilitate the rating process. Taken in this context, the “death of both parents” is described as a catastrophic stressor and accorded a rating of 6 and “breaking up with a boyfriend or girlfriend” is described as a mild stressor and accorded a rating of 2. The absence of a significant stressor is rated as 1 for “None.” A board-certified child psychiatrist with 21 years of post-residency experience and a psychologist with 23 years of postdoctoral experience independently read all of the recorded responses to the *Children’s PTSD Inventory* stress exposure items and rated the statements according to the SPSS-CA criteria. A Pearson product moment correlation of .98 ($p < .001$) was observed between the independently derived stressor severity ratings. As stressor severity has been associated with increased psychiatric morbidity in children (Pynoos, Goenjian, & Tashjian, 1993), SPSS-CA ratings were used to examine for potential differences between traumatized youth with or without PTSD.

Dependent Measure

Children’s Future Orientation Scale (CFOS; Saigh, 1995). The CFOS is a self-report inventory that was devised to assess the attitudes of children and adolescents as they relate to three specific domains and a general domain (Saigh, 1995). These domains are labeled “Work”, “Family”, “Social”, and “Omnibus,” respectively. The Work domain involves statements about working in the future (e.g., “I will earn a living or keep a home when I get older,” and, “I will have a job when I get older”), the Family domain involves statements about future marriage and the prospect of having a family (e.g., “I will be a husband or wife when I get older,” and, “I will have a family of my own in the future”), the Social domain presents statements about anticipated

interpersonal relations (e.g., “I will have friends when I get older,” and, “I am sure that I will meet a lot of people in the future), and the Omnibus domain involves general statements about future expectations or attitudes (e.g., “I like to make plans for what I want to do” or, “I will live to be more than 60 years old”). Items are rated for agreement according to a 1-5 Likert-type scale with 5 denoting “Very Much” and 1 denoting “Not at All.” Ratings are added to derive domain scores and a Total composite score. The Composite raw scores for each of the Work, Family, Social, and Omnibus domains may range from 4 to 20, respectively. Higher domain Composite scores suggest higher future orientation relative to the respective areas. As the Total Score comprises the sum of all domain ratings, General Composite scores or Total raw scores may range from 16 to 80. Higher Total CFOS raw scores indicate higher or more positive attitudes about the future overall.

Yasik, Saigh, Oberfield and Halamandaris (1999) administered the CFOS to 140 non-referred children in grades three through eight and reported a moderate level of internal consistency for the CFOS Total scale ($\alpha = .79$). Yasik and colleagues further observed internal consistency coefficients of .89, .68, .76, and .50, for the Family, Social, Work, and Omnibus scales respectively. These authors also provided evidence regarding stability over time by reporting significant ($p < .05$) Pearson Product Moment test-retest coefficients of .65, .63, .47, .57, and .61 for the respective domains and the Total composite. Internal consistency alpha estimates for the current sample were .90, .66, .81, and .60 for the Family, Social, Work, and Omnibus subscales, respectively. The Total composite had an internal consistency of .84 for the current sample.

Data Analysis

With regard to statistical procedures for demographic variables, this study utilized chi-square analyses to examine whether there were significant gender differences between the PTSD positive, traumatized PTSD negatives, and control groups. Univariate ANOVAs were used to determine if there were significant group differences relative to age and socioeconomic status. Additional chi-square analyses were used to test if there were group differences with regard to specific traumatic stressors reported. Furthermore, univariate *F*-tests were used to determine if there were significant differences between the groups on mean number of traumas reported, severity of stressors, and time since trauma exposure.

In order to answer the research questions, an ANOVA assessed for substantial group differences on the CFOS Total scale. Additionally, a multivariate analysis of variance (MANOVA) was conducted in order to examine differences among comparison groups across CFOS composite scales. Given significant outcomes on these measures, univariate *F*-tests and post hoc pairwise analyses were employed in order to test hypotheses relative to specific group differences on the CFOS.

Chapter IV

RESULTS

This chapter includes information regarding descriptive measures and data analyses.

Descriptive Data

Table 3 below presents a summary of the demographic backgrounds of the selected sample.

Table 3

Demographic Variables

Variable	PTSD Positives (<i>n</i> = 30)	Traumatized PTSD Negatives (<i>n</i> = 62)	Non-Traumatized Controls (<i>n</i> = 40)
Age (years)			
M	14.33	13.33	12.42
SD	2.88	2.85	2.56
Gender	%	%	%
Male	56.7	66.1	42.5
Female	43.3	33.9	57.5
WISC-III	<i>M</i>	<i>M</i>	<i>M</i>
Full Scale IQ (FSIQ)	87.96	96.31	96.86
Hollingshead Social Class	%	%	%
Class I	3.3	3.2	10.0
Class II	13.3	24.2	20.0
Class III	10.0	45.2	37.5
Class IV	40.0	19.4	22.5
Class V	33.3	8.1	10.0
Race/Ethnicity	%	%	%
African-American	10.0	29.0	15.0
Asian	3.3	12.9	0.0

Caucasian	6.7	16.1	12.5
Hispanic	80.0	41.9	70.0
Other	0.0	0.0	2.5

A *chi-square* test indicated non-significant differences between the comparison groups with regard to gender, $X^2 (n = 132) = 5.53, p = .06$. An ANOVA identified significant socioeconomic status (SES) between group differences, $F(2, 129) = 7.59, p < 0.001$. Post hoc tests determined that the PTSD group had significantly lower Hollingshead SES ratings than the traumatized PTSD negatives, $t(92) = -3.65, p < 0.001$, and non-traumatized controls, $t(70) = -3.32, p = 0.001$. The Hollingshead ratings of the PTSD negatives and the non-traumatized controls were not significantly different, $t(102) = -0.04, p = 0.965$.

An ANOVA also revealed significant age variations, $F(2, 131) = 4.07, p < .05$. Bonferroni post-hoc analyses were employed to determine significant group comparisons with regard to age. As such, each subsequent ANOVA was tested at an alpha level of .017. This level was achieved by dividing the original alpha (.05) by the number of group comparisons (3). Bonferroni post-hoc tests established that the control group was significantly younger than the PTSD group, $t(70) = 2.85, p < .05$. The control group did not significantly differ from the PTSD negative group with reference to age, $t(102) = 1.61, p > .05$. Similarly, the PTSD and PTSD negative groups did not significantly differ on age, $t(92) = 1.62, p > .05$.

Given these outcomes, correlations between age, SES, and CFOS scores were explored to determine the strength of association between variables. SES was modestly correlated with the CFOS Total score ($r = .20, p < .05$), Omnibus scale ($r = .20, p < .05$), and Social scale ($r = .20, p < .05$). Each of these coefficients reflects four percent of the variance for the Total, Omnibus, and Social scales. Age was also modestly correlated with the Work scale ($r = .26, p < .01$). This coefficient constitutes seven percent of the total variance for the scale. All other correlations

between demographic variables were non-significant.

Descriptive Statistics for Traumatic Stressor Variables. Table 4 provides a list of types of traumatic events reported by males and females in the trauma-exposed groups. The mean number of traumas reported by the PTSD group ($M = 1.83$, $SD = .95$) was significantly greater than the mean number of traumas reported by the traumatized PTSD negatives ($M = 1.32$, $SD = .95$), $F(1, 90) = 9.95$, $p < 0.01$. With regard to specific traumatic stressor categories, the PTSD group reported a significantly greater number of sexual assaults, $X^2_{(df=1)} = 6$, $p < .02$, whereas the PTSD negative group reported experiencing considerably more motor vehicle accidents, $X^2_{(df=1)} = 7.2$, $p < .01$, and hand injuries, $X^2_{(df=1)} = 10.29$, $p < .01$. Males reported a greater number of physical assaults, $X^2_{(df=1)} = 4.55$, $p < .05$, being shot, $X^2_{(df=1)} = 7.36$, $p < .01$, and hand injuries $X^2_{(df=1)} = 7.14$, $p < .01$. No other significant group or gender differences relative to traumatic stressor types were observed.

Table 4

Types of Traumas Reported by Male and Female Participants between Groups

Stressor	PTSD Positives^a		Traumatized PTSD Negatives^b		Total^c	
	Male <i>n</i> (%)	Female <i>n</i> (%)	Male <i>n</i> (%)	Female <i>n</i> (%)	Male <i>n</i> (%)*	Female <i>n</i> (%)*
Sexual Assault	1 (5.9)	5 (38.5)	0 (0.0)	0 (0.0)	1 (1.7)	5 (14.7)
Physical Assault	6 (35.3)	3 (23.1)	10 (24.4)	3 (14.3)	16 (27.6)	6 (17.6)
Shot	5 (29.4)	0 (0.0)	5 (12.2)	1 (4.8)	10 (17.2)	1 (2.9)
Dog Attack	1 (5.9)	0 (0.0)	3 (7.3)	3 (14.3)	4 (6.9)	3 (8.8)
Motor Vehicle Accident	1 (5.9)	3 (23.1)	8 (19.5)	8 (38.1)	9 (15.5)	11 (32.)
Hand Injury	1 (5.9)	0 (0.0)	11 (26.8)	2 (9.5)	12 (20.7)	2 (5.9)
Smoke Inhalation	1 (5.9)	1 (7.7)	0 (0.0)	1 (4.8)	1 (1.7)	2 (5.9)

Other	1 (5.9)	0 (0.0)	4 (9.7)	0 (0.0)	5 (8.6)	0 (0.0)
Witnessed Trauma	0 (0.0)	1 (7.7)	0 (0.0)	3 (14.3)	0 (0.0)	4 (11.8)

^a $n = 30$. ^b $n = 62$. ^c $n = 92$.

* Represents total of PTSD positive and traumatized PTSD negative groups.

An ANOVA denoted non-significant group differences with regard to stressor severity as measured by the *Severity of Psychosocial Stress Scale: Children and Adolescents*, $F(1, 90) = 2.59$, $p = .11$. The mean severity ratings were 5.84 ($SD = 0.33$) and 5.70 ($SD = 0.42$) for the PTSD positives and traumatized PTSD negatives respectively. Similarly, a non-significant difference was noted with reference to the severity ratings for stress-exposed males and females, $F(1, 90) = 0.21$, $p = .64$. Males had a mean severity rating of 5.73 ($SD = 0.40$) and females had a mean rating of 5.77 ($SD = 0.39$).

The amount of time that had passed since trauma exposure for the PTSD group ($M = 7.7$ months, $SD = 10.7$ months) did not significantly differ from the time interval for the traumatized PTSD negatives ($M = 6.9$ months, $SD = 14.4$ months), $F(1, 88) = 0.62$, $p = 0.21$. The mean age at the time of trauma exposure for the PTSD group was 13.7 years ($SD = 3.2$ years) and 12.6 years ($SD = 3.3$ years) for the traumatized PTSD negatives. The mean age at trauma exposure for the trauma exposed groups was not significantly different, $F(1, 88) = 2.32$, $p > 0.05$.

Group Differences Relative to CFOS Total and Subscale Ratings

Table 5 presents the CFOS Total and subscale means and standard deviations for the comparison groups as well as the univariate analyses. In order to explore group differences on the CFOS scores, a separate ANOVA procedure was conducted. Levene's (1960) Test of Equality of Error Variance performed by SPSS version 17.0 identified unequal variance on the CFOS total score and on two of the four subscales. In order to investigate pairs of significantly different group means, a multiple comparison method must be employed. Many popular

pairwise post hoc analyses, such as the Bonferroni adjustment or Tukey's HSD, are based on the assumption that variances are equal across groups or samples (i.e., the assumption of homogeneity of variance). In an effort to adjust for unequal sample or group variances, Tamhane (1977, 1979) proposed the T2 procedure, a conservative post hoc comparison method based on *Student's t* distribution. The use of the rather conservative T2 method reduces the likelihood for inflated Type I Error (rejecting null hypothesis when it is true) in cases where the research design is heavily unbalanced (biggest sample more than four times the smallest) and sample variances very different. Tamhane's (1979) T2 test was subsequently utilized using SPSS version 17.0.

As can be seen in Table 5, an ANOVA indicated significant group differences on the Total CFOS score. Tamhane T2 post-hoc comparisons revealed that the mean CFOS Total score of the PTSD group was significantly lower than the mean score of the traumatized PTSD negatives ($p < .05$) and controls ($p < .01$). This finding supports Hypotheses 1 and 6. In contrast, the CFOS Total mean scores of the traumatized PTSD negatives and controls did not significantly differ ($p = .18$). As such, Hypothesis 11 was supported.

Similarly, a MANOVA identified significant group differences with regard to the CFOS subscale scores, $F(8, 252) = 2.46, p < .05$. Univariate *F*-tests denoted significant group differences on the Social and Omnibus scales. Tamhane T2 post-hoc comparisons determined that the mean Social scores of the PTSD ($p < .01$) and traumatized PTSD negative ($p < .05$) groups were significantly lower than the means of the controls. Therefore, Hypothesis 9 was accepted, and Hypothesis 14 was not supported. No statistically significant ($p = .18$) difference was evident when the Social scale means of the PTSD and the traumatized PTSD negatives groups were compared. Given this outcome, Hypothesis 4 was not supported. On the Omnibus

scale, the PTSD group mean was significantly ($p < .05$) lower than the mean of the control group. In contrast, the Omnibus Scale means of the PTSD group and the traumatized PTSD negative group did not significantly differ ($p = .40$). The Omnibus scale means of the traumatized PTSD negative group and the control group also did not significantly differ ($p = .17$). Therefore, Hypotheses 10 and 15 were supported, whereas Hypothesis 5 was not supported. Furthermore, univariate F -tests revealed non-significant differences on the Work and Family scales. As such, Hypotheses 12 and 13 were accepted, and Hypotheses 2, 3, 7 and 8 were not supported, respectively.

Table 5

Means, Standard Deviations, Ranges, and Univariate F-tests for CFOS Total & Subscale Scores

Scale	PTSD Positives ^a			Traumatized PTSD Negatives ^b			Non- Traumatized Control ^c			Univariate Results	
	M	SD	Range	M	SD	Range	M	SD	Range	F^d	p
Total	68.3	6.9	54-80	72.1	6.8	45- 80	74.2	4.5	53-80	7.91	.001
Work	19.0	1.8	11-20	19.4	1.5	10-20	19.6	.84	13-20	1.37	.256
Family	15.5	3.8	6-20	17.0	3.7	4-20	17.4	3.1	8-20	2.71	.071
Social	17.5	2.7	14-20	18.5	1.5	8-20	19.2	1.1	15-20	8.15	.000
Omnibus	16.2	3.3	10-20	17.2	2.6	7-20	17.9	1.6	14-20	4.20	.017

Note. ^a $n = 30$. ^b $n = 62$. ^c $n = 40$. ^d $df = (2, 129)$

Chapter Summary

Data analyses indicated that the aggregate future orientation ratings of youth with PTSD were significantly lower than the ratings of traumatized youth without PTSD and non-traumatized controls. Youth with PTSD also had lower expectations about future social relations and more pessimistic general expectations about the future than the controls. On the other hand,

deficits in future orientation were not limited to the PTSD group as the anticipated socialization estimates of the traumatized participants did not vary as a function of diagnosis and as the social expectations of traumatized PTSD negatives were significantly lower than the expectations of the controls. While support for the DSM-IV position that PTSD is associated with negative expectations about the future was evident, deficits in future orientation were not limited to PTSD status and varied as a function of the type of future expectation.

Chapter V

DISCUSSION AND FUTURE RESEARCH

This chapter presents a discussion of the observed results. The theoretical and clinical significance of this study are addressed. Limitations of the study and suggestions for future research are also provided.

Summary of Findings

This investigation aimed to compare the future orientation ratings of a sample of hospital-referred traumatized youth with and without PTSD to non-clinical community controls. In a departure from previous research examining the relationship between PTSD and attitudes about the future, this study employed a three-group case-control design and controlled for the potentially confounding effects of major comorbid disorders. It was hypothesized that youth with PTSD would exhibit considerably lower expectations about the future, as rated on the Children's Future Orientation Scale, relative to traumatized youth who did not develop PTSD and non-clinical controls. It was also hypothesized that the CFOS scores of traumatized children and adolescents without PTSD would not significantly differ.

As predicted, the aggregate future orientation scores of children and adolescents with PTSD were significantly lower than the CFOS Total scores of traumatized PTSD negatives and non-traumatized controls. Likewise, youth with PTSD had considerably lower expectations about future social relations and less positive general expectations regarding the future than the controls. These outcomes are generally consistent with Terr's (1983) initial observations, the results of the DSM-IV PTSD field trial, and the outcomes of the earlier Israeli investigations (Lavi & Soloman, 2005; Schwarzwald, Weisenberg, & Solomon, 1997; Soloman & Lavi, 2005).

On the other hand, deficits in future orientation were not limited to youth with PTSD. The social expectations of traumatized PTSD negatives were significantly lower than the expectations of the controls and the Omnibus scale CFOS scores of traumatized youth with or without PTSD did not significantly vary. Likewise, the anticipated socialization scale estimates of the traumatized participants did not vary as a function of diagnosis. Moreover, trauma exposure was not invariably associated with pessimism about the future, as expectations about marriage, having a family, and future work did not significantly differ between groups.

In discussing the lower expectations about future social interactions among traumatized youth with and without PTSD relative to the attitudes of the controls, it is of interest to consider the intentional nature of the traumatic acts that were experienced by the PTSD positive and PTSD negative groups. The present study observed that 93.3% of the participants with PTSD and 88.7% of the traumatized PTSD negatives were physically harmed by another human through acts of physical, sexual assault, or being shot. According to Janet Freyd's (1994) "betrayal trauma theory," experiences that are intentional or "social in nature" may involve perceptions of betrayal, violating the "fundamental ethic of human relationships" (Freyd, 1994, p. 307). This notion may therefore influence the traumatized individual's "psychological as well as behavioral responses," which have been associated with increased dissociative symptoms and PTSD withdrawal symptoms (Freyd 1996; Becker-Blease & Freyd, 2005; DePrince, 2001). Along these lines, Frederick (1980) postulated that victims of human-induced trauma tend to receive less emotional support than victims of natural disasters or accidents, as well as "rejection by others" (i.e., isolation and avoidance) (p. 74). As such, the high number of interpersonal traumas that were reported by the PTSD positives and traumatized PTSD negatives might have

contributed to the non-significant differences regarding future social expectations that were observed between these groups.

With regard to Family subscale findings, non-significant differences relative to future marriage and or having a family may be associated with the systematic exclusion of participants that were harmed by immediate family members. In contrast to the extant findings, other research has found that adult men and women who were physically or sexually abused during childhood reported having more *disrupted marriages* (Finkelhor, 1989; Russell, 1986) and more marital conflict (Courtois, 1979).

While greater levels of unemployment and lower earnings were evident among adults with PTSD (Kulka et al., 1990; Sack, 1995) and Holocaust survivors (Eitinger, 1993; Weinfeld, Seigal, & Eaton, 1991), the traumatized child-adolescents participants did not report lower expectations regarding future work. Given that self-efficacy expectations about future accomplishments are associated with previous accomplishments (Bandura, 2001), the non-significant outcomes involving future employment may be associated with limited employment experiences of the participants.

Examined from an epidemiological perspective, the results involving the number of traumatized participants that did not have PTSD speak well for the resilience of children and adolescents to cope with adversity. More specifically, among all youth who reported experiencing a DSM-IV PTSD Criterion A1 traumatic event at evaluation ($n = 92$), 67 percent ($n = 62$) did not develop full PTSD. This finding is consistent with the outcomes of studies that concluded that the majority of traumatized youth do not meet criteria for PTSD (Giaconia et al., 1995; Kilpatrick et al., 2000; Saigh et al., 1999). Clearly, trauma exposure did not lead to the

development of PTSD in the majority of cases, and this observation is consistent with 30 years of trauma research.

Significance

Viewed theoretically, previous research examining future orientation in youth exposed to trauma has left unanswered the question of whether future orientation is detrimentally affected by exposure to extreme stress, or, rather constitutes a response to traumatic stress and is a part of the posttraumatic syndrome. While only a few studies have systematically observed pessimistic attitudes about the future in youth with PTSD (Lavi & Solomon, 2005, Solomon & Lavi, 2005, Schwarzwald et al., 1997), these investigations were characterized by methodological limitations, including lack of a non-traumatized comparison group, and failure to control for the potentially confounding effects of comorbid disorders. It is important to recall that the PTSD diagnostic criteria that appeared in the DSM-III (APA, 1980) and DSM-III-R (APA, 1987) were established without performing data-based field trials. While the DSM-IV PTSD work group carried out a field trial, this effort did not involve participants below the age of 15 years (Kilpatrick et al., 1999). The exclusion of younger subjects limited the generalizability of future foreshortening symptoms as they pertain to youth. Given the contextual gap in the literature, the present investigation presents empirical information about the future orientation of traumatized children or without PTSD relative to controls and extends our understanding of the relation between trauma exposure and future orientation.

Within a clinical context, the results of this study have significant implications. In general, the collection of self-report information relative to children's attitudes about the future is relevant to clinical practice given research findings suggesting negative future expectations can predict later risky behavior (e.g., alcohol and drug use, number of sexual intercourse partners) in

adolescents (Dorham, 2005; Goetz, 2010). A positive future orientation, on the other hand, may serve as a protective factor for youth (McCabe & Barnett, 2000), predicting fewer psychological and social problems later in life (Werner & Smith, 1982, 1992; Wyman et al., 1992). Therefore, mental health clinicians may utilize findings from measures of future orientation, such as the CFOS, for diagnostic clarification and to develop treatment programs that are tailored to meet the specific needs of youth with and without PTSD. In the same vein, participants in the present study received psychiatric and psychological reports denoting findings from the comprehensive evaluation. Such information may have been particularly useful to individuals and families as it highlighted areas of concern and specified the possible need psychological treatment.

In addition, the results of this study highlight the utility of the Children's Future Orientation Scale in measuring pessimistic attitudes about the future in traumatized youth with and without PTSD. Based on a review of the literature, there is currently a dearth of self-report inventories examining future orientation in trauma-exposed youth. Among previous studies reviewed in this investigation, Lavi and Soloman (2005) and Soloman and Lavi (2005) relied on the CFOS to assess future orientation among Palestinian and Israeli children. Schwarzwald et al. (1997), however, collected written responses to an open-ended question asking participants what they thought life in Israel would be like in one year's time. Newman (1976) employed "fantasy eliciting" or projective techniques, and Terr (1983) utilized unstructured questions to obtain information regarding traumatized youth's attitudes about the future.

Furthermore, this study systematically excluded from individuals presenting with comorbid disorders, allowing for the assessment of relatively "pure cases." This method was employed in order to more clearly gauge whether reported variations in CFOS scores were a function of PTSD, rather than a combination of PTSD and another psychiatric disorder (e.g.,

MDD or ADHD). Along these lines, March (1990) asserts that high rates of comorbid diagnoses challenge the conceptualization of PTSD as a distinct diagnostic entity. The presence of multiple diagnoses also impacts on assessment, requiring clinicians to make complex decisions regarding differential diagnoses (Pitman et al., 1991). Additionally, unlike most comparative PTSD studies (Blanchard et al., 2004; Jaycox et al., 2004; Linning, 2004; Maeser, 2008; McLeer et al., 1988; McNally, English, & Lipke, 1993), this investigation included traumatized children who did not develop PTSD as well as non-traumatized control group. The inclusion of distinct comparison groups is significant in that it allows researchers to determine whether PTSD is specifically associated with specific emotional vulnerabilities and pathological behaviors or if traumatic exposure in the absence of PTSD is associated with such significant impairments. Moreover, in contrast with studies that simply relied on the outcome of a self-report questionnaire to denote diagnostic status (Bayer et al, 2007; Geltman et al., 2005; Goenjian et al, 2001; Laor et al., 2002; Linning, 2004; Pynoos, 1987; Schwarz & Kowalski, 1991; Thabet, 1999), this study used an exceptionally conservative approach to case identification and employed rigorous diagnostic assessment methods to designating participants to groups. Specifically, each participant received two independent administrations of the Children's PTSD Inventory (an index with very high sensitivity and specificity) and two independent DSM-IV based PTSD clinical interviews by a psychiatrist and a psychologist.

Limitations

As with any research study, certain limitations were unavoidable. To start, the nature of the current sample limits generalizability. More specifically, children under the age of six were not included in this investigation. The exclusion of very young children from the current study is supported by research findings indicating that the self-report observations from youth under age

six are often unreliable (Saigh, *in press*). According to Terr (1988), the verbal memory of children ages five and under may stray from its origin through symbolic elaboration, cognitive reappraisal, and subtraction of content. Denham and colleagues (2003) also recognized that preschool aged children often make errors in their own emotional reflection and social information processing. Furthermore, interviewing traumatized children ages five and below, particularly those traumatized by physical and sexual abuse, is difficult, not only because of children's recall deficiencies, but more often because standard interviewing formats can be ineffective with economically disadvantaged and culturally different children (Mordock, 2001).

In addition, observations from this investigation must be tempered with the understanding that youth with major comorbid disorders (i.e., major depressive disorder, conduct disorder, ADHD, and substance dependence) were excluded and the results should be viewed accordingly (i.e., may not generalize to populations with PTSD and multiple *DSM-IV* disorders). Also, based on significant differences between the comparison groups with regard to SES and ethnicity and SES, the current sample is highly representative of urban inner-city populations. Within this context, it should be noted that the PTSD group had significantly lower SES ratings on the Hollingshead index relative to traumatized PTSD negatives and controls. In fact, approximately 73.3% of youth ($n = 22$) in the PTSD group had Hollingshead ratings within the lowest two indices on this measure, compared to 27.5% ($n = 17$) and 22.5% ($n = 13$) in the traumatized PTSD negative and control groups, respectively. This finding is in keeping with the outcomes of a large meta-analysis that considered data from 77 studies that examined risk factors for PTSD (Brewin, Andrews, and Valentine, 2000). Results of the meta-analysis identified a small but significant effect size for predicting PTSD given SES, wherein low SES was predictive of higher PTSD symptoms. In a similar vein, the extant findings are consistent with prior research

suggesting that socioeconomic status is a risk factor for disaster-related PTSD (Norris et al., 2002) as well as PTSD following acts of physical and sexual abuse (Romero, 2009).

Furthermore, in the present investigation, premorbid estimates of future orientation were not available and that the observed deficits may have existed before trauma exposure. Given these points, the external validity of the study may be limited to youth with similar demographic, developmental, and psychiatric characteristics as well as trauma history backgrounds. The outcomes must also be tempered with the knowledge that information about the psychometric properties of CFOS has not been extensively investigated and that a degree of unsystematic error may have influenced the outcomes. It should also be noted that the Omnibus subscale might have not captured general future expectations, and it is plausible the Omnibus scale represented different constructs (e.g., “I like to make plans for the future,” and “I will have a normal life” may have different connotations). In addition, the failure to observe differences between groups on some CFOS subscales may be partially associated with the limited number of items (i.e., 4 items per subscale). Accordingly, it may be argued that a larger item pool may have generated more variation and that may have been associated with more significant contrasts. On the other hand, it should also be noted that there is a paucity of objective child measures of future orientations and the CFOS may reflect the only vehicle that is currently available to measure this construct.

The fact that a sense of foreshortened future is both a potential criterion for PTSD and the dependent variable reflects another limitation of this investigation. It is necessary to recall that the DSM-IV criteria for PTSD includes a single symptom involving future orientation and this symptom does not have to be evident to make a diagnosis. As McNally (2001) makes clear, self-report measures are important in laying the foundation for experiments designed to test out

mechanistic processes, but used in isolation can lack the necessary scientific rigor. Therefore, it may be argued that the CFOS and the CPTSDI vary with regard to quantitative and qualitative domains. The CPTSDI, an index of the independent variable, is a 43-item structured diagnostic clinical interview that is used to determine the presence or absence of PTSD. Of the 43 diagnostic items that make up the CPTSDI, 4 items relate to future orientation. In contrast, the CFOS is made up of 16 items that encompass different aspects of philosophical pessimism about the future (Saigh et al., *under review*). Moreover, while the CPTSDI involves individually administered verbal questions and probes by trained examiners, the CFOS is a paper and pencil self-report inventory that calls on examinees to read and mark a record form.

Future Directions

It is of significance to note that attention-deficit/hyperactivity disorder (ADHD), conduct disorder (CD), major depressive disorder (MDD), and substance dependence (Saigh, Sack, Yasik, & Koplewicz, 1999) have been associated with negative expectations about the future (Andersen & Limpert, 2001; Dodge, 1993; Hillebrand & Marsden, 2001; Kaidar, Wiener, & Tannock, 2003). As such, future research should strive to compare youth with PTSD to youth with other psychiatric disorders. Comparative information involving future orientation ratings of participants with PTSD, Major Depressive Disorder, and controls would further our understanding of impairments across diagnostic categories and increase the external validity of empirical findings. This point is particularly relevant as PTSD and Major Depressive Disorder share a number of symptoms. In addition, comparative studies that include comorbid cases may further our understanding of the expression of PTSD among populations with multiple disorders.

Given the cross-sectional design of this investigation, future studies should seek to examine the future orientation of traumatized youth over time. As epidemiological studies

suggest that intentionally traumatized individuals evidence higher rates of PTSD relative to accident or disaster survivors (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Norris, 1990) and as case–control investigations also support the idea that the nature of traumatic events may influence subsequent adjustment (Krupnick et al., 2004; Schreiner, 1994), future research also should consider the nature of traumatic events as they relate to future orientation. Given the significantly lower SES ratings of the PTSD group, prospective research should aim to examine the relative contributions of demographic, familial, or environmental factors in predicting the development of PTSD in youth populations. Furthermore, a similar investigation with a younger sample may provide valuable insights about the differential validity of the PTSD classification at an earlier developmental stage. Finally, the relation between PTSD, future orientation and developmental moderators such as the quality of parent–child interaction warrant consideration.

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