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Validating the Impact of Event Scale with Adolescents : a Look at the September 11, 2001, Terrorist Attacks

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VALIDATING THE IMPACT OF EVENT SCALE WITH ADOLESCENTS: A LOOK AT THE SEPTEMBER 11, 2001, TERRORIST ATTACKS

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Dissertation Approval

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Abstract

The current study examined the psychometric properties of the Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979), a self-report measure of current subjective distress. Twenty-four adolescents from an urban high school were surveyed regarding their experiences from the events of September 11, 2001. The IES showed a moderate correlation with the My Worst Experience Scale (MWES; Hyman, Snook, Berna, & Kohr, 1997). Findings indicate the IES may be effective as a quick screening tool for the intrusive and avoidant symptoms of posttraumatic stress in adolescents pending further research with a larger sample.

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INTRODUCTION

The terrorist attacks of September 11, 2001 marked the worst acts of terrorism on United States soil in this nation's history. The attacks directly affected those living in New York City, Washington, DC and western Pennsylvania. Thousands of people were killed in the attacks, and millions of people around the world were exposed to exhaustive media coverage of the horrifying events.

Many youth were exposed to those horrifying events. Television coverage was available in school classrooms, in some for the entire school day. Children went home to hear parents and neighbors and friends talk, cry, and react to the enormity of the disaster. Many children were directly exposed to these traumatic events because they had parents, relatives or friends who perished in the attacks. Many others were vicariously traumatized through hearing about or seeing events unfold through the media.

Events like those of September 11, 2001, spark an increase in anxiety in the general population and may even lead to more severe stress reactions in some individuals (Galea et al., 2002; Hoven et al., 2005). Research on trauma and its sequelae has burgeoned over the last two decades, with investigators increasingly looking at trauma-

related stress reactions in children and adolescents. Exposure to traumatic stressors can be direct or vicarious. The diagnostic classification of Posttraumatic Stress Disorder (PTSD) was formalized in 1980 (American Psychiatric Association, 1980); since that time PTSD has been identified as a common reaction to trauma (Pfefferbaum, 1997).

Children and adolescents, like adults who have been exposed to trauma, suffer both from acute and chronic stress-related symptoms. In the age of managed care, clinicians treating this population can benefit from a quick, efficient instrument to measure traumatic stress that can be used on a regular basis to monitor treatment gains and outcomes in therapy. The Impact of Event Scale (IES) by Horowitz, Wilner, and Alvarez (1979) is one such instrument. The IES assesses current subjective distress related to a specific traumatic event. The IES was not originally designed to assess for PTSD, because it was developed before the diagnosis of PTSD was formalized in the *DSM-III* (American Psychiatric Association, 1980).

Not all exposure to traumatic events results in a diagnosis of PTSD (Stallard, Velleman, & Baldwin, 1999). Some individuals do not meet the diagnostic criteria for PTSD; however, their symptoms can still create a

considerable amount of distress, calling for clinical intervention (Schutzwohl & Maercker, 1999). The IES is adept at measuring not only the intrusive re-experiencing symptoms, but also the avoidance of stimuli associated with a traumatic stressor. Most of the psychometric research to date on the IES has been performed with samples of traumatized adults. Validating this scale for use with children and adolescents would provide clinicians with an efficient and cost-effective tool in the screening of traumatic stress reactions in youth.

Traumatic Stress Reactions

Traumatic stress reactions result after an individual has suffered an event or events that cause psychological and perhaps even physical distress. Incidents such as homicide (Nader, Pynoos, Fairbanks, & Frederick, 1990), suicide (Brent, Morris, Bridge, Perper, & Canobbio, 1996), physical and sexual assault (Cuffe et al., 1998; Rachuba, Stanton, & Howard, 1995) and motor vehicle accidents (Jeavons, 2000) have been studied to determine psychological sequelae for individuals. In addition, human made and natural disasters such as war (Nader, Pynoos, Fairbanks, Al-Ajeel, & Al-Asfour, 1993), terrorism (Galea et al., 2002; Hoven et al., 2005; Pfefferbaum et al., 2002; Schuster et al., 2001), the Challenger space shuttle

disaster (Terr et al., 1999), hurricanes (Garrison et al., 1995; Shaw et al., 1995) and shipping disasters (Joseph, Williams, & Yule, 1993; Yule & Williams, 1990) have also been studied.

A review of these studies indicates that individuals who underwent such traumas often suffered from long-term stress reactions. These reactions may have included symptoms of numbing, increased arousal, avoidance of stimuli associated with the trauma, and re-experiencing the event through flashbacks, dreams, or intrusive recollections of the event. In children, symptoms of traumatic stress may include repetitive play of the event (Terr, 1979, 1987; Terr et al., 1999) Traumatized children also show problems similar to traumatized adults, including difficulty sleeping, difficulty concentrating, intrusive thoughts, flashbacks and use of avoidance as a coping strategy (Yule & Williams, 1990).

Posttraumatic Stress Disorder

The Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2000) has categorized these traumatic stress reactions as symptoms of PTSD. According to the *DSM-IV-TR*, PTSD occurs when a person has been exposed to an extreme traumatic stressor that involved intense fear, helplessness or horror; the person

experienced or witnessed actual or threatened death or serious injury or a threat to the physical integrity of herself, himself or others. Characteristic symptoms of PTSD include a persistent re-experiencing of the traumatic event, an avoidance of stimuli associated with the trauma, a numbing of general responsiveness, and persistent symptoms of increased arousal. By definition, these symptoms must be present for more than one month and cause clinically significant impairment in functioning. The traumatic stressor can be directly experienced by the individual or can be the result of witnessing a traumatic event. Table 1 summarizes the DSM-IV-TR diagnostic criteria for PTSD.

Table 1

DSM-IV-TR Diagnostic Criteria for Posttraumatic Stress Disorder

Diagnostic Criteria for PTSD
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 persistently re-experienced in one (or more) 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 might 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 on 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 (e.g. unable to have loving feelings
(7) sense of foreshortened future (e.g. does not expect to have a career, marriage, children or a normal life span)

D. Persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) 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 & D) is more than 1 month.

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

Note. From the *Diagnostic and Statistical Manual of Mental Disorders - Text Revision (4th ed.)* pp. 467-468, by the American Psychiatric Association, 2000, Washington, DC: American Psychiatric Press, Inc. Copyright 2000 by the American Psychiatric Association. Used with permission.

One of the hallmarks of PTSD is disturbed memory functioning. All the recurrent and intrusive distressing recollections and dreams, the physiological reactivity to traumatic stimuli, and the symptoms of hyperarousal that are so characteristic of patients with PTSD have a basis in memory processes. Individuals with PTSD often suffer memory deficits (Cloitre, 1998). Being reminded of the trauma through questioning can trigger disassociation when cognitive cues evoke memories of the trauma. Instead of verbally restating the events of the trauma, individuals

will withdraw to familiar behaviors that are protective in nature (van der Kolk, 1994).

Avoidance is another important component of PTSD. In their research on the diagnostic efficacy of posttraumatic symptoms in 5,687 children exposed to Hurricane Hugo, Lonigan, Anthony, and Shannon (1998) concluded that instead of intrusion or arousal, avoidance is most likely the hallmark of severe posttraumatic stress reactions. Difede and Barocas (1999) also found that the presence and severity of acute avoidant symptoms (versus acute intrusion symptoms) predicted both the diagnosis of PTSD and the self-reported chronic avoidant and intrusive symptoms of a small sample of adults following a burn injury.

Risk and Protective Factors

Magnitude and severity of exposure, previous traumatic experiences, social support and developmental level at time of exposure have been implicated as predictors in the development of chronic PTSD symptomatology as well as in the recovery capability (Fitzpatrick & Boldizar, 1995; Hoven et al., 2005; Post et al., 1998; Tyron, 1998; van der Kolk, 1994). The duration and intensity of the trauma mediate the severity of PTSD symptomatology, even in the absence of declarative memory (Krikorian & Layton, 1998).

Children who know the victim of a violent death such as suicide or homicide, or who are directly exposed to the event, experience PTSD symptoms that are usually more severe and more likely to become chronic (Brent et al., 1996; Nader et al., 1990). Witnessing trauma of a multiple and prolonged fashion, such as domestic and community violence, can also increase risk and length of trauma symptoms (Fitzpatrick & Boldizar, 1995; Horowitz et al., 1995; Schwab-Stone et al., 1995).

Epidemiology of PTSD following the 9/11 Terrorist Attacks

Research on children and adults after a traumatic event has focused both on those who were directly exposed and on those who were traumatized indirectly. In their review of the literature on PTSD and terrorism, Lee, Isaac and Janca (2002) found that between 28 and 35 percent of people exposed to a terrorist attack may develop post-traumatic stress disorder. In their sampling of 8,236 New York City public school students six months after the September 11, 2001 attacks, Hoven et al. (2005) determined the probable level of PTSD was 10.6 percent.

Galea et al. (2002) assessed the prevalence of PTSD and depression among residents of lower Manhattan five to eight weeks after the September 11, 2001, terrorist attacks. Using random-digit dialing, 1008 adults were

interviewed about their exposure to the events of September 11 and about any psychological symptoms they experienced after the attacks. Seven and a half percent reported symptoms consistent with PTSD, and 9.7% were consistent with depression, twice the national average of the prevalence both of PTSD and of depression. Research, in fact, has shown that those most highly exposed to the event often show the most severe stress reactions (Galea et al., 2002; Stephenson, 2001; Terr et al., 1999), including the development of PTSD, depression and other anxiety disorders after exposure to a terrorist attack (Galea et al., 2002; Hoven et al., 2005).

Indirect Exposure

People do not have to be present at the event to develop symptoms of traumatic stress (Schuster et al., 2001). Even those individuals distant from an event can develop stress reactions related to the trauma (Lengua, Long, Smith, & Meltzoff, 2005; Murphy, Wismar, & Freeman, 2003; Terr et al., 1999). Galea et al. (2003) found that one third of adults in their large sample of New Yorkers met criteria for probable PTSD even though they were not directly affected by the September 11 attacks. Lengua et al. (2005) assessed the psychological response of children in Seattle, Washington following the September 11, 2001

terrorist attacks. Results indicated that these children demonstrated traumatic stress symptoms at levels comparable with those children who had been exposed to disasters directly, and eight percent of the children in their sample met criteria consistent with PTSD.

Rushing and Jean-Baptiste (2003) describe two cases of adults who met criteria for brief psychotic disorder after viewing television coverage of the September 11, 2001 terrorist attacks. Studies have shown that direct and indirect exposure to violence as well as to the experience of physical injury are associated with an increase in traumatic stress reactions, even when the injuries are not severe (Jeavons, 2000; Martinez & Richters, 1993; Pfefferbaum et al., 2001).

In another study, Dixon, Rehling, Shiwach (1993) found that 14 cross channel ferry workers presented with posttraumatic stress symptoms three years after the Herald of Free Enterprise ferry disaster in which 193 people perished, including 38 of 80 crew members. Although a majority of the subject sample had lost friends or acquaintances in the disaster, none of the subjects had been directly involved in the disaster; i.e. none were survivors, helpers or bereaved relatives. Among the reported symptoms, intrusive thoughts, images and

nightmares were common. Fear of the sea, panic, irritability, and psychic numbing was also common. Although the ferry workers had many years' experience of working at sea, they had developed increasing anxiety and revealed impairments in social, interpersonal, and work functioning.

Posttraumatic Symptoms as a Normative Response to Trauma

Certain researchers posit that some posttraumatic stress symptoms are normative after experiencing a traumatic life event (Martinez & Richters, 1993; Pfefferbaum et al. 2001; Terr et al., 1999), whereas others disagree (Difede & Barocas, 1999). Joseph et al. (1993) noted that adults reported positive changes in their outlook on life after surviving a major boating accident. In examining the reactions of 21 individuals directly exposed to the 1998 embassy bombing in Tanzania, Pfefferbaum et al. (2001) concluded that these individuals' stress reactions were normative. Galea et al. (2003) found a relatively rapid decline in the prevalence of probable PTSD in the general New York City population six months after the September 11 attacks.

In examining the psychological sequalae of the space shuttle Challenger disaster, Terr et al. (1999) found that children previously exposed to trauma were less symptomatic with regard to fears and behavioral reenactments than those

children who reported no history of previous traumatic events. The researchers suggest that although multiple traumas are known to cause serious psychopathology (Herman, 1992; Zlotnick et al., 1996), distant traumas may not have the same effect, even for children previously exposed to personally traumatic events. As such, Terr et al. propose that distant traumatic experiences are part of ordinary short-term human development, because traumas involving no personal or direct threat may commonly be encountered throughout a person's lifetime. Researchers point out, however, that post-trauma reactions can become maladaptive with chronic exposure to stress, such as exposure to chronic violence in communities (Fitzpatrick & Boldizar, 1993; Martinez & Richters, 1993), especially (?) if exposure to the stressor was severe (Galea et al., 2002).

Chronic Exposure to Long-Term Stress

More recently, researchers studying victims of prolonged exposure to trauma have suggested a distinct disorder separate from simple PTSD which is often referred to as complex PTSD or Disorders of Extreme Stress Not Otherwise Specified (DESNOS; Herman, 1992). Research indicates that individuals exposed to chronic, long-term stress such as war or persistent sexual abuse show not only signs of PTSD but also suggests more long-term

characterological changes, often in an attempt to cope with the extreme stress.

Most often, the symptoms of complex PTSD are found in victims of prolonged exposure to repeated trauma such as those who are survivors of concentration camps and torture (Herman, 1992) or victims of sexual abuse (Zlotnick et al., 1996). Features include somatization, dissociation, and instability in affect regulation as well as characterological changes in identity and self-definition. There is a continuing debate about whether or not complex PTSD is a subset of PTSD or an indicator of severity of PTSD, given that complex PTSD so often co-occurs with PTSD (Jongedijk, Carlier, Schreuder, & Gersons, 1996; Roth, Newman, Pelcovitz, van der Kolk, & Mandel, 1997).

In reviewing symptomatology shared by victims of prolonged, repeated trauma, Herman (1992) found that protracted depression is extremely common. In addition to startle reactions and agitation, Herman found that these victims are more liable to complain frequently of somatic problems. Prolonged exposure to trauma also often produces profound alterations in the victim's identity. Herman points out that "while the victim of a single acute trauma may say she is 'not herself' since the event, the victim of

chronic trauma may lose the sense that she has a self" (p. 385).

Traumatic Stress Reactions in Children and Adolescents

Although much of the research on PTSD and traumatic stress reactions focuses on adults, studies have found that children and adolescents, like adults, can suffer severe traumatic stress reactions and meet criteria for PTSD. Research has shown that a wide variety of stressors can lead to PTSD in children and adolescents, including exposure to peer suicide (Brent et al., 1996), exposure to violence (Campbell & Schwarz, 1998; Horowitz, Weine, & Jekel, 1995; Nader et al., 1990), exposure to war (Nader et al., 1993), witnessing a motor vehicle accident (Cuffe et al., 1998; Mirza, Bhadrinath, Goodyer, & Gilmour, 1998), experiencing physical and sexual assault (Cuffe et al., 1998; Rachuba et al., 1995), or kidnapping (Terr, 1987), being a victim of a dam collapse (Green et al., 1994), of natural disasters (Goenjian et al., 1997) and of terrorism (Hoven et al., 2005).

Epidemiology

In a longitudinal, epidemiological study examining the prevalence and correlates of trauma and PTSD, Cuffe et al. (1998) utilized a sample of 490 adolescents aged 16 through 22, and found that approximately 3% of female subjects and

1% of male subjects met the *DSM-IV* criteria for PTSD. A majority of the subjects reporting PTSD symptoms had experienced a traumatic event. Being female and witnessing an accident or medical emergency were associated with an increased risk of PTSD.

Campbell and Schwarz (1998) studied the effects and prevalence of exposure to violence in preadolescent children by surveying 209 sixth grade students in an urban school and 228 sixth grade students from a suburban school. The researchers found that 89% of students from the suburban school and 90% of students from the urban school reported knowing someone who had been robbed, beaten, stabbed, shot or murdered. Fifty-seven percent and 88%, respectively, witnessed a robbing, beating, stabbing, shooting, or murder, and 40% and 67%, respectively, had been personally robbed, beaten up, stabbed, shot, or caught in gun cross fire. The major limitation of this study is the cross-sectional nature of the design, which limits interpretation of the data. Also, no students from a rural school were surveyed. However, this study does suggest that large numbers of youth in urban and suburban schools have been exposed to more than one violent event at a young age.

Green et al. (1994) researched the long-term effects of a dam collapse on survivors who were children at the

time of the disaster. In their 17-year follow-up, the researchers found that although the individuals studied had shown indications of distress and impairment related to the dam collapse early on, most had recovered by the time of their follow-up study. The survivors showed levels of functioning that were comparable with a nonexposed comparison group at 17-year follow-up. Rates of PTSD in the follow-up group were 7%, compared with post flood rates of 32% at the time of the disaster. Women experienced more PTSD symptoms than did men. The researchers are careful to point out that the follow-up sample represented only half of the original group of children studied, and that the group lost to follow-up was more impaired. It is likely that the follow-up study tapped the more "healthy" subgroup of the original sample.

Hoven et al. (2005) examined the prevalence of eight probable mental disorders related to level of exposure in a large representative sample of New York City public school children (N = 8,236; ages 9 to 21 years old) six months after the September 11, 2001 attacks. One or more of six probable anxiety and depressive disorders (including PTSD) were identified in almost 29% of the children sampled. However, attending a school near the World Trade Center attacks was associated with lower rates of a probable

mental health disorder. Children attending schools in the ground zero area were exposed more directly to the events of September 11 than were children living in other areas of the city. However, these children had less prior exposure to traumatic events and less exposure to a family member's witnessing, being injured or being killed in the attacks. Family exposure was more strongly associated with probable mental health disorders than was direct exposure. Additionally, those students closer to ground zero may have been the recipients of increased attention, support and intervention in the aftermath of the attacks due to their proximity to ground zero. Interestingly, children sampled from ground zero schools that participated in the study were much more likely to live outside the immediate geographical area of the school as compared with children from schools which chose not to participate in the study.

Traumatic Stress Symptoms

A host of traumatic stress symptoms have been found in children exposed to a variety of stressful situations. Children can develop posttraumatic symptoms either through direct or indirect exposure. In particular, severity of exposure and experience as a witness of the event is associated with increased posttraumatic symptoms, although children witnessing a catastrophic event from a distance

can also exhibit symptoms of posttraumatic stress. Some of these symptoms are captured in the *DSM-IV-TR* diagnostic criteria for PTSD (see Table 1).

Type of Exposure

Violence. Nader et al. (1990), in their longitudinal study of 100 children exposed to a sniper attack which left a peer dead and more than 13 others wounded, found that re-experiencing the event, emotional detachment, and an increased state of arousal were common in children exposed to the shooting. The more intensely the children were exposed, the greater the numbers of posttraumatic symptoms were reported. After 14 months, symptoms had diminished in all but the most directly exposed children. No effects related to age, sex, or ethnicities were found.

In their study of 221 African-American adolescent males, Fitzpatrick and Boldizar (1995) found that witnessing violence and being victimized by violence was significantly related to the reporting of PTSD symptoms. Horowitz et al. (1995) found similar results in their study of 79 urban adolescent females exposed routinely to daily violence. Sixty-seven percent of subjects met the criteria for PTSD, with hyperarousal symptoms present in 90% of subjects, re-experiencing cluster symptoms present in 89% of subjects, and avoidance cluster symptoms present in 80%

of the subjects. Horowitz et al. concluded that exposure to chronic violence affected the normal female development of the subjects; their ability to trust others and form healthy, intimate interpersonal relationships was also impaired.

Terrorism. Exposure to trauma resulting from terrorist attacks has some unique features because terrorist attacks are designed to cause psychological fear and intimidation (Fremont, 2004). The attacks can occur in any place at any time, and "the threat persists indefinitely" (Fremont, 2004, p. 382). Often, these attacks are accompanied by exhaustive media coverage. Parents, teachers and community members are also affected by terrorism, perhaps impairing their abilities to provide needed support to children (Fremont, 2004).

Hoven et al. (2005) found that family exposure (knowing a family member who witnessed, who was injured or who was killed in the September 11 attacks on the World Trade Centers) was more strongly associated with a probable mental health disorder than direct exposure to the events of September 11 for a large sample of New York City public school students. The researchers concluded, "Parental traumatization may in itself have an effect on child mental health" (Hoven et al., 2005, p. 551).

Pfefferbaum, Nixon, and Krug et al.(1999) studied exposure, initial responses and factors associated with posttraumatic stress reactions in 3,218 middle and high school students 7 weeks after the bombing of the Alfred P. Murrah Federal Building in Oklahoma City. More than 40% of students reported knowing someone who was injured, and more than one-third reported knowing someone who was killed in the blast. The researchers found that posttraumatic symptoms were correlated with gender, with exposure through knowing someone injured or killed, and with bomb-related television viewing. Over 60% of the students reported hearing and/or feeling the blast. This study is limited by its use of a sample of convenience. Females, minority youth, middle school students and students from lower socioeconomic status families were highly represented.

War. Nader et al. (1993) found that the witnessing of violence by Kuwaiti children during the occupation of their country by Iraq was the best predictor of posttraumatic symptom scores on the Child Posttraumatic Stress Disorder Reaction Index (CPTSD-RI; Pynoos et al., 1987a). In addition, children who had reported hurting someone else had the highest mean CPTSD-RI scores. Repeated exposure to stressful life events decreases an individual's available

resources and increases vulnerability to physical and emotional disturbances (Tyano et al., 1996).

Disaster. Terr et al. (1999) found similar results in their study of 3rd- and 10th-grade students exposed to the space shuttle Challenger disaster. Of the 153 latency-aged children and adolescents studied, the researchers found that more than 60% of the subjects reported at least one event-specific fear within the first 5 to 7 weeks after the explosion. Subjects also reported dreaming about the disaster, as well as writing and drawing about the explosion; they had fears of being left alone and developed habits of clinging to others. At 14-month follow-up, most of these symptoms had greatly diminished.

Perception of threat can also be a risk factor after a disaster for traumatic stress in children. McDermott and Palmer (2002) found that a child's perception that a parent may die during a disaster could be potentially traumatic. In their study of 2,379 school children exposed to a devastating bushfire, symptoms of emotional distress were significantly associated with the child's perception of a direct threat to the life of the parent.

Accidents. Mirza et al. (1998) surveyed 119 eight to 16-year-olds and their parents 6 weeks after and then 6 months after their involvement in a road traffic accident.

They found that a majority of the subjects met the *DSM-IV* criteria for PTSD, even when the subjects sustained relatively minor injuries. Most of the children suffering from PTSD symptoms improved after 6 months, but a significant minority (17%) continued to exhibit these symptoms. Limitations of this study include the absence of a control group and the inability of the data to determine if co-existing anxiety and depression with PTSD predated the accidents for this sample.

Tyano et al. (1996) studied the effects of a bus-train collision on 389 young adolescent witnesses 7 years after the accident. Four hundred and fifteen 7^{th} graders traveling in 12 school buses were on an annual school trip when a train hit one of their school buses as it was crossing the railroad tracks. Three adults and 19 pupils were killed, and 14 others were severely injured. Three buses were filled with children who witnessed the disaster. The other nine buses had taken a different route and were notified by police of the accident. Of the 389 respondents in the study, 9 were on the bus that had been involved in the accident, 74 were on the three buses close to the scene, and 223 were on the other buses. The researchers did use a matched control group in this study.

Adolescents who were the most highly exposed to the accident reported the highest levels of somatization, depression, phobic anxiety, psychoticism, and additional PTSD symptoms. Acute stress symptoms and manifestations of fear immediately after the accident were strongly related to long-term maladjustment. On a positive note, Tyano et al. (1995) reported that immediate crisis intervention as well as a shared sense of fate helped insulate some children from the severe effects of trauma. This is an important finding in light of the fact that many children exposed to trauma are in need of services but do not seek or receive mental health services (Brent et al., 1996). The study by Tyano et al. was limited by the retrospective nature of its design. Additionally, groups were not equally matched in size, gender distribution, economic status or premorbid adjustment.

Witnessing From a Distance

Witnessing a traumatic event from a distance can produce posttraumatic stress symptoms in children and adolescents (Terr et al., 1999). Those exposed less directly to the event often have an altered sense of personal safety (Stephenson, 2001). In their community sample of children indirectly exposed to the events of September 11, 2001, Lengua et al. (2005) found that

children reported being worried, being upset by reminders, and having upsetting thoughts related to the attacks. Re-experiencing was the most common symptom cluster identified, and eight percent of the children in their sample met criteria consistent with PTSD. Girls reported being more upset than boys, and African-American children reported more avoidant symptoms as compared with European-American children.

Developmental Issues

Many studies emphasize the cost to children's social and emotional development as a result of being exposed to trauma, particularly in prolonged and repeated exposure as in community violence (Fitzpatrick & Boldizar, 1993; Rachuba et al., 1995) or war (Nader et al., 1993; Sack et al., 1993; Sack, Clarke, Kinney, et al. 1995; Sack, Clarke, & Seeley, 1995; Weine et al., 1995). PTSD is a common outcome among survivors of such repeated exposure to traumatic events (Horowitz et al., 1995; Schwab-Stone et al., 1995). Failure to address the symptoms of trauma exposure in children can lead to developmental concerns (Horowitz et al., 1995; Schwab-Stone et al., 1995), increases in violent behavior (Song, Singer, & Anglin, 1998), and the ongoing manifestation of psychopathology in youth today (Brent et al., 1996; Cuffe et al., 1998;

Shooter, 1997). The influence of relationships between individuals and their environment at the family and community level needs to be considered when addressing issues related to loss and to violence in youth (Rachuba et al., 1995). Even in those children who indirectly witness a traumatic event, stress symptoms can develop (Lengua et al. 2005; Pfefferbaum, Nixon & Krug et al., 1999; Terr et al., 1999).

The unique developmental needs of children need to be taken into account when addressing posttraumatic stress reactions in children (Horowitz et al., 1995; Shooter, 1997; Terr et al., 1997). Children and adolescents exposed to trauma can suffer both from acute and chronic stress-related symptoms. Given the severity of exposure and level of distress in their environments, exposure to a traumatic stressor can affect children, depending on their developmental level.

Childhood

Children manifest many of the same symptoms of posttraumatic stress as adults. They may exhibit hyperarousal, numbing and re-experiencing of the event. However, children may also exhibit behavior not usually seen in adults diagnosed with PTSD. The children may re-experience the event through stereotyped, repetitive

posttraumatic play instead of through flashbacks, and they may display regressive behavior marked by loss of acquired developmental skills (McNally, 1991; Terr, 1979). The child may also express a sense of foreshortened future and display cognitive disturbances such as time skew and omen formation (McNally, 1991).

Children exposed to trauma from a distance may have dreams about the event and engage in posttraumatic play such as drawing and pretending (Terr et al., 1999). In the Terr et al. (1999) study on children's symptoms in the wake of the space shuttle *Challenger* disaster, 90% of latency-age children suffered from one or more fears related to this incident such as fear of dying, of explosions, or of space; these persisted 5 to 7 weeks after the disaster. A large number of these children continued to manifest at least one event-specific fear for more than a year.

In addition, Terr et al. (1999) advise that the helping professionals take into account the fear of being left alone and the habit of clinging to others as a trauma-related condition in those children who are survivors of distant trauma, particularly if the child is under 10 years of age. Interestingly, almost 87% of the children in this study experienced the traumatic event at a distance; that is, either they watched the disaster live on television or

they heard about it afterwards. Terr et al. found no significant symptomatic differences between the children who watched the shuttle liftoff from the Cape Canaveral viewing stands and those who viewed it on television.

Kiser et al. (1993) studied 553 third- and 10th-grade students who lived in an area in which a major earthquake was predicted in December of 1990. The disaster never occurred, but children were exposed to daily media coverage of the prediction as well as to disaster preparedness activities by community agencies, schools, and their own families. The youth were interviewed before the occurrence of the earthquake was predicted (December 3, 1990) and six to eight weeks later. Kiser et al. found that children exhibited symptoms of anticipatory stress. Although duration of the stress reaction was reportedly brief, it was highly associated with the perception of continued threat.

Prior to December 3, children and adolescents reported sleep disturbance and repetitive dreams or nightmares (Kiser et al., 1993). More traumatic stress responses were reported before December 3 than afterwards, when the earthquake did not occur. Elementary school students scored higher on an anticipatory stress index both before and after December 3 as compared with high school students.

Schwarzwald, Weisenberg, Waysman, Solomon and Klingman (1993) studied 492 Israeli school children approximately one month after the end of the Persian Gulf War. Three hundred and ten children sampled came from a region hit by 17 SCUD missiles in three direct attacks. One hundred and eighty two children came from an area that was not hit by any missiles. Elementary, junior high and high school students were surveyed. Schwarzwald et al. found that 5th graders exposed to the results of the missile attacks reported significantly higher global symptom scores on a stress reaction questionnaire than did 7^{th} and 10^{th} graders. Fifth-grade girls reported the highest stress responses in regions hit by the SCUD missiles. In contrast, fifth-grade boys reported the highest stress reactions regardless of whether or not they lived in an area hit by missiles when compared with their 7^{th} and 10^{th} grade counterparts. The study points out that exposure to the probability of an attack as well as to the results of an attack contribute to postwar stress reactions in children.

Adolescence

Adolescence is a unique period in life, one in which the search for identity is paramount and the nature and substance of peer relationships are emphasized (Sroufe, Cooper, & DeHart, 1996). Often, adolescent survivors of a

traumatic event will struggle with the meaning of "why" the event occurred. This struggle for meaning may be compounded by their particular developmental levels and their own searches for identity (Sroufe et al., 1996; Terr et al., 1997). Adolescents exposed to trauma from a distance may have dreams about the event, engage in writing about the event, and have fears specific to the traumatic event (Terr et al., 1999). In the study by Terr et al. (1999), adolescents who experienced the Challenger disaster from a distance reported an increase in their diminished expectations for the future.

Studies on youth exposed to chronic violence indicate that these youth display a diminished perception of risk, lowered personal expectations for the future, dysphoric mood, antisocial activity, diminished academic achievement and somatization syndromes (Campbell & Schwarz, 1998; McNally, 1991; Schwab-Stone et al., 1995). Exposure to violence among adolescents has been positively associated with depression, anger, anxiety, dissociation, and posttraumatic stress (Singer, Anglin, Song, & Lunghofer, 1995). These mental health issues can interfere with and even delay the normal development of the adolescent, including an adolescent's ability to form healthy relationships with others (Horowitz et al., 1995). Youth

presenting with severe stress reactions, even those with partial symptomatology, need to be identified as such in order to receive appropriate mental health treatment (Brent et al., 1996; Pfefferbaum, Nixon & Tucker et al., 1999) to address these developmental concerns.

Longitudinal Course

There is a paucity of research on the longitudinal course of effects of trauma and stress-related responses in children and adolescents. The few studies which have attempted to study the long-term consequences of exposure to trauma have systematically identified recurrent depression and PTSD as common outcomes in children and adolescents (Brent et al., 1996; Sack et al., 1993). Yule and Williams (1990) found that 6 of 10 children studied who survived a ferry disaster still showed signs of distress over a year after the disaster. Nader et al. (1990), in their longitudinal study of 100 children exposed to a sniper attack, found that after 14 months symptoms had diminished in all but the most directly exposed children. In contrast, some research on children exposed to disaster has shown that a majority do recover in the long-term (Terr et al., 1999) and that rates of PTSD significantly decrease (Green et al., 1994).

Trauma and Loss

There is a debate in the literature over whether or not complications of grief should be labeled with psychiatric disorders such as PTSD, because this implies an inherent pathology and blames the victim. Shooter (1997) suggests there are two models with which to approach children's response to trauma: (a) the mourning process as a normal facet of loss, and (b) posttraumatic stress and related symptomatology, including PTSD. He suggests that a minimum of six factors need to be addressed when investigating trauma responses in children. These include the nature of the event, the individual characteristics of the child, family dynamics, culture, service issues, and the surrounding social climate.

Some traumatic processes and loss are inextricably linked. In their study of Kuwaiti children affected by war atrocities after Iraq invaded their country, Nader et al. (1993) found that 70% of children reported moderate to severe PTSD. Not surprisingly, 98% of children also endorsed one or more symptoms of grief.

Pfefferbaum, Nixon, and Tucker et al. (1999), using data from the Pfefferbaum, Nixon and Krug et al. (1999) study, looked at posttraumatic stress responses in bereaved children 7 weeks after the Oklahoma City bombing.

Pfefferbaum, Nixon and Tucker et al. developed the Posttraumatic Stress Symptom Scale (PTSS) as a measure of current posttraumatic stress symptoms and as a retrospective measure of initial arousal and fear. Subscales of the PTSS represented the 3 PTSD symptom clusters of intrusion, avoidance and arousal. In comparison with nonbereaved youth, bereaved youth were more likely to report symptoms of arousal retrospectively, to worry about family members, to report not feeling safe and to report that the bombing had changed things at home and at school. Bereaved youths had significantly higher mean PTSS scores than nonbereaved youths did; bereaved children who had lost an immediate family member had a significantly higher PTSS score than all other groups.

Exposure through the Media

Over the past few decades, researchers have studied the effect on children of exposure to traumatic stimuli through the media. A majority of these studies have focused on the influence of media as contributing to aggression (see Villani, 2001, for a review). More recent research has begun to examine the role that witnessing traumatic images through the media has on children's development of traumatic stress symptoms (Hoven et al., 2005). Singer, Slovak, Frierson, & York (1998) found that children who

watched more than 6 hours of television per day not only reported higher levels of violent behavior than those who watched less, but also those same children reported higher levels of trauma symptoms.

Media Exposure Related to War and Disaster

In a preliminary study of Kuwaiti children exposed to war atrocities during the occupation by Iraq, Nader et al. (1993) found that more than 70% of the children sampled reported moderate to severe posttraumatic stress reactions. Sixty-five percent of their sample witnessed war-related violence on television; this included images of death and mutilation. The researchers found that television exposure of explicit and graphic images of dead and mutilated persons added significantly to scores of posttraumatic stress, even after controlling for the effects of other types of exposure.

Other studies have found that subjects who watched extensive television and news reports of disasters reported high levels of distress (Murphy et al., 2003) and posttraumatic stress reactions (Pfefferbaum, Nixon, & Krug et al., 1999; Pfefferbaum, Nixon & Tucker et al., 1999). In a review of the literature on posttraumatic stress disorder and terrorism, Lee et al. (2002) found that viewing television coverage of disasters was significantly related

to the development of traumatic stress symptoms in children. Terr et al. (1999) "conclude that for children raised from birth with television, the immediacy of the medium seems almost as real as pure, untouched reality"(p. 1542).

Media Exposure Related to Terrorism

In their study on the aftermath of the 1995 Oklahoma City bombing, Pfefferbaum, Nixon and Krug et al. (1999) reported that for days following the bombing, local stations aired coverage that was primarily bomb-related. Over two-thirds of the 3,218 students assessed 7 weeks after the bombing reported that most or all of the television they watched was bomb-related. When the researchers used a stepwise linear regression analysis to build a predictive model for posttraumatic stress symptom scores, the primary predictor was found to be television exposure. Exposure to bomb-related television was found to account for most of the variance over gender, race/ethnicity or grade level.

Pfefferbaum, Nixon and Tucker et al. (1999) studied posttraumatic stress responses in bereaved children after the 1995 Oklahoma City bombing, using data from the study by Pfefferbaum, Nixon and Krug et al. (1999). These researchers found that youth who reported that all or most

of their television viewing was of bomb-related material after the blast also scored in the upper quartile on two subscales of the PTSS, the Intrusion Cluster subscale and the Arousal Cluster subscale. In a follow-up to these studies, Pfefferbaum, Moore et al., (1999) found that television exposure was a stronger predictor of posttraumatic stress symptoms than physical and emotional exposure for a sample of 3,210 children exposed to the 1995 Oklahoma City bombing.

Stress reactions can be exacerbated by repetitive watching of images and events associated with a disaster, including watching television coverage of an event or hearing about the event through news reports. Murphy et al., using self-report questionnaires, (2003) studied the stress reactions of 219 African-American undergraduates at a Southern college within 3 days of the September 11, 2001 terrorist attacks in the United States. The researchers studied students' distress reactions related to various events, images, or news reports of the September 11 terrorist attacks. A majority of the participants frequently endorsed the highest rating of distress for all seven categories, with nearly one half to three quarters of all students giving the maximum rating to all seven events. Students were most severely distressed by watching people

fall from the World Trade Center towers; they were further distressed by observing the hurt and the dead .

Importantly, this subject sample endorsed low rates for having any relationships with the people and sites of the events of September 11, 2001 (Murphy et al., 2003). Only three students reported knowing someone who had been killed and only 9% were awaiting news of someone they knew. In addition, only 27% of the sample reported knowing a family member or friend near the attacks and only 7.8 % had ever lived in New York or Washington, D.C. Although the survey results are limited because the sample consisted primarily of women (78.5%) and participants were not selected through random sampling, results nevertheless indicate stress symptoms were prevalent in a majority of the subject sample based on witnessing images or news reports of the terrorist attacks.

Schuster et al. (2001) assessed the immediate mental health effects of the September 11, 2001, terrorist attacks in a nationally representative sample of 560 U.S. adults three to five days after the attacks. Using random-digit dialing, Schuster et al. found that 44% of adults surveyed reported one or more substantial symptoms of stress and 90% had one or more symptoms to some degree. The researchers also reported a striking association between extensive

television viewing and substantial stress reactions. In their survey, Schuster et al. found that adults reported watching television coverage of the attacks for a mean of 8.1 hours, with 31% of respondents watching for 8 to 12 hours and 18% watching for 13 hours or more.

Information was also gathered on 170 children aged 5 to 18 years via parent report. Thirty-five percent of parents reported having children with at least one of five stress symptoms (Schuster et al., 2001). In addition, 47% of parents reported that children had been worrying about their own safety as well as the safety of loved ones. Children, as well as their parents, were exposed to media coverage of the terrorist attacks. Schuster et al. found that children watched television coverage of the attacks for a mean of 3.0 hours on September 11, with 23% watching for 5 hours or more. Over half of those watching 5 hours or more were 17 or 18 years old, whereas 73% of 5 to 8 year olds watched for an hour or less. Thirty-four percent of parents tried to restrict children's viewing. There was an association between the number of reported stress symptoms and the number of hours of television viewing for children whose parents did not try to restrict television viewing.

The sample involved a slight overrepresentation of females, non-Hispanic whites, and those with higher

education and incomes. A sensitivity analysis completed on the data showed no decrease in total sampling error nor a substantial alteration in the results when the sample was weighted to resemble population estimates from the March 2001 Current Population Survey (Schuster et al., 2001).

Developmental Differences

Cantor and colleagues have explored developmental differences in media-induced fright reactions (Cantor, Mares, & Oliver, 1993; Cantor & Nathanson, 1996; Cantor & Sparks, 1984; Hoffner & Cantor, 1985). Children are most frightened by violent images in the media or by images in which there is a perceived threat of violence (Cantor, 2002). Pre-school children are more fearful of a scary image which is harmless than an attractive image which is actually harmful; elementary school children, in contrast, tend to respond more to the destructive potential of the character or animal portrayed rather than responding to its appearance (Hoffner & Cantor, 1985).

In addition, as children get older and are increasingly able to comprehend the fantasy-reality distinction cognitively, they are more likely to become disturbed by realistic images than fantasy ones depicted through the media (Cantor & Nathanson, 1996; Cantor & Sparks, 1984). For this reason, older elementary school

children are especially susceptible to images and stories in the news that provoke fear (Cantor, 2002). In addition, the older children get, the more likely they are to become frightened by abstract concepts, such as the global impact of war; this is consistent with cognitive changes in development (Cantor et al., 1993; Sroufe et al., 1996). In a paper presented at the Colloquium on Television and Violence in Society, Cantor (2002) describes the psychological effects of media violence on children and adolescents from September 11th, 2001:

> The media's constant showing of the events of September 11th and their aftermath had something to frighten viewers of all ages, but different-aged children most likely responded to different features of the presentations. Prior research suggests that preschoolers most likely responded to images of bloodied victims and expressions of emotional distress; older elementary school children most likely responded to the idea of their own and their family's vulnerability to attack; teenagers, like adults, were able to grasp the enormity of the events and the long-term implications they presented for civilized society. (p. 12)

Exposure to traumatic stimuli through the media can have a distressing effect on children. Developmental factors, however, need to be taken into account; witnessing news media of a violent nature can be frightening to children who are watching. For those children who have been more directly exposed to traumatic events in their lives, the repetitive viewing of graphic and violent images can exacerbate posttraumatic stress reactions. Because of the finding that parents and teachers often underestimate the level of a child's distress (Yule & Williams, 1990), accurate measurement of traumatic stress reactions from children and adolescents themselves is critical to ensuring appropriate identification and subsequent intervention.

Measurement of Traumatic Stress Reactions

From a review of the literature, it is vital that individuals suffering from traumatic stress receive intervention as soon as possible after the exposure. For children, adolescents and adults, immediate intervention may mediate some of the long-term sequelae from exposure to a traumatic stimulus (Brent et al., 1996; Tyano et al., 1996). Consistently, the literature encourages intervention in the immediate posttraumatic period as crucial to prevent the consolidation of traumatic emotional memory traces (Post et al., 1998; Terr, 1992). Child survivors of trauma

related to terrorism may not have the same exposure to protective resources, because parents and community members are likely to have been profoundly affected as well by the terrorist attack(s) and thus may have difficulty being able to provide necessary support and intervention (Fremont, 2004).

Clinicians and researchers can benefit from accurate measurement of traumatic stress reactions to guide intervention and treatment planning and to research the efficacy and outcome of those interventions. Additionally, gearing treatment interventions with a respect for individual differences in reacting to traumatic situations is warranted. Comprehensive assessment can provide for this.

Assessment of traumatic stress reactions, including PTSD, often involves the use of one or more techniques. Structured interviews, administration of questionnaires, and psychological evaluation methods can be utilized to gain an accurate picture of the client's distress (Allen, 1994; McNally, 1991).

Assessment with Adults

Allen (1994) stresses the fact that scores from one instrument alone are not enough to make a diagnosis of PTSD. Ideally, a multitude of assessment techniques should

be used. Pre- and post-trauma experiences should be explored, as well as reactions to the trauma itself.

Self-report measures used to assess PTSD in adults include the IES, the Minnesota Multiphasic Personality Inventory - II (MMPI-2; Hathaway & McKinley, 1989) with its PTSD subscales (PK and PS), the Millon Clinical Multiaxial Inventory - III (MCMI; Millon, 1994), the Mississippi Scale for Combat-Related Post-Traumatic Stress Disorder (M-PTSD; Keane, Caddell, & Taylor, 1988), and the Penn Inventory (Hammarberg, 1992). Structured interviews include the Structured Clinical Interview (SCID; Spitzer, Williams, & Gibbon, 1987), the Clinician-Administered Post-Traumatic Stress Disorder Scale (CAPS; Blake, Weathers, & Nagy, 1990), and the Post-Traumatic Stress Disorder Interview (PSDI; Watson, Juba, & Manifold, 1991). Other psychological instruments that may be used in combination with the above tools are the Rorschach Inkblot test using the Exner (1993) scoring system, the Stroop Interference Task, and cognitive measures such as the Wechsler Adult Intelligence Scale - Revised (WAIS-R). Autonomic arousal can also be measured through various psychophysiologic measures such as heart rate, skin conductance, and electromyogram recordings (Allen, 1994).

Assessment with Children and Adolescents

In contrast to the numerous assessment techniques available to screen for adult PTSD, relatively little attention has been paid to assessing PTSD in children and adolescents until recently. McNally (1991), in his review of childhood PTSD, suggests that thorough assessment of PTSD in children and adolescents requires a multi-method approach. Structured interviews, questionnaires, and psychophysiological evaluation techniques should be employed to assess traumatic stress reactions in this population. A limited review of scales assessing PTSD and traumatic stress symptoms in children follows. For a more comprehensive review, the reader is directed to Ohan, Myers, and Collett (2002).

The clinician administered Children's PTSD-Reaction Index (CPTS-RI) by Pynoos et al. (1987a) is widely used as a measure of PTSD in children older than 8 years of age. This measure can also be used as a self-report scale. It has adequate internal consistency and good interrater and test-retest reliability. The CPTS-RI has been used extensively in research with children of varying ages, cultures and traumatic experiences. A disadvantage in using this scale is that it does not measure all of the symptoms of PTSD as defined in the *DSM-IV*.

The Children's Post-Traumatic Stress Disorder Inventory (CPTSDI) developed by Saigh et al. (2000) can be used with youth aged 7 to 18. The scale has good reliability and validity. Ohan et al. (2002) describe the CPTSDI as "one of the most thoroughly examined scales [psychometrically] assessing juvenile trauma" (pg. 1406). Items are based on *DSM-IV* criteria for PTSD.

More recently, Foa et al. (2001) designed the Child PTSD Symptom Scale (CPSS) to assess the *DSM-IV* construct of PTSD in children. The CPSS is a self-report scale for children 8 to 15 years of age. Its format is developmentally suitable for children and adolescents. Preliminary estimates of reliability and validity are good. There is some concern that the three subscales, Reexperiencing, Avoidance and Arousal, may not measure separate constructs for youths (Ohan et al., 2002).

Another recently developed scale that shows promise is the Children's Reaction to Traumatic Events Scale (CRTES) by Jones (2002). This scale, based on the IES and the *DSM-III-R's* criteria for PTSD, was an attempt by Jones to develop a scale that took the developmental needs of children and adolescents into account. The scale is designed for elementary and middle school children aged 8 to 12. Data is limited, but this scale shows potential in

assessing posttraumatic reactions in children (Ohan et al., 2002).

The My Worst Experience Scale (MWES; Hyman, Snook, Berna, & Kohr, 1997) was designed to diagnose PTSD in children ranging in age from 9 to 18 years old. Written on a third grade reading level, the MWES is an outgrowth of the My Worst School Experience Scale, a measure designed to assess trauma induced by negative experiences at school (Snook, 2000). The MWES is a self-report measure designed to assess the most stressful experiences of children; it contains 105 symptom items designed to measure the thoughts, feelings or behaviors of children related to those traumatic events (Hyman et al., 1997b). Reliability and validity estimates are good. A review of studies in which the MWES was used with children concluded that researchers have endorsed its utility and ease of administration with this population (Nader, 1997).

As part of a comprehensive, multi-method approach of assessing traumatic stress symptoms in children, several structured interviews for parents were developed. One of these is the Diagnostic Interview Schedule for Children and Adolescents - Parent Version (DICA-P; Robins & Smith, 1984; Welner, Reich, Herjanic, Jung, & Amado, 1987). Nader and Pynoos (1989) developed the Child Post-Traumatic Stress

Disorder Inventory (CPTSD-I) which is a structured interview used in questioning parents about the symptoms of their traumatized children.

A review of the literature suggests that it is important to interview children directly, because teachers and parents of bereaved and traumatized children often underestimate the level of a child's suffering (McNally, 1991; Yule & Williams, 1990). Yule and Williams (1990) found that child survivors of a ferry accident were able to report their experiences using self-report questionnaires; teachers and parents underestimated the level of distress that their children were experiencing. In a study on the effects of community violence, Martinez and Richters (1993) found that parents greatly underestimated the levels of their children's distress even when "children's symptoms are associated with objectively dangerous experiences"(p. 32). Researchers hypothesize that parents either do not recognize their child's symptoms as traumatic stress or they are overwhelmed with their own problems. In addition, teachers have been found to underreport symptoms even more so than parents (Yule & Williams, 1990). When dealing with the trauma related to a terrorist attack, the likelihood that parents and teachers are also profoundly affected is

high. They may not be able to identify symptoms in children nor provide support needed to protect children.

Ohan et al.(2002) provide a comprehensive review of rating scales assessing trauma and the effects of trauma on (?)youth. The authors note that scales that are most successful in assessing trauma in juveniles tend to be shorter in length, less intrusive, and not reactive. The IES is one such scale.

The IES was chosen for this study rather than other scales for several reasons. First, it meets the criteria outlined by Ohan et al. (2002) for scales most successful in assessing trauma in youth: it is short in length, relatively unobtrusive, and not likely to be reactive. Secondly, unlike some of the other scales assessing trauma in children, non-clinical personnel can administer the IES in large group format relatively quickly. This ease of administration lends itself to the possibility of the IES being a cost-effective screening tool for schools in assessing the after effects of a catastrophic event on school populations. Also, unlike some of the newer scales assessing PTSD in children, the IES has decades of research behind it, and it has been translated into many languages. Thus, it has applications for assessing traumatic reactions in school-aged youth in other cultures. Finally, this study

seeks to validate the use of the IES with children who have been directly and indirectly exposed to a traumatic stressor and who may be experiencing symptoms of PTSD without meeting full criteria. Scales designed purely to measure the presence of PTSD may exclude children who are suffering posttraumatic stress reactions but do not meet full diagnostic criteria for PTSD.

Impact of Event Scale

The IES is one of the most widely used self-report instruments in the assessment of posttraumatic stress reactions (Joseph, 2000). An individual's subjective interpretation of a traumatic event is considered a significant variable in determining the impact of that event (e.g. Dyregrov, Kuterovac, & Barath, 1996; Pfefferbaum et al., 2002). Horowitz et al. (1979) developed the scale to measure current intrusive and avoidant phenomena associated with any specific stressful life event in accordance with Horowitz's (1976) theory of stress response syndromes. The development of the scale was based on a sample of 66 adults who had experienced either personal injury or bereavement. The intrusion items consist of intrusively experienced ideas, images, feelings or bad dreams. The avoidance items consist of consciously recognized avoidance of ideas, feelings or situations. The

IES was developed prior to the inclusion of PTSD as a distinct psychiatric disorder in the *DSM-III*. The IES can be used to assess individuals over time, and it can be used to compare levels of distress among subgroups as well as the impact of various life events (Schwarzwald, Solomon, Weisenberg, & Mikulincer, 1987).

The IES is a 15-item self-report scale with two subscales, one measuring intrusion and the other avoidance. Items 1, 4, 5, 6, 10, 11 and 14 compose the intrusion subscale. Items 2, 3, 7, 8, 9, 12, 13 and 15 compose the avoidance subscale. Horowitz et al. (1979) used 4-point frequency scales (0 = not at all, 1 = rarely, 3 = sometimes, and 5 = often) for each item. This scale assesses the frequency of intrusion and avoidance symptoms associated with a particularly stressful life event for the previous seven days. Total scores on the IES have a range of 0 to 75. Higher scores indicate a greater frequency and intensity of intrusive thoughts and attempts to avoid stimuli associated with the traumatic event. Subscale scores can also be calculated for intrusion and avoidance. The seven intrusion items on the scale have a range of 0 to 35, and the eight avoidance subscale scores have a range of 0 to 40.

Horowitz et al. (1979) report that the scale has satisfactory internal reliability (split half reliability of total scale = 0.86; Cronbach's alpha for intrusion = 0.78 and for avoidance = 0.82). Other studies have found similar results; Zilberg, Weiss, and Horowitz (1982) reported a Cronbach's alpha equaling 0.86 for the total IES. Horowitz et al. (1979) report that test-retest reliability is also good (r = 0.89 for intrusion and 0.79 for avoidance; 0.87 for the total score). Horowitz (1982) identified clinical threshold levels for symptom levels on the IES using the total score. The low symptom threshold is < 8.5, the medium threshold is 8.6 to 19.0, and the high threshold is > 19. Joseph (2000) notes, however, that these cutoff points are arbitrary and are not indicative of any specific clinical diagnosis.

Although the IES has been used in many studies of adults with PTSD, some researchers have criticized its use in this manner. Even though the IES measures aspects of intrusion and avoidance, it does not contain items related to hyperarousal, a key criterion in the diagnosis of PTSD (American Psychiatric Association, 2000). Pfefferbaum, Nixon, Tucker et al. (1999) found that the intrusion and arousal cluster subscale scores on the PTSS were the best predictors of posttraumatic stress symptoms in their large

sample of children exposed to the 1995 Oklahoma City bombing. Furthermore, the IES does not cover some avoidant or intrusive symptoms of PTSD such as sense of foreshortened future, detachment, or flashbacks (Joseph, 2000). This poses problems regarding content validity if the IES is used as a measure of PTSD.

In contrast, some studies have shown that in children with PTSD, re-experiencing and avoidance symptoms are endorsed more frequently than items assessing arousal (Nader et al., 1993). In studying 5,687 children exposed to Hurricane Hugo, Lonigan et al. (1998) found that emotional and behavioral avoidance, bad dreams, and repetitive thoughts about the disaster had the highest diagnostic efficacy in diagnosing PTSD. Emotional numbing, repetitive images of the hurricane, and being easily startled were found to be moderately good in terms of inclusion criteria for diagnosing PTSD.

A review of the literature finds the IES to be extremely useful when clients have experienced a single trauma. Some researchers have expressed concern that the IES becomes difficult to use with clients who have been exposed to multiple traumas, such as refugees or war victims (Newman & Lee, 1997; Velsen, Gorst-Unsworth, & Turner, 1996). These subjects have difficulty deciding

which traumatic stressor to assess because they have been exposed to so many. However, as Joseph (2000) points out, this criticism is not unique to the IES.

The amount of time from the occurrence of the event to completion of the IES does not seem to matter. In the original study, the subjects were asked to assess the most recent serious life event they experienced as most significantly stressful (Horowitz et al., 1979). The average time from occurrence of the event to completion of the IES averaged 25 weeks, with the time ranging from 1 to 136 weeks.

Interestingly, Joseph (2000) points out that although the IES has shortcomings in terms of clear criteria and norms for diagnostic use, it remains a popular instrument both in clinical and in research studies. He suggests that one reason for this is that the IES "has provided an unchanging standard measure of posttraumatic stress for almost 20 years" (p. 108. When Joseph calls the IES the "gold standard self-report measure in trauma research" (p. 108), he notes that the IES allows for comparisons between old and new trauma samples. Allen (1994) further notes that the IES is frequently used in outcome studies because it provides continuous scores.

Research has shown that not all children exposed to trauma develop PTSD (Stallard et al., 1999). Children who suffer from traumatic stress but do not meet full criteria for PTSD are nevertheless in distress. Studies have shown that these children can suffer from distress symptoms long after experiencing the traumatic event (Yule & Williams, 1990). In this way, the IES can contribute important information both in terms of clinical utility and in measurement of traumatic stress reactions in children over the long run. In the study by Stallard et al. (1999), the IES was found to identify correctly two thirds of children with PTSD and borderline conditions. Thus, the IES has been shown to be effective in screening for posttraumatic stress symptoms.

Other studies using self-report questionnaires to assess stress reactions in children have met with similar success. Schwarzwald et al. (1993) used not only teacher ratings, a self designed questionnaire on perceived stress impact measuring objective and subjective stress, but they also used a stress reaction questionnaire based on the Child Post-Traumatic Stress Reaction Index interview by Frederick and Pynoos (1988) to measure stress reactions by Israeli school children to SCUD missile attacks. The researchers found that self-reported exposure to missile

attacks and subjective assessment of stress correctly identified 75% of school children as falling into clinical or nonclinical subgroups.

In fact, Pfefferbaum et al. (2002) argue that the child's subjective experience of distress at the time of exposure should be included in the diagnostic stressor criterion for PTSD. Jeavons (2000) stressed the importance of understanding the subjective meaning that the trauma has for the individual. For example, she found that emotion-focused coping and perceived life threat had more predictive value in determining the one who was likely to suffer a psychological disorder after a road accident than demographic or accident variables did at three month follow-up.

Use of the IES with Adult Trauma Populations: Psychometric Validation

The IES has frequently been used in studies of adult trauma populations (e.g. Allen, 1994; Joseph, 2000) both as a screening tool and as a tool through which its psychometric properties were studied. After the development of the IES by Horowitz et al. (1979), Zilberg et al. (1982) conducted a psychometric evaluation of the IES with 72 bereaved adults. Thirty-five of these were outpatients seeking treatment after the death of a parent; 28 were

adult offspring of deceased parents who volunteered for the study, and another 9 individuals, who were self-referred, but were also bereaved after the death of a parent. The subjects were assessed over time at three different intervals.

Principal components analysis yielded three factors (Zilberg et al., 1982). The third factor was dropped because it barely met the standard criteria for inclusion. A two-factor forced solution using principal components analysis with a varimax rotation yielded the following two factors: an intrusion factor with seven items (1, 4, 5, 6, 10, 11, and 14) and an avoidance factor with eight items (2, 3, 7, 8, 9, 12, 13 and 15). This study confirmed the original scoring procedure by Horowitz et al. (1979).

The study also confirms the fact that the two subscales have high internal consistency across repeated measurements over time (Zilberg et al., 1982). The subscales are sensitive to changes over time and in discriminating between different populations. Zilberg et al. concluded that the IES item pool represents similarities in the content of experience following a traumatic event across types of events and between patient and nonpatient populations.

However, the study is limited because in the patient sample, only two of the subjects were male. Another limitation is the small sample size. Also, in using principal components analysis, researchers should have used at least five respondents per item analyzed (Bryant & Yarnold, 1995). The analysis by Zilberg et al. used only 72 respondents.

Other studies support the two-factor structure of the IES with some exceptions. Schwarzwald et al. (1987) examined the factor structure of the IES with 382 male combat veterans approximately 12 months after exposure to combat. Using principal components analysis followed by a varimax rotation, three factors emerged. Because the third factor accounted for only 7% of the variance and the eigenvalue was close to 1.00, the researchers performed a forced two-factor solution. This yielded an intrusion factor (items 1, 2, 4, 5, 6, 10, 11, 12, and 14) and an avoidance factor (items 3, 7, 9, and 13) with items loading above 0.50. For their sample of combat veterans, intrusion was much more prominent than avoidance.

Items 2 and 12, avoidance items from the original scale (Horowitz et al., 1979), loaded high on the intrusion factor, suggesting that these items cover symptoms both of intrusion and of avoidance (Schwarzwald et al., 1987).

These findings are consistent with the findings of other studies (Dyregrov et al., 1996; Hodgkinson & Joseph, 1995; Shevlin, Hunt, & Robbins, 2000). The authors conclude that the wording in these two items are ambiguous and can reflect aspects both of intrusive and of avoidant symptoms.

In addition, items 8 and 15 did not load either on the intrusion or on the avoidance factor. Instead, they loaded on the third factor that had been dropped through the 2-factor forced solution. The authors characterized this factor as emotional numbing and denial. Schwarzwald et al. (1987) found that items 8 and 15 differed from the avoidance factor, which characterizes behavioral-cognitive avoidance. Instead, they suggest that items 8 and 15 are more reflective of emotional avoidance and denial.

Joseph, Williams, Yule and Walker (1992) found results similar to that of Schwarzwald et al. (1987) in the analysis of the IES with adult survivors of two maritime disasters. Principal components analysis and a three factor forced solution resulted in the emergence of three factors: intrusion (items 1, 4, 5, 6, 10, 11, 12, and 14), avoidance (items 2, 3, 7, 9, and 13) and emotional numbing or denial (items 8 and 15). Similar to the results of Schwarzwald et al. (1987), item 12 loaded on intrusion rather than avoidance, and items 8 and 15 emerged as a separate factor.

Although their study is limited by small sample size, the researchers suggest that caution be taken when including items 8 and 15 into the avoidance subscale.

Hodgkinson and Joseph (1995) examined the psychometric properties of the IES with a large sample of women, following an armed bank raid. Two hundred and twenty eight women completed the IES three weeks after the raid, and 147 women of this sample completed the IES 3 months after the bank raid. Principal components analysis with varimax rotation was used. Factors with eigenvalues above 1.00 were taken into account. A criterion of loading above 0.50 was used as the level of factor loading significance.

Interestingly, Hodgkinson and Joseph (1995) found that the factor structure of the IES changed over time. These results are consistent with Horowitz's (1982) theoretical model of stress response syndromes, which indicates that symptoms of intrusion and avoidance tend to wax and wane over time. Using principal components analysis, the researchers found that at 3 weeks after the event, a two-factor solution emerged. Items 1, 4, 5, 6, 10, 11, and 14 loaded on the intrusion factor, consistent with the work by Horowitz et al. (1979). Items 3, 7, 9, 12, 13, and 15 loaded on the avoidance factor. The original scoring procedure by Horowitz et al. included items 2 and 8 in the

avoidance subscale, which Hodgkinson and Joseph did not find. At 3 months after the event, a three-factor solution emerged. In addition to an intrusion and an avoidance factor, an additional factor emerged which the authors characterized as comprising sleep disturbance, dreams and emotional distress (items 4, 6, and 12).

Using a forced two-factor solution for the data at 3 months, Hodgkinson and Joseph (1995) found that an intrusion (items 1, 4, 5, 6, 10, 11, 12, and 14) and an avoidance factor (items 2, 3, 7, 8, 9, 13, and 15) emerged. In the original work by Horowitz et al. (1979), item 12 loaded on the avoidance factor; this is similar to the work of Schwarzwald et al. (1987) and Joseph et al. (1992). The authors speculate that items 2 and 12 tap coping strategies that are emotion-focused.

No association was found between age and scores, nor did Hodgkinson and Joseph (1995) find emotional numbing and denial emerge as a separate factor; this, however, has been found in other studies (Schwarzwald et al., 1987; Yule et al., 1994). The researchers suggest that emotional numbing is characteristic of a more chronically disturbed population than the sample in their study. Although the generalizability of this study is limited, and the researchers could not draw conclusions about the course of

symptomatology, their study does confirm the use of the IES as a screening tool with a civilian population.

More recently, Shevlin et al.(2000) assessed the factor structure of the IES using a sample of 731 veterans of World War II and the Korean War. Using confirmatory factor analysis, the researchers concluded that even with a substantial time lag since the traumatic event, in this case 40 to 50 years, the IES does measure two distinct factors of intrusion and avoidance. Items 1, 2, 4, 5, 6, 10, 11, 12, and 14 loaded on the Intrusion subscale. Items 2, 3, 7, 8, 9, 12, 13, and 15 loaded on the Avoidance subscale. Notably, items 2 and 12 loaded both on the intrusion and on avoidance factors. As previous studies have mentioned (Hodgkinson & Joseph, 1995; Robbins & Hunt, 1996; Schwarzwald et al., 1987), these items appear to measure both aspects of intrusion and avoidance. The reliability of the IES was also found to be acceptable in this study.

Use of the IES as an Assessment Tool with Children

Although primarily used in studies of adult PTSD, the IES has also been used as part of an assessment for anxiety and PTSD in children. The IES has been found to be useful as part of a battery of tests screening for PTSD in children aged 7 to 18 years of age (Stallard et al., 1999).

It has also been used as part of an assessment of postdisaster depression and emotional distress including anxiety in children (McDermott & Palmer, 2002).

Malmquist (1986) studied 16 children, between 5 and 10 years of age, who had witnessed their parents being murdered. Malmquist used the scale in interview format, rather than having the children fill out the scale themselves. He found that children's scores were comparable with those of severely traumatized adults. Yule and Williams (1990) used the IES to study the effects of a fatal shipwreck on 10 adolescent survivors. Like Malmquist, the researchers found that scores on the IES were similar to those of traumatized adults. Additionally, 12 to 15 months after the accident, the adolescents still showed signs of impairment. The researchers concluded that the IES can be used with children aged 8 and up as an effective screening instrument. In neither of these studies, however, were the researchers looking to validate the instrument with the populations studied.

The IES has been used in many other studies as part of an assessment battery to screen for posttraumatic stress symptoms and PTSD in children. Green et al. (1994) used the IES as one measure of psychological functioning in a 17-year follow-up of subjects who had been children at the

time of a fatal dam collapse. Kuterovac, Dyregrov, and Stuvland (1994) used the IES as one measure of stress related to war, in children exposed to war in Croatia. Likewise, Yule, Udwin, and Murdoch (1990) used the IES as part of a study examining the effects of a cruise ship sinking on 25 adolescent survivors.

Stallard et al. (1999) used the IES as part of a psychological screening to assess the prevalence of PTSD in children referred to a hospital emergency room as the result of a sports injury or a car accident. The researchers found that using a cutoff score of 30 or more resulted in the IES correctly identifying three quarters of all children who fulfilled the diagnosis of PTSD. Raising the cutoff to 35 resulted in only two-thirds of all children being correctly identified; however, specificity increased slightly as did the positive predictive value of the screen.

McNally (1991) posits the idea that the IES may be the best questionnaire for evaluating childhood PTSD. However, he cautions that it may be difficult to distinguish between grief and PTSD when using the IES to evaluate a child who has lost a friend or family member. Sometimes, children exposed to violent events in which a friend or family member was killed may exhibit both grief and symptoms of

PTSD (Pynoos, Nader, Frederick, Gonda, & Stuber, 1987b) and it is difficult to distinguish when using the IES alone.

Psychometric Properties of the IES with Child Trauma Populations

Studies examining the psychometric properties of the IES with children are sparse. Yule, Bruggencate and Joseph (1994) examined the psychometric properties of the IES with 334 adolescent survivors (aged 11 to 18 years) of a shipping disaster. The item content of the IES was found to be highly relevant for adolescents. In contrast to previous research supporting a two-dimensional instrument (Zilberg et al., 1982), Yule et al. found three factors emerged from their principal components analysis: an 8-item intrusion factor (items 1, 4, 5, 6, 10, 11, 12, and 14), a 5-item avoidance factor (items 2, 3, 7, 9, and 13), and a 2-item emotional numbing factor consisting of items 8 and 15. This result is similar to results found by others (Dyregrov et al., 1996; Joseph et al., 1992; Schwarzwald et al., 1987) and may reflect the more chronic disturbance of the populations studied (Hodgkinson & Joseph, 1995).

Yule et al. (1994) found that item 12, loading on the avoidance subscale in the original research (Horowitz et al., 1979), loaded on the intrusion subscale. This is consistent with previous research using adult subjects

(Hodgkinson and Joseph 1995; Schwarzwald et al., 1987). The authors caution that items 2 and 12 are rather ambiguous and include features both of intrusion and of avoidance.

Yule et al. (1994) found that girls reported significantly higher symptomatology than boys. In addition, the factor structure of the IES varied according to gender. For boys, a two-factor solution of intrusion and avoidance emerged. For girls, four factors emerged: intrusion, avoidance, sleep disturbance and emotional numbing. However, the sleep disturbance factor (items 4 and 6) accounted for only 7.4% of the variance, and the emotional numbing factor (items 8 and 15) accounted for only 6.7% of the variance. When the girls' data was subjected to a forced 2-factor analysis followed by varimax rotation, an intrusion and an avoidance factor emerged. Nevertheless, Yule et al. suggest that further investigation of the emotional numbing factor is warranted, given its emergence in the analysis of the total sample.

Dyregrov et al. (1996) studied the psychometric properties of the IES with a large sample of children in war. The researchers studied 1,787 children aged 6 to 15, who were exposed to war in Croatia, Bosnia, and Herzegovina. The children were asked to report their reactions during the previous 14 days based on their own

worst war experience. In translating the scale to Croatian, the researchers changed the items from past to present tense in order to facilitate better understanding of the items.

Dyregrov et al. (1996) used principal components analysis with varimax rotation on the whole sample as well as on age, gender and differently war-exposed groups of children. Factors with eigenvalues above 1.00 were taken into account. A loading criterion of greater than 0.40 was used as the level of factor loading significance. The overall IES score and subscale scores were significantly higher in girls than in boys, similar to findings from Yule et al. (1994).

Their research confirms the two-dimensional nature of the IES (Dyregrov et al., 1996). Items 1, 2, 4, 5, 6, 10, 11, 12, and 14 loaded on the intrusion subscale. This factor includes all of the original items from the intrusion subscale, plus items 2 and 12, which originally loaded on the avoidance subscale (Horowitz et al., 1979). Items 3, 7, 9, and 13 loaded on the avoidance subscale; these items were part of the original avoidance scale. Consistent with the psychometric research by Yule et al. (1994) and others (Hodgkinson & Joseph, 1995; Schwarzwald et al., 1987; Shevlin et al. 2000), it appears that items 2

and 12 measure symptoms both of intrusion and of avoidance in children as well.

In the study by Dyregrov et al. (1996), items 8 and 15 did not load on either factor; this is similar to the finding by Yule et al. (1994). The authors suggest that for item 15, "My feelings about it were kind of numb,"the children in this study had difficulty understanding the word "numb" because this word is difficult to translate into Croatian. In addition, children may have had difficulty understanding item 8, which deals with the unreality of the stressful event. The authors suggest that in using the IES with children two options are possible: omit items 8 and 15 or add items that assess numbing in ways that any child is able to understand.

The authors concluded that the two-factor structure of the IES was stable and reliable for children of all ages and for both genders. Dyregrov et al. (1996) found that both for girls and boys, the factors comprised the same items for both the intrusion and the avoidance factors. This finding is different from that of Yule et al. (1994), who found differences in the factor structure of the IES based on gender.

More recently, Sack, Seeley, Him and Clarke (1998) studied the psychometric properties of the IES with 180

Cambodian refugee youth traumatized by years of war. The IES was administered in English, with the assistance of a Khmer interpreter. For their sample, internal consistency of the IES was found to be high (Cronbach's alpha = 0.92) and the criterion related validity was excellent. Confirmatory factor analysis replicated the three-factor solution put forth by Yule et al. (1994). Dimensions of intrusion, avoidance and emotional numbing emerged. No gender differences were found, contrary to the study by Yule et al. (1994). The authors see the IES as a useful tool in tracing trauma symptoms over time.

In summary, the psychometric properties of the IES have been studied with a variety of adult trauma populations. Studies of the IES with children have primarily used subjects who have experienced severe and direct trauma, such as war or a major disaster. The role of indirect exposure in the development of posttraumatic stress symptoms, including the role of media exposure, is gaining more attention in the recent literature. The IES could serve as a useful screening tool for the quick assessment of posttraumatic stress reactions in children who have been both directly and indirectly exposed to trauma, but its psychometric properties with this population would need to be studied.

Statement of Purpose

This study examined the Impact of Event Scale (IES) as formulated by Horowitz et al. (1979), determining its utility in assessing the intrusion and avoidance characteristics of PTSD. The population that was studied consisted of a convenience sample of adolescents currently attending an urban high school less than six miles from the site of the World Trade Center terrorist attacks. The IES is a widely used screening tool in the quick assessment of current subjective symptoms of stress following a traumatic event. However, the psychometric properties of the use of the IES with youth under 18 years of age have been infrequently studied.

For the purposes of this study, the IES was adapted to measure the subjective amount of stress that adolescents reported as being related to the terrorist attacks on New York City, the Pentagon and the plane crash near Pittsburgh. The IES was factor analyzed using principal components analysis to determine the factor structure of the scale. Results were also correlated with scores from the MWES (Hyman et al., 1997b).

It is predicted that the IES, with slight modifications, will be a user-friendly, easy to administer and an efficient measure of the intrusion and avoidance

characteristics of a traumatic stress response with children.

Hypothesis 1: The psychometric analysis of the IES will yield two separate factors: intrusion and avoidance.

Rationale: The IES was designed to measure current intrusive and avoidance phenomena associated with stressful life events. Previous studies using the IES with adults have found that the scale yields two factors of intrusion and avoidance (Horowitz et al., 1979; Schwarzwald et al, 1987; Shevlin et al., 2000).

Hypothesis 2: It is predicted that the IES two-factor structure will perform similarly for girls and for boys.

Rationale: Of the studies reviewed, only one with a small sample size found any difference related to gender and factor structure (Yule et al., 1994).

Hypothesis 3: The IES will moderately correlate with the MWES as a measure of posttraumatic stress reactions in children exposed to a traumatic stressor.

Rationale: Studies have shown that the IES can correctly identify three-quarters to two-thirds of children with PTSD and borderline conditions when used as part of a screening for PTSD and posttraumatic symptoms (Stallard et al., 1999). The MWES has been validated as a measure of PTSD in children (Hyman et al., 1997b).

Hypothesis 4: It is predicted that those children who directly witnessed the effects of the attacks (i.e. saw it live as it happened, knew someone who died or was hurt, experienced effects in neighborhood) will exhibit higher distress levels than those who indirectly witnessed the effects of the attacks (i.e. heard about it from family, teachers, friends; saw it on TV/computer; listened to it on the radio).

Rationale: Research has shown that those most highly exposed to a traumatic event often show the most severe stress reactions (Galea et al., 2002; Nader et al., 1990; Terr et al., 1999; Tyano et al., 1995).

Consistent with previously published studies examining the psychometric properties of the IES with adults (Hodgkinson & Joseph, 1995; Schwarzwald et al., 1987; Shevlin et al., 2000) and children (Dyregrov et al., 1996), It is expected that the IES will produce two factors, one of intrusion and one of avoidance. Items 2 and 12 have been shown to load both on the intrusion and on the avoidance subscales (Hodgkinson & Joseph, 1995; Schwarzwald et al., 1987; Shevlin et al., 2000) and the expectation is to find this in my results as well. There is no expectation that emotional numbing will emerge as a separate factor, in large part because the sample in this study is not expected

to manifest the chronic disturbance associated with emotional numbing (Hodgkinson & Joseph, 1995; Yule et al., 1994). I expect to find no differences in gender. There is the expectation that scores on the IES will correlate moderately with scores from the MWES. In addition, it is my expectation to find that those children who directly witnessed someone being hurt or killed in the attacks will exhibit higher distress levels than those who indirectly witnessed the effects of the attacks.

METHOD

Participants

Twenty-four adolescents aged 15 to 17 years old participated in the study. The mean age of the adolescents was 16.2 years. Thirty-three percent of participants were in 10^{th} grade and 67% were in the 11^{th} grade. Seventy-nine percent of participants were female; 21% were male. Ninety-two adolescents (92%) were African-American, one was Hispanic (4%) and one (4%) checked "other."

Participants were recruited from an urban high school in Brooklyn, NY, less than six miles from the site of the World Trade Center attacks. Information about the study, which included a letter to parents, consent forms and assent forms were sent home with children in the 10^{th} and 11^{th} grade English classes. Of the 360 students who received

the packets and were instructed to bring them home to their parents, 24 students returned packets with signed consents and met criteria for the study.

At the time of the September 11, 2001 terrorist attacks, the mean age of the participants was 12.8 years. Fifty-eight percent of participants reported being in 8th grade at the time of the September 11 attacks, and 42% reported being in 7th grade with a mean grade level of 7 years, 6 months. Ninety-two percent of the adolescents reported that they were in school at the time of the attacks. Participants reported watching a mean of 7.1 hours of media coverage after the attacks.

Participants reported experiencing the effects of September 11, 2001 both in indirect and direct ways. Seventeen percent of males and 83% of females reported hearing about it from family, friends or teachers. Twenty-nine percent of males and 71% of females reported seeing it on television or over the computer. Seventy-one percent of males and 29% of females reported hearing about it on the radio. Sixty-seven percent of males and 33% of females reported seeing the events of September 11, 2001, live as it actually happened. Sixty-two and a half percent of males and 37.5% of females reported experiencing the effects of the attacks in their neighborhoods (saw dust clouds, heard

sirens, smelled smoke, etc.). Eighty-three percent of males and 17% of females reported knowing of someone who died or who was hurt. When asked which one of these types of exposure had the greatest impact, participants reported "saw it on TV or over the computer" (27%), "saw it live, as it actually happened" (27%), and "knew someone who died or was hurt" (27%).

The majority of participants (54%) reported that the events of September 11 upset them "a little." Twenty-five percent reported the events upset them "a lot," and 21% reported the events "did not really bother me." When asked to report if the events of September 11, 2001, still bothered them, 46% of participants reported "yes." Only one adolescent reported receiving brief therapy (6-10 sessions) at school as a direct result of the events of September 11. Five participants (22%) reported exposure to other types of trauma in addition to the events of September 11, 2001. Traumas listed included death of family members, abuse, crime and a gun shooting in the neighborhood.

Four participants (17%) personally knew of someone who was hurt or killed in the attacks. Two of those injured or killed were reported to be relatives; one was reported as a friend, and one as a co-worker of a parent. All four

participants indicated "someone close to me told me about it."

Measures

Subjects were administered the My Worst Experience Scale (Hyman et al., 1997b) and an adapted Impact of Event Scale (Horowitz et al., 1979). The MWES, a self-report measure designed for 9- to 18-year olds, measures symptoms of PTSD and traumatic stress. A child can complete the scale in 20 to 30 minutes. The MWES requires a reading level of third grade and above and can be administered in individual or group format by non-clinicians. For the purposes of this study, subjects were instructed to rate their responses based on their reactions only to the terrorist attacks of September 11, 2001. In addition to demographic information, Part I of the MWES requests that subjects indicate whether or not the event happened to them, whether or not they saw it happen, heard about it, did it, or all of the above (Hyman et al., 1997b). For the purposes of this study, only Part II of the MWES was used. The demographic information was collected on a separate form to maintain anonymity.

MWES *DSM-IV* criterion subscales for PTSD measure the impact of the event, re-experience of the trauma, avoidance and numbing, and increased arousal. Symptom subscales

measure subject distress in seven areas: depression, hopelessness, somatic symptoms, oppositional conduct, hypervigilance, dissociation and dreams, and general maladjustment.

Hyman et al. (1997a) report that the MWES has excellent reliability with Pearson correlations obtained for the total MWES score ($r = .98$, $p < .001$) and total MWES symptoms ($r = .95$, $p < .001$). The MWES has satisfactory internal consistency, with Cronbach's alpha ranging from .68 to .91 for the seven factors of the MWES. Research has also indicated satisfactory construct, concurrent and discriminant validity for the MWES (Hyman et al., 1997b).

The Impact of Event Scale (IES) is a 15-item self-report scale used to assess the frequency of intrusion and avoidance symptoms associated with a particularly stressful life event (see Appendix A). In its original form, the person completing the scale chooses the life event she or he is assessing. For the purposes of this study, the scale was modified; participants were asked to assess their reactions specifically to the September 11, 2001, terrorist attacks on New York City, the Pentagon, and the plane crash near Pittsburgh. Subjects assessed each item on a 4-point frequency scale (e.g. 0 = not at all, 1 = rarely, 3 = sometimes, and 5 = often). Readability of the IES was

calculated using the Flesch-Kincaid readability formula. The formula computes readability based on a rating of the average number of syllables per word and the average number of words per sentence. The Flesch-Kincaid grade level for the IES used in this study was computed to be at the 4.2 grade level.

The IES is one of the most widely used self-report instruments in the assessment of posttraumatic stress reactions (Joseph, 2000). Horowitz et al. (1979) report the scale has satisfactory internal reliability (split half reliability of total scale = .86; .78 for intrusion and .82 for avoidance subscales). Zilberg et al. (1982) reported a Cronbach's alpha equaling .86 for the total IES. Advantages to using the IES include an administration time of less than 10 minutes and facility in scoring, with no training of clinicians required.

Brief demographic data, history of exposure to traumatic events, and knowledge of anyone hurt or killed in the September 11, 2001, attacks was also collected (see Appendix B).

Procedure

The researcher solicited participation from 12 different schools in the New York City area, including public and private high schools and middle schools. Three

public schools in New York City originally agreed to participate in the study. In order to secure their participation, the researcher contacted the New York City Department of Education (NYCDOE), Office of Assessment and Accountability, and submitted the proposed study through the Proposal Review Committee. After the Proposal Review Committee of the NYCDOE approved the study, only one school committed to participate in the study.

The researcher sent the school contact person 400 packets of information regarding the study. Approximately 360 of these packets were distributed to students in the 10^{th} and 11^{th} grade English classes. The students were instructed to take these packets home to their parents/legal guardians. The packets included letters to the legal guardians of all potential participants describing the study; statements of informed consent and assent were also included (see Appendices C, D and E). Thirty-four students, 10 from the 10^{th} grade and 24 from the 11^{th} grade, returned the packets to the school contact person. Of these students, five were 18 years old or over and did not meet criteria for inclusion in the study. Another four students returned the packets but did not have the consent forms completed, and another student was absent

on all three days of data collection. Twenty-four students completed all facets of the study.

Approximately 172 weeks after September 11, 2001, the researcher spent three full days in the school administering the surveys, using standardized instructions (see Appendix F). Students completed the surveys in groups; some groups involved two students, others, three students. Subjects initially completed the demographic information form, which is designed to maintain anonymity (see Appendix B). This form contained some material requested on Part I of the MWES in an attempt to maintain consistency. For the purpose of screening subjects with potentially high scores on either of the surveys being administered, subjects were asked to write their names on a tear off sheet attached to the front of the demographic data sheet. The tear off sheet had only the subject's printed name and the survey packet number on it. Subjects then completed the IES and Part II of the MWES.

The researcher collected the surveys and briefly screened the results to see if any subject met criteria for concern. This criterion for the IES was a score of 35 and above. The criteria for the MWES included marking "a lot" or "all the time" on Question 34 (I thought about killing myself) or Question 60 (Sometimes I thought that I might

hurt myself or someone else). Although the MWES requested that participants respond with answers based on their recollections of their reactions at the time of the events of September 11, 2001, the screening of these questions was designed to rule out any current level of distress.

One student met the above criteria, and after completing the surveys, indicated some distress at "other things" going on in her life. The student's name was submitted to the Assistant Principal who passed on the student's name to the school counselor immediately. Participants had been informed in the letter of assent about this procedure. The student in question gave assent in person as well.

Immediately afterwards, the tear off sheets were removed and destroyed. The data was collected and reported without using any identifying information. Surveys were numbered for logistical purposes only.

A request was made to the school guidance department to agree to be available for up to one year after the administration of these surveys to provide debriefing for any student who required it. The researcher offered to provide on-site presentations about the study and the after effects of trauma to interested parents, legal guardians,

students and school personnel. At this point in time, the school has not expressed an interest in this offer.

Legal guardians who gave permission for their children to participate in the survey and who provided an address on the consent form received a follow-up packet from the researcher with a letter thanking them for their participation. The packet contained a listing of resources for those desiring further information about how to help their children (see Appendix G). The resource page includes local hotline numbers, mental health resources, and links to websites with relevant books and articles. The packet also included Dr.Jessica Hamblen's article, entitled "Terrorist Attacks and Children," which gives adults practical advice on how to deal with the after effects of trauma with children at various age levels (see Appendix H). In addition, information on how to contact the researcher was provided should any further questions arise regarding their children's participation in the study.

RESULTS

Descriptive Statistics

The majority of respondents were female (79%) and African-American (92%). All of the participants experienced the effects of September 11, 2001, either indirectly, directly or both. Thirty-three percent experienced the effects indirectly (heard about it from family, teachers or friends; saw it on TV or computer; and/or listened to it on the radio. Two of the 24 participants (.08%) reported experiencing the effects directly: seeing it live as it actually happened, experiencing the effects in their neighborhoods, and/or knowing someone who died or was hurt. Fifty-eight percent of participants reported experiencing the effects of September 11, 2001 both indirectly and directly.

Ease of Use

As predicted, the IES was a user-friendly and was easy to administer. The IES took students between 5 and 10 minutes to complete. The completion both of the measures and of the demographic data sheet took a minimum of 40 minutes and a maximum of 55 minutes to complete.

Factor Analysis of the IES

The 15 items on the IES were examined using principal components analysis with Varimax rotation. Although the

small subjects-to-variables ratio resulted (fewer than 5 subjects to each item) (Bryant & Yarnold, 1995) in unreliable findings, the researcher was interested to see if the findings would mirror previous analyses found in other studies.

Factors with eigenvalues greater than 1.00 were taken into account. Using this criterion, a three-factor structure emerged (see Table 2). A criterion of loading of greater than 0.52 was used as the level of factor loading significance. Factor one emerged containing Item numbers 1,2,4,5,6,10,11,12 and 14. This factor will be labeled Intrusion. Factor two emerged with item numbers 3,8,9, and 13. This factor is called Avoidance. The third factor, which will be identified as Numbing, emerged with items 7 and 15. See Table 3 for the Rotated Component Matrix.

Table 2

Eigenvalues for Components

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	7.139	47.592	47.592
2	1.665	11.097	58.689
3	1.619	10.793	69.482
4	.910	6.066	75.548
5	.754	5.029	80.576
6	.631	4.207	84.783
7	.558	3.717	88.500
8	.516	3.439	91.939
9	.394	2.630	94.569
10	.296	1.974	96.543
11	.203	1.351	97.894
12	.151	1.007	98.901
13	.073	.486	99.387
14	.060	.399	99.786
15	.032	.214	100.000

Table 3

Rotated Component Matrix Factor Structure for the IES

IES Item Number	Component		
	1	2	3
1	.734	-.011	.518
2	.737	.083	-.016
3	.069	.877	-.036
4	.641	.327	.148
5	.678	.214	-.118
6	.691	.292	.264
7	.028	.573	.669
8	.356	.628	.084
9	.354	.864	.027
10	.859	.324	.300
11	.683	.213	-.386
12	.520	.273	.450
13	.474	.731	.196
14	.802	.355	.185
15	.056	-.039	.821

Measures of Internal Consistency

Reliability data for each of the three factors as well as for the total IES scale are reviewed in Table 4. The total IES score and two of the three factors demonstrated high internal consistency. Reliability for the 15-item IES scale was satisfactory (Cronbach's alpha = .91). The 9-item intrusion factor emerged with satisfactory reliability (Cronbach's alpha = .91) as did the 4-item avoidance factor (Cronbach's alpha = .87). The 2-item third factor also achieved satisfactory reliability (Cronbach's alpha = .59).

Table 4

Reliability Data for the Three Factors of the IES

Components	Cronbach's Alpha
Intrusion	.907
Avoidance	.869
Numbing	.591
Total IES	.912

Item Correlations

The item total correlations for the IES are highlighted in Table 5. For the Intrusion factor item,

total correlation scores for items range from .506 to .946 suggesting good to excellent internal consistency. For the Avoidance factor, total correlation scores for items range from .641 to .839, also suggesting good to excellent internal consistency. The Numbing factor achieved a total correlation score of only .425 on both items suggesting the factor achieved good internal consistency.

Table 5

Item Total Correlations

Factor and Related IES Item Numbers	Item Total Correlation
Intrusion	
1. I thought about the terrorist attacks when I didn't mean to.	704
2. I avoided letting myself get upset when I thought about the terrorist attacks or was reminded of them.	.619
4. I had trouble falling asleep or staying asleep, because of pictures or thoughts about the terrorist attacks that came into my mind.	.664
5. I had waves of strong feelings about the terrorist attacks.	.588
6. I had dreams about the terrorist attacks.	.721
10. Pictures about the terrorist attacks popped into my mind.	.946
11. Other things kept making me think about the terrorist attacks.	.506
12. I was aware that I still had a lot of feelings about the terrorist attacks, but I didn't deal with them.	.604
14. Any reminder brought back feelings about the terrorist attacks.	.837
Avoidance	
3. I tried to remove the terrorist attacks from memory.	.672
8. I felt as if the terrorist attacks hadn't happened or the terrorist attacks weren't real.	.641
9. I tried not to talk about the terrorist attacks.	.839
13. I tried not to think about the terrorist attacks.	.760
Numbing	
7. I stayed away from reminders of the terrorist attacks.	.425

15. My feelings about the terrorist attacks were kind of numb.	.425

Given the small subjects-to-variables ratio and the small sample size (fewer than 100 subjects; Bryant & Yarnold, 1995), analyses were not performed regarding the factor structure related to gender.

Correlation with the MWES

Intercorrelations between the IES and the MWES are summarized in Table 6. As scores on the IES increased, so did participants' reporting of the impact of the event, a re-experiencing of the trauma, the avoidance of traumatic reminders and increased arousal. As IES scores increased, participants also reported more depression, hypervigilance and disassociation and dreams. IES scores were positively correlated with the persistence of traumatic symptoms. As total IES scores increased, so did the number of criteria met by the participants for the six major *DSM-IV* PTSD diagnostic criteria (A through F) according to the MWES PTSD checklist. Total IES scores did not achieve statistical significance, however, with total *T* scores on the MWES.

Table 6

Intercorrelations between the IES and MWES

MWES Scales[a]	Total IES[a]
DSM-IV PTSD Diagnostic Criterion	
Impact	.49**
Re-experience	.51**
Avoidance	.39*
Arousal	.44*
Symptom Subscales	
Depression	.49**
Hypervigilance	.43*
Dissociation & Dreams	.36*
Enduring Symptoms Total	.55**
PTSD Checklist	.60**

Note. Impact = Impact of the Event; Re-experience = Re-experience of the Trauma; Avoidance = Avoidance and Numbing; Arousal = Increased Arousal; Total IES = total IES score.

[a]$n = 24$.

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

Factor Correlations

The more participants reported re-experiencing symptoms, the more they tried to avoid thinking about the events of September 11, 2001 (r = +.61, N = 24, p = .001, one-tailed). Also, the more participants avoided experiencing the effects of September 11, the more they experienced feeling numb (r = .39, N = 24, p = .029, one-tailed).

Table 7 summarizes the intercorrelations between the IES intrusion and numbing factors and the MWES. The more participants reported intrusive symptoms, the higher were their total MWES scores and the more they reported on the impact of the event, the re-experiencing of the trauma, the avoidance of traumatic reminders and increased arousal. As scores on the 9-item intrusion factor increased, so did the reporting of depression and hypervigilance. Scores on the intrusion factor were also positively correlated with the persistence of traumatic symptoms.

The 2-item numbing factor showed a significant relationship with the MWES *DSM-IV* PTSD Diagnostic Criterion of Avoidance. As the number of criteria the participants met in terms of *DSM-IV* PTSD diagnostic criteria (A through F) increased, the participants reported feeling increasingly numb and intrusive symptoms increased. It is

noteworthy that the Avoidance factor approached significance when correlated with the number of criteria the participants met in terms of *DSM-IV* PTSD diagnostic criteria ($r = +.337$, $N = 24$, $p = .054$).

Table 7

Intercorrelations between IES Factors and the MWES

MWES[a]	IES Factor[a]	
	INTR	NUMB
Total T score	.48**	
PTSD Criterion		
Impact	.55**	
Re-experience	.59**	
Avoidance	.40*	.46*
Arousal	.51**	
Symptom Subscales		
Depression	.53**	
Hypervigilance	.50**	
Enduring Symptoms Total	.61**	
PTSD Checklist	.62**	.50**

Note. PTSD Criterion = *DSM-IV* PTSD diagnostic criterion; Impact = Impact of the Event; Re-experience = Re-experience of the Trauma; Avoidance = Avoidance and Numbing; Arousal = Increased Arousal; INTR = IES intrusion factor; NUMB = IES numbing factor.

[a] $n = 24$.

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

Exposure to 9/11: Direct vs. Indirect

Eight participants (33%) reported experiencing the events of September 11, 2001 indirectly (heard about it from family, teachers, friends; saw it on TV or over the computer; listened to it on the radio.) Two participants (.08%) reported experiencing the events of September 11, 2001 directly (saw it live as it happened, knew someone who died or was hurt, experienced effects in neighborhood). Fourteen participants (58%) reported experiencing the events of September 11, 2001 both directly and indirectly.

A one-way ANOVA was run to determine whether or not significant differences existed between the mean scores of subjects in the indirect exposure only category versus those in the indirect and direct exposure category on the intrusion, avoidance and numbing factors. Table 8 summarizes these results. For intrusion, there was a significant difference in means between those who experienced the events of September 11, 2001 indirectly versus those who experienced the events both directly and indirectly ($F(1) = 15.6$ versus $F(1) = 5.78$, $p = .044$). For avoidance, there was also a significant difference in means between those who experienced the events of September 11, 2001 indirectly versus those who experienced the events both directly and indirectly ($F(1) = 10.0$ versus $F(1)$ 3.57,

p = .030). Adolescents who reported experiencing the events of September 11, 2001 in an indirect way reported more intrusion and avoidance that those who experienced the events both indirectly and directly.

There were no significant differences between groups for the numbing factor. A one-way ANOVA also showed no significant differences when the mean scores of subjects in the indirect exposure only category versus those in the indirect and direct exposure category were examined using the four MWES *DSM-IV* PTSD Diagnostic Criterion. The Levene statistic was significant for the one-way ANOVA of the intrusion factor (p = .003) and the avoidance factor (p = .030) but it was not significant for the numbing factor nor for the MWES *DSM-IV* PTSD Diagnostic Criterion analyses, indicating a violation of the homogeneity of variance assumption. As such, the results should be interpreted with caution.

Table 8

One-way Analysis of Variance for Type of Exposure Related to Factor

Factors of IES	Mean	SD	F	p
	Between Subjects			
Intrusion				
Indirect exposure	15.62	15.49	4.640	.044
Indirect and direct exposure	5.79	5.85		
Avoidance				
Indirect exposure	10.00	8.70	5.44	.030
Indirect and direct exposure	3.57	4.33		
Numbing				
Indirect exposure	2.25	1.75	.327	.574
Indirect and direct exposure	1.64	2.68		

DISCUSSION

The psychometric properties of the IES, a self-report measure that assesses intrusive and avoidant symptoms associated with posttraumatic stress, were studied to validate this scale's use with adolescents. Consistent with previously published studies examining the psychometric properties of the IES, this study found that the IES produced three factors that were labeled intrusion, avoidance and numbing. The intrusion factor consisted of item numbers 1,2,4,5,6,10,11,12 and 14. The avoidance factor consisted of item numbers 3,8,9, and 13. The numbing factor consisted of items 7 and 15. Although ideally there would be a 10 to one subject to item ratio (Bryant & Yarnold, 1995, recommend a minimum of 5:1), factor analysis was conducted anyway. The results of this study may present problems with the reliability of the factor structure due to the small subjects-to-variables ratio.

It is of interest to note that the analyses yielded three factors similar to that which other research has found. The items that loaded for each factor, however, varied somewhat from those found in other studies including the original research by Horowitz et al. (1976). This is most likely the result of the small sample size. Neither

were analyses completed on the factor structure of the IES related to gender due to the small number of participants.

The IES did prove to be a reliable measure overall with good internal consistency. It also demonstrated a moderate correlation with the MWES as a measure of posttraumatic stress reactions in adolescents exposed to a specific traumatic stressor. The IES can be a useful measure in assessing intrusive re-experiencing symptoms and the avoidance of stimuli associated with a specific traumatic stressor for those adolescents who exhibit symptoms of posttraumatic stress but who do not meet the criteria for PTSD.

These results indicate that the IES offers clinicians and school personnel an efficient and cost-effective tool in the screening of traumatic stress reactions in youth. Identifying youth early on may insulate some children from the severe effects of trauma by increasing access to early intervention and possible treatment. Remarkably, the IES was able to screen for intrusive and avoidant phenomena in a non-clinical population of adolescents 172 weeks after exposure to a specific traumatic stressor. This is consistent with findings in studies of the IES with adult trauma survivors (Shevlin et al., 2000).

Research has shown that those most highly exposed to a traumatic event often show the most severe stress reactions (Galea et al., 2002; Nader et al., 1990; Terr et al., 1999). As such, one would expect those both indirectly and directly exposed to the events of September 11, 2001 to show an increase in intrusive and avoidance phenomena compared with those only indirectly exposed, yet the findings of this study show the opposite to be true. Adolescents who reported experiencing the events of September 11, 2001 in an indirect way reported more intrusion and avoidance than those who experienced the events both indirectly and directly.

One reason for this finding may be in the way "indirect" exposure was measured. Participants were considered to have been indirectly exposed if they "heard about it from family, teachers, friends; saw it on TV or over the computer; and/or listened to it on the radio." Because participants in this study were asked to check "all that apply" for this question, these three items formed one variable and were not able to be measured independently of one another.

Viewing television coverage of disasters has been significantly related to the development of traumatic stress symptoms in children (Lee et al., 2002; Pfefferbaum,

Nixon, & Krug et al., 1999). Exposure to explicit and graphic images of dead and mutilated persons on television and in news reports of disasters has also been correlated with posttraumatic stress reactions in youth (Murphy et al., 2003; Nader et al., 1993; Schuster et al., 2001). Television exposure has been found to be a stronger predictor of posttraumatic stress symptoms than physical and emotional exposure in at least one study of disaster survivors that involved a large sample size (Pfefferbaum, Moore et al., 1999). Interestingly, Terr et al., 1999 found no significant symptomatic differences between children watching a shuttle disaster from the viewing stands versus those who viewed it on television.

The participants in this study reported watching media coverage of the terrorist attacks a mean of 7.1 hours. In answering this question on the data form, one participant wrote she/he watched "24/7" and another wrote, "It was on every channel." Although it cannot be quantified, this information gives a qualitative insight into the level of media exposure for this sample.

This could explain why those indirectly exposed may have reported an increase in traumatic stress symptoms; however, it does not explain why there was an increase *compared with* the group which experienced exposure both

directly and indirectly. It is possible that those in the latter category had more of an opportunity to be exposed to grief and as such process their grief openly. Potential moderating variables to account for this finding could be that those both directly and indirectly exposed received increased social support, community support and/or faith-based support as a result of their direct exposure. This support bolstered resilient characteristics and protective factors in these youth, allowing them to process the traumatic events emotionally and move on. This hypothesis is consistent with other research suggesting familial and societal factors may be involved in the protection against or the persistence of symptoms after terrorist attacks (Fremont, 2004; Galea et al., 2003; Hoven et al., 2005; McDermott & Palmer, 2002). Additional research is needed in this area.

It is also possible that those students who were only indirectly exposed to the terrorist attacks experienced posttraumatic stress reactions that were not identified as such because the students were not "directly" exposed to the events. It is possible that these students avoided symptoms even though they were upset. This is consistent with the research from Lengua et al. (2005) who studied children from Seattle, Washington who were exposed to

September 11, 2001 at a distance. The researchers found that girls reported being more upset than boys, and that African-American children reported more avoidant symptoms as compared with European-American children. Consequently, the participants in this study who experienced the events of September 11 indirectly did not have the same opportunity to talk about their grief nor did they receive the support they needed to process the traumatic events as those who not only experienced the events, but did so directly.

It is also possible to conceptualize participants as being exposed to the trauma "at a distance;" in other words, none of the participants in this study was at the site of the terrorist attacks. According to Terr et al. (1999), such distant traumatic experiences are part of ordinary short-term human development, because traumas involving no personal or direct threat may commonly be encountered throughout a person's lifetime. Only four of the 24 participants personally knew someone who was hurt or killed. It is possible the adolescents who reported experiencing the events both directly and indirectly experienced a shared sense of fate which helped insulate them from the more severe effects of trauma (Tyano et al., 1995).

Limitations and Future Research

There are several limitations to this study. One involves the small sample size of the students who completed both surveys. The sample was not large enough to complete a proper factor analysis on the IES item structure. Another limitation is the sample make-up because the majority of respondents were female and African-American. This would make the generalizability to males and those of other ethnic backgrounds limited. In addition, the sample was one of convenience.

A selection bias could also be operating; it is possible that students who volunteered to participate in this study were in some way different from those who chose not to participate. Those who suffer from posttraumatic stress symptoms may wish to avoid thinking about their traumatic experience and as such would be unlikely participants in such a study. By the same token, those who suffer from traumatic stress reactions may want to participate in such a study to help themselves and/or others.

Another limitation of this study is that the IES and the MWES were modified to assess specifically the subjective impact of the events of September 11, 2001. As

such, children and adolescents were not able to choose which trauma had affected them the most severely, as is the case with both of the original scales. Because this study dealt exclusively with the events of September 11, 2001, the generalizability of these findings to other types of trauma is limited.

Further research is needed in terms of identifying any moderating variables in protecting those who were indirectly and directly exposed to the effects of September 11, 2001. Variables related to length and type of exposure to media-related coverage, resiliency and protective factors and cultural factors could be studied. Future researchers may also want to compare this sample of inner-city high school students with another group on the factors measured in order to increase the generalizability of these results.

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APPENDIX A

THE IMPACT OF EVENT SCALE (ADAPTED)

On September 11, 2001 you experienced the effects of the terrorist attacks on New York City, the Pentagon, and the plane crash near Pittsburgh.
Below is a list of comments made by people after stressful life events. Please check each item, indicating how frequently These comments were true for you DURING THE PAST SEVEN DAYS. If they did not occur during that time, please mark the "not at all" column.

	Not at All	Rarely	Sometimes	Often
1. I thought about the terrorist attacks when I didn't mean to.	____	____	____	____
2. I avoided letting myself get upset when I thought about the terrorist attacks or was reminded of them.	____	____	____	____
3. I tried to remove the terrorist attacks from memory.	____	____	____	____
4. I had trouble falling asleep or staying asleep, because of pictures or thoughts about the terrorist attacks that came into my mind.	____	____	____	____
5. I had waves of strong feelings about the terrorist attacks.	____	____	____	____
6. I had dreams about the terrorist attacks.	____	____	____	____
7. I stayed away from reminders of the terrorist attacks.	____	____	____	____
8. I felt as if the terrorist attacks hadn't happened or the terrorist attacks weren't real.	____	____	____	____
9. I tried not to talk about the terrorist attacks.	____	____	____	____
10. Pictures about the terrorist attacks popped into my mind.	____	____	____	____
11. Other things kept making me think about the terrorist attacks.	____	____	____	____
12. I was aware that I still had a lot of feelings about the terrorist attacks, but I didn't deal with them.	____	____	____	____
12. I tried not to think about the terrorist attacks.	____	____	____	____
14. Any reminder brought back feelings about the terrorist attacks.	____	____	____	____
15. My feelings about the terrorist attacks were kind of numb.	____	____	____	____

Note. From "Impact of Event Scale: A Measure of Subjective Stress," by M. Horowitz, N. Wilner, and W. Alvarez, 1979, *Psychosomatic Medicine, 41*(3), p.214.

APPENDIX B

DEMOGRAPHIC DATA FORM

No. _____

PART I

Please complete the following information:

Age: ____ Grade: _____ Gender (please circle):FEMALE/MALE

What is your ethnic background?

(1)____ African-American(2) ____ Asian-American (3)____ Caucasian
(4)____ Hispanic (5) ____ Native American(6) ____ Other: _____

How did you experience the events of September 11, 2001? Check all that apply, and then circle the one that had the greatest impact on you.

(1)____ Heard about it from family, teachers or friends
(2)____ Saw it on TV or over the computer
(3)____ Listened to it on the radio
(4)____ Saw it live, as it actually happened
(5)____ Experienced the effects of it in my neighborhood (saw dust clouds, heard sirens, smelled smoke, and so on)
(6)____ Knew someone who died or was hurt

How old were you when the events of September 11, 2001, happened?

_____

What grade were you in when the events of September 11, 2001 happened? _____

Where were you when the events of September 11, 2001, happened?

_____

Please check the sentence that best tells how you felt right after it happened:

(1) ____ It did not really bother me.
(2) ____ It upset me a little.
(3) ____ It upset me a lot.

Do the events of September 11, 2001 still bother you? Yes _ No __

Have you been involved in counseling or psychotherapy as a direct result of the events of September 11, 2001? Yes __ No __

If yes, where did you go for counseling (i.e. school, private office)? _____

How long did you attend counseling?

(1) ___ 1-5 sessions (2) ___ 6-10 sessions (3) ___ 11-20 sessions (4) ___ more than 20 sessions

PART II

Have you ever been exposed to any type of trauma in addition to/other than the events of September 11, 2001 (e.g. war, disaster, assault, crime, abuse, etc.)? Yes _____ No_____

If yes, to which type of trauma have you been exposed? Please list: _____

Part III

Do you personally know anyone who was hurt or killed in the terrorist attacks on September 11, 2001? Yes ___ No ____

If yes, how did you know that person?

(1)____ relative
(2)____ friend
(3)____ other (please list: _____)

How did you find out about it?

(1)___ I saw and/or heard it happen.
(2)___ I heard about it on the TV/computer/radio.
(3)___ Someone close to me (parent, teacher, etc.) told me about it.

Approximately how much time did you spend watching TV, news events or terrorist-attack related media coverage after the attacks?

Please list your answer in hours. _____

APPENDIX C

SAMPLE LETTER TO PARENTS DESCRIBING STUDY

Date

Dear Parent or Guardian,

We are writing to invite your child to be a part of our study on ways to measure the effects of stressful events on children. The study is part of a research project. Your child is being asked to be in the study because your child is in the age range we are interested in studying. Please read this form and ask any questions you may have before agreeing to have your child in our study.

The study will ask your child to look at the events of September 11, 2001. If you agree to have your child take part in the study, s/he will be asked to fill out two surveys in school: one with 15 questions, the other with 105 questions. The surveys will take about one class period to finish (about 40-45 minutes). S/he will also be asked to give some basic information like age and grade, and where they were and what happened when the events of September 11, 2001, happened.

Your child will be asked to write his/her name on a cover page, so that the person doing the study can check and see how your child answered the questions. If there is a reason to be concerned because of the answers your child gave, the guidance counselor will be told right away. Then the paper with your child's name will be thrown away, so that no name will be recorded, and no one will know how your child answered the questions.

Sometimes, questions about stressful events may be thought of as touchy. Children taking part in this study will be able to speak with their guidance counselor or the researchers if they want to before, during or after finishing the surveys. The guidance staff at your child's school has agreed to be on hand for at least a year after the end of this study. Also, if you agree to have your child be a part of this study, you will receive a list of places to call for help and information. You will also receive an article on how to help your child deal with terrorist attacks.

You and your child can decide whether or not to be in this study. If you decide to allow your child to be a part of this study, you are free to remove your child at any time. Your child is also free to decide not to continue at any time. There are no penalties for not being a part of this study.

If you agree to have your child be a part of this study, please check the first box below, and also sign and date the form called "Parental Consent Form." Also, please have your child sign and date the form called "Student Assent Form." Please return both forms in the envelope provided. You may ask any questions you have to Dr. Bruce Zahn or me at the numbers below at any time. If you would like a copy of the results when the study is completed, please be sure to check the box below and provide an address.

Thank you again for your time.

Sincerely,

Claudia Lingertat, M.Ed., M.S.
Doctoral Student
(518) 438-9920

Dr. Bruce Zahn
Principal Investigator
(215) 871- 6498

___ Yes, I agree to let my child _____ be a part of the study described above. (name of your child)

___ No, I do not want my child to be a part of this study.

_____ _____
Signature Date

___ Yes, I would like a copy of the results when the project is completed. Please send them to this address:

My Name:
Address:
City, State:
Zip Code:

APPENDIX D

STATEMENT OF INFORMED CONSENT

PARENTAL CONSENT FORM

Submitted to PCOM IRB for review 5/13/04

INFORMED CONSENT FORM

TITLE OF STUDY

Validating the Impact of Event Scale with Adolescents: A Look at the September 11, 2001, Terrorist Attacks

PURPOSE

The purpose of this research is to find out if a test, the Impact of Event Scale, can be used with adolescents.

Your child is being asked to be in this research study because he/she is in the age range we would like to study and can read at least at a fourth grade reading level. If your child is not between the ages of 13 and 17 and cannot read at a fourth grade reading level, he/she can not be in this study.

INVESTIGATOR(S)

Name:	Bruce S. Zahn, Ed.D., ABPP Associate Professor in Clinical Psychology Director of Clinical Training
Department:	Department of Psychology
Address:	Philadelphia College of Osteopathic Medicine 4190 City Avenue Philadelphia, PA 19131
Phone:	215-871-6498

Name:	Claudia Lingertat, M.S., Psy.D. Doctoral Candidate, Clinical Psychology
Department:	Department of Psychology
Address:	Philadelphia College of Osteopathic Medicine 4190 City Avenue Philadelphia, PA 19131
Phone:	518-438-9920

The doctors and scientists at Philadelphia College of Osteopathic Medicine (PCOM) do research on diseases and new treatments. The survey your child is being asked to volunteer for is part of a research project.

Even though this research project is to study a test made to measure stress to certain events, no one can say that this will be better than the usual treatment.

If you have any questions about this research, you can call Dr. Bruce Zahn at (215) 871-6498.

If you have any questions or problems during the study, you can ask Claudia Lingertat, who will be available during the entire study. If you want to know more about Dr. Bruce Zahn 's or Claudia Lingertat's background, or the rights of research subjects, you can call Dr. John Simelaro, Chairperson, PCOM Institutional Review Board at (215) 871-6337.

DESCRIPTION OF THE PROCEDURES

The study will ask your child to look at the events of September 11, 2001. If you agree to have your child take part in the study, s/he will be asked to fill out two surveys in school: one with 15 questions, the other with 105 questions. The surveys will take about one class period to finish (about 40-45 minutes). S/he will also be asked to give some basic information like age and grade, and where they were and what happened when the events of September 11, 2001, happened.

Your child will be asked to write his/her name on a cover page, so that the person doing the study can check and see how your child answered the questions. If there is a reason to be concerned because of the answers your child gave, the guidance counselor will be told right away. Then the paper with your child's name will be thrown away, so that no name will be recorded, and no one will know how your child answered the questions.

POTENTIAL BENEFITS

If your child is suffering from stressful responses to the events of September 11, 2001, this study may be able to find that out. Otherwise, your child may not gain from being in this study. However, other children/people in the future may gain from what the researchers learn from the study.

RISKS AND DISCOMFORTS

Sometimes, questions about stressful events may be thought of as touchy. Children taking part in this study will be able to speak with their guidance counselor or the researchers if they want to before, during or after finishing the surveys. The guidance staff at your child's school has agreed to be on hand for at least a year after the end of this study. Also, if you agree to have your child be a part of this study, you will receive a list of places to

call for help and information. You will also receive an article on how to help your child deal with terrorist attacks.

There are no known risks or discomforts from being in the study.

ALTERNATIVES

The other choice is to not have your child be in this study.

PAYMENT

You (or your child) will not receive any payment for being in this study.

CONFIDENTIALITY

All information and medical records relating to your child's part in this study will be kept in a locked file. Only the researchers, members of the Institutional Review Board, and the U.S. Food and Drug Administration will be able to look at these records. If the results of this study are published, no names or other identifying information will be used.

The records of this study will be kept private. All surveys will be recorded by number, so it will be impossible to identify your child by name.

REASONS YOUR CHILD MAY BE TAKEN OUT OF THE STUDY WITHOUT YOUR CONSENT

If health conditions occur that would make staying in the study possibly dangerous to your child, or if other conditions occur that would damage your child or your child's health, Dr. Bruce Zahn or his associates may take your child out of this study. In addition, the entire study may be stopped if dangerous risks or side effects occur in other people.

NEW FINDINGS

If any new information develops that may affect your child's willingness to stay in this study, you and your child will be told about it.

INJURY

If your child is injured as a result of this research study, s/he will be provided with immediate necessary medical care.

However, you will not be reimbursed for medical care or receive other payment. PCOM will not be responsible for any of your bills, including any routine medical care under this program or reimbursement for any side effects that may occur as a result of this program.

If you believe that your child has suffered injury or illness in the course of this research, you should notify John Simelaro, D.O., Chairperson, PCOM Institutional Review Board at (215) 871-6337. A review by a committee will be arranged to determine if your injury or illness is a result of your being in this research. You should also contact Dr. Simelaro if you think that you have not been told enough about the risks, benefits, or other options, or that your child is being pressured to stay in this study against your wishes.

VOLUNTARY PARTICIPATION

You may refuse to let your child be in this study. You voluntarily consent to let your child be in this study with the understanding of the known possible effects or hazards that might occur while s/he is in this study. Not all the possible effects of the study are known.

Your child may leave this study at any time.

You also understand that if your child drops out of this study, there will be no penalty or loss of benefits to which you or your child are entitled.

I have had adequate time to read this form and I understand its contents. I have been given a copy for my personal records.

I agree to let my child be in this research study.

Signature of Parent/Legal Guardian:_____

Date: ____/____/_____ Time:_____AM/PM

Signature of Witness:_____

Date: ____/____/_____ Time:_____AM/PM

Signature of Investigator:_____

Date: ____/____/_____ Time:_____AM/PM

APPENDIX E

STATEMENT OF ASSENT

Submitted to PCOM IRB for review 5/13/04

ASSENT FORM

We would like you to be a part of our study on ways to measure the effects of stressful events on adolescents. Please read this form and ask any questions you may have before agreeing to be a part of the study.

The purpose of this research is to find out if a test, the Impact of Event Scale, can be used with adolescents. You are being asked to be in this research study because you are between the ages of 13 and 17, and you have at least a fourth grade reading level. If you are not between the ages of 13 to 17 years old, and you cannot read at least at a fourth grade reading level, you can not be in this study.

The people doing the study are Dr. Bruce Zahn and Claudia Lingertat. If you have any questions about this research, you can call Dr. Dr. Bruce Zahn at (215) 871-6498 or Claudia Lingertat at (518) 438-9920. If you have any questions or problems during the study, you can ask Claudia Lingertat, who will be available during the entire study. If you want to know more about Dr. Bruce Zahn's or Claudia Lingertat's background, or the rights of research subjects, you can call Dr. John Simelaro, Chairperson, PCOM Institutional Review Board at (215) 871-6337.

The study will ask you to look at what happened on September 11, 2001. If you agree to take part in the study, you will be asked to fill out two surveys in school: one with 15 questions, the other with 105 questions. The surveys will take about one class period to finish (about 40-45 minutes). You will also be asked to give some basic information like age and grade, and where you were and what happened when the events of September 11, 2001, happened.

You will only be asked to write your name on a cover page, so that the person doing the study can check and see that there is no reason to be concerned about you based on how you answered the questions. If there is a reason to be concerned because of the answers you gave, the person doing the study will let your school counselor know. Then the paper with your name on it will be thrown away, so that no name will be recorded, and no one will know how you answered the questions.

If you are really upset about what happened on September 11, 2001, this study may be able to find that out. Otherwise, you may not benefit from being in this study. Other people in the future may benefit from what the researchers learn from the study.

Sometimes, questions about stressful events may be considered touchy. You will be able to speak with your guidance counselor or myself if you want to before, during or after finishing the surveys. The guidance staff at your school has agreed to be available for at least a year after the end of this study. Also, if you take part in this study, your parents will be sent a list of places to call for help and information. The other choice is to not be in this study. You will not receive any payment for being in this study.

All information and medical records relating to you being a part of this study will be kept in a locked file. Only the researchers, members of the Institutional Review Board, and the U.S. Food and Drug Administration will be able to look at these records. If the results of this study are published, no names or other identifying information will be used.

The records of this study will be kept private. All surveys will be recorded by number, so it will be impossible to identify you by name.

You can choose not to be a part of this study, and you may leave this study at any time.

I agree to be a part of this study. I know that I can ask questions that I have about this study at any time. Also, if I decide at any time not to finish, I know that I can stop whenever I want.

Signing this paper means you have read this or had it read to you and that you want to be in the study. Remember that being in the study is up to you. No one will be mad if you don't sign this paper or even if you change your mind later. If you have questions, you can ask your guidance counselor or call the people doing the study: Dr. Bruce Zahn, (215) 871-6498 or Claudia Lingertat (518) 438-9920.

I have been given a copy of this form to keep. I agree to be in this research study.

Signature of Student:_____

Date: ____/____/_____ Time:_____AM/PM

Signature of Witness:_____

Date: ____/____/_____ Time:_____AM/PM

Signature of Investigator:_____

Date: ____/____/_____ Time:_____AM/PM

APPENDIX F

INSTRUCTIONS

Thank you for agreeing to be a part of this study. I would like to remind you that your participation in this study is voluntary, and you can stop at any time. You will need a No. 2 pencil. If you don't have one, one will be provided for you. Mark your answers completely. Remember that no one will know what answers you put down. Your school guidance department will be available to help you with any questions or concerns you may have after taking part in this study. If you have any questions at any time before, during or after this study, please ask.

Please complete the top sheet of the packet by printing your name on the paper. I will go through the surveys after you're done to make sure there is no reason to be concerned about you based on how you answered the questions. If there is a reason to be concerned because of the answers you gave, I will let your appropriate school official know. Then the paper with your name on it will be destroyed, so that no name will be recorded, and no one will know how you answered the questions. Please do not write your name anywhere else on the papers.

Please complete the next form I have handed out by filling in your age, gender, grade level and race. The form asks some questions about September 11, 2001. Be sure to answer all the questions in Part II and III of the form as well.

You are being asked to complete two surveys, the first of which is called the "Impact of Event Scale." Here you will find a list of 15 comments made by people after stressful life events. Please answer the questions in response to your memories of the events of September 11, 2001, the day of the terrorist attacks on New York City, the Pentagon, and the plane crash in Pittsburgh. Please check each item, telling how often these comments were true for you during the past seven days. If they did not occur during that time, please mark the "not at all" column.

The second survey is entitled the "My Worst Experience Scale." Again, please answer the questions only in response to your memories of the events of September 11, 2001, the day of the terrorist attacks on New York City, the Pentagon, and the plane crash in Pittsburgh and only these events. Please hand in the surveys to me when you are finished.

APPENDIX G

HELPFUL RESOURCES FOR FAMILIES RESPONDING TO TRAUMATIC EVENTS

CRISIS HOTLINES (24/7)

Mental Health Association of New York City

LIFENET (English)	1-800-LIFENET
LIFENET (Spanish)	1-877-Ayudese
LIFENET (Asian)	1-877-990-8585
LIFENET (TTY)	1-212-982-5284

National Hopeline Network **1-800-784-2433**

New Jersey Crisis Hotlines by County
http://www.state.nj.us/lps/nj_crisis_hotlines.htm

New York City Hotlines:

Covenant House Nineline	1-800-999-9999
HELPLINE Telephone Services/JBFCS	1-212-532-2400
	1-718-237-1337
NYC Hospital Mental Health Services (English)	1-212-995-5824
(Spanish)	1-212-533-7007
(Chinese)	1-212-254-2731
Samaritans of New York	1-212-673-3000
St. Vincent's Health Crisis Center	1-212-604-8220

Red Cross (counseling and referral)	1-866-GET-INFO 1-866-438-4636; 1-800-526-1417 TDD (for the hearing impaired).

MENTAL HEALTH RESOURCES

American Academy of Child And Adolescent Psychiatry
Free fact sheets for families on helping children after a disaster, children and grief, and Posttraumatic stress disorder. These fact sheets are available in English and Spanish.
http://www.aacap.org/publications/DisasterResponse/

American Psychological Association
Trauma Counseling 1-800-964-2000
Information on trauma at:
http://www.apa.org/topics/topictrauma.html

Mental Health Association Of New York City
666 Broadway, 2nd Floor
New York, New York 10012
(212) 254-0333
Email for information: help@mhaofnyc.org

- Comprehensive Parent's Guide to Mental Health Services in NYC. Download free from www.mhaofnyc.org or contact the agency directly.

Mental Health Association Of Westchester
Administrative Offices
2269 Saw Mill River Road, Building 1A
Elmsford, NY 10523
help@mhawestchester.org
Information and referral 1-914-345-5900, x240

National Association Of Social Workers
NASW New York City Chapter
50 Broadway, 10th Floor
New York, NY 10004
(212) 668-0050

- Website with information on talking to children about war and terrorism and helping children cope with crisis. http://www.naswnyc.org/disaster.html

NYU Child Study Center
577 First Avenue
New York, NY 10016
(212) 263-6622
http://www.aboutourkids.org/

- Center provides mental health services to children affected by the events of 9/11/01.

Red Cross: Helping Young Children Cope with Trauma
http://www.redcross.org/services/disaster/keepsafe/childtrauma.html

WEBSITES

Guidance Channel

Index to nine helpful articles for parents or teachers talking with children about terrorist attacks. Articles include information on helping children cope with their fears of war, children's reaction to crisis and how parents can help, and helping children cope with stress and loss.
http://www.guidancechannel.com/static.asp?index=33
See also:
http://www.guidancechannel.com/talkingterrorism.pdf

National Center For PTSD

Website devoted to Disaster Mental Health: Dealing with the After-effects of Terrorism. Find links to articles on common reactions to trauma, terrorism and children, and effects of media coverage. You can also download videos on children and trauma, and hope for recovery.
http://www.ncptsd.org/disaster.html

- Terrorist attacks and children:
  http://www.ncptsd.org/facts/disasters/fs_children_disaster.html

Penn State Hershey Medical Center and The College Of Medicine

Free booklet for parents on helping children to cope after a disaster. http://www.childadvocate.net/disaster.htm

SESAME STREET WORKSHOP, EDUCATION AND RESEARCH DIVISION
Read article called "Tragic Times, Healing Words" to help parents talk to their children about tragedy. Also included is a booklist.
http://www.sesameworkshop.org/parents/advice/article.php?contentId=49560

APPENDIX H

ARTICLE FOR PACKET

National Center for Post-Traumatic Stress Disorder,
Department of Veterans Affairs

Terrorist Attacks and Children

A National Center for PTSD Fact Sheet
By Jessica Hamblen, Ph.D.

When terrorist attacks occur in this country, our children may witness these events by watching TV, hearing people talk at school, hearing people in public places discuss the events, etc. For instance, the World Trade Center attacks and the Oklahoma City bombing received widespread attention and media coverage that many children were exposed to. But how should we speak to our children about these events when they occur? Should we shield them from such horrors or talk openly about them? How can we help children make sense of a tragedy that we ourselves cannot understand? How will children react? How can we help our children recover? Fortunately, there have been few terrorist attacks in the United States. One consequence of this is that there is little empirical research to help us answer the above questions. Information from related events can be used to provide answers.

How do children respond to trauma?

There is a wide range of emotional and physiological reactions that children may display following disaster. From previous research, we know that more severe reactions are associated with a higher degree of exposure (i.e., life threat, physical injury, witnessing death or injury, hearing screams, etc.), closer proximity to the disaster, a history of prior traumas, being female, poor parental response, and parental psychopathology.

Findings from a study following the Oklahoma City bombing indicate that more severe reactions were related to being female, knowing someone injured or killed, and bomb-related television viewing and media exposure (Pfefferbaum et al., 1999; Pfefferbaum et al., 2000).

Below are some common reactions that children and adolescents may display (Dewolfe, 2001; Pynoos & Nader, 1993).

Young Children (1-6 years)

o Helplessness and passivity; lack of usual responsiveness
o Generalized fear
o Heightened arousal and confusion
o Cognitive confusion
o Difficulty talking about event; lack of verbalization
o Difficulty identifying feelings
o Nightmares and other sleep disturbances
o Separation fears and clinging to caregivers
o Regressive symptoms (e.g., bedwetting, loss of acquired speech and motor skills)
o Inability to understand death as permanent
o Anxieties about death
o Grief related to abandonment by caregiver
o Somatic symptoms (e.g., stomach aches, headaches)
o Startle response to loud or unusual noises
o "Freezing" (sudden immobility of body)
o Fussiness, uncharacteristic crying, and neediness
o Avoidance of or alarm response to specific trauma-related reminders involving sights and physical sensations

School-aged Children (6-11 years)

o Feelings of responsibility and guilt
o Repetitious traumatic play and retelling
o Feeling disturbed by reminders of the event
o Nightmares and other sleep disturbances
o Concerns about safety and preoccupation with danger
o Aggressive behavior and angry outbursts
o Fear of feelings and trauma reactions
o Close attention to parents' anxieties
o School avoidance
o Worry and concern for others
o Changes in behavior, mood, and personality
o Somatic symptoms (complaints about bodily aches and pains)
o Obvious anxiety and fearfulness
o Withdrawal
o Specific trauma-related fears; general fearfulness
o Regression (behaving like a younger child)
o Separation anxiety
o Loss of interest in activities
o Confusion and inadequate understanding of traumatic events (more evident in play than in discussion)
o Unclear understanding of death and the causes of "bad" events
o Giving magical explanations to fill in gaps in understanding

o Loss of ability to concentrate at school, with lowering of performance
o "Spacey" or distractible behavior

Pre-adolescents and Adolescents (12-18 years)

o Self-consciousness
o Life-threatening reenactment
o Rebellion at home or school
o Abrupt shift in relationships
o Depression and social withdrawal
o Decline in school performance
o Trauma-driven acting out, such as with sexual activity and reckless risk taking
o Effort to distance oneself from feelings of shame, guilt, and humiliation
o Excessive activity and involvement with others, or retreat from others in order to manage inner turmoil
o Accident proneness
o Wish for revenge and action-oriented responses to trauma
o Increased self-focusing and withdrawal
o Sleep and eating disturbances, including nightmares

How should you talk to your child?

o **Create a safe environment.** One of the most important steps you can take is to help children feel safe. If possible, children should be placed in a familiar environment with people that they feel close to. Keep your child's routine as regular as possible. Children find comfort in having things be consistent and familiar.
o **Provide children with reassurance and extra emotional support.** Adults need to create an environment in which children feel safe enough to ask questions, express feelings, or just be by themselves. Let your children know they can ask questions. Ask your children what they have heard and how they feel about it. Reassure your child that they are safe and that you will not abandon them.
o **Be honest with children about what happened.** Provide accurate information, but make sure it is appropriate to their developmental level. Very young children may be protected because they are not old enough to be aware that something bad has happened. School age children will need help understanding what has happened. You might want to tell them that there has been a terrible accident and that many people have been hurt or killed. Adolescents will have a better idea of what has occurred. It may be appropriate to watch selected news coverage with your adolescent and then discuss it.

o **Tell children what the government is doing.** Reassure children that the state and federal government, police, firemen, and hospitals are doing everything possible. Explain that people from all over the country and from other countries offer their services in times of need.
o **Be aware that children will often take on the anxiety of the adults around them.** Parents have difficulty finding a balance between sharing their own feelings with their children and not placing their anxiety on their children. For example, the September 11th attack on the United States was inconceivable. Our sense of safety and freedom was shattered. Many parents felt scared and fearful of another attack. Others were angry and revengeful. Parents must deal with their own emotional reactions before they can help children understand and label their feelings. Parents who are frightened may want to explain that to their child, but they should also talk about their ability to cope and how family members can help each other.
o **Try to put the event in perspective.** Although you yourself may be anxious or scared, children need to know that attacks are rare events. They also need to know that the world is generally a safe place.

What can parents do? (Excerpted from Monahon, 1997)

Infancy to two and a half years:
o Maintain child's routines around sleeping and eating.
o Avoid unnecessary separations from important caretakers.
o Provide additional soothing activities.
o Maintain calm atmosphere in child's presence.
o Avoid exposing child to reminders of trauma.
o Expect child's temporary regression; don't panic.
o Help verbal child to give simple names to big feelings; talk about event in simple terms during brief chats.
o Give simple play props related to the actual trauma to a child who is trying to play out the frightening situation (e.g., a doctor's kit, a toy ambulance).
Zero-to-Three has published excellent guidelines for parents whose very young children (ages 0 to 3) might have been exposed to media or conversations about the September 11th terroristic attacks.
Two and a half to six years:
o Listen to and tolerate child's retelling of the event.
o Respect child's fears; give child time to cope with fears.
o Protect child from re-exposure to frightening situations and reminders of trauma, including scary TV programs,

movies, stories, and physical or locational reminders of trauma.
o Accept and help the child to name strong feelings during brief conversations (the child cannot talk about these feelings or the experience for long).
o Expect and understand child's regression while maintaining basic household rules.
o Expect some difficult or uncharacteristic behavior.
o Set firm limits on hurtful or scary play and behavior.
o If child is fearful, avoid unnecessary separations from important caretakers.
o Maintain household and family routines that comfort child.
o Avoid introducing experiences that are new and challenging for child.
o Provide additional nighttime comforts when possible such as night-lights, stuffed animals, and physical comfort after nightmares.
o Explain to child that nightmares come from the fears a child has inside, that they aren't real, and that they will occur less frequently over time.
o Provide opportunities and props for trauma-related play.
o Try to discover what triggers sudden fearfulness or regression.
o Monitor child's coping in school and daycare by expressing concerns and communicating with teaching staff.

Six to eleven years:

o Listen to and tolerate child's retelling of the event.
o Respect child's fears; give child time to cope with fears.
o Increase monitoring and awareness of child's play which may involve secretive reenactments of trauma with peers and siblings; set limits on scary or hurtful play.
o Permit child to try out new ways of coping with fearfulness at bedtime: extra reading time, leaving the radio on, or listening to a tape in the middle of the night to erase the residue of fear from a nightmare.
o Reassure the older child that feelings of fear and behaviors that feel out of control or babyish (e.g., bed wetting) are normal after a frightening experience and that he or she will feel better with time.

Eleven to eighteen years:

o Encourage adolescents of all ages to talk about the traumatic event with family members.
o Provide opportunities for the young person to spend time with friends who are supportive.

o Reassure the young person that strong feelings-guilt, shame, embarrassment, or a wish for revenge-are normal following a trauma.
o Help the young person find activities that offer opportunities to experience mastery, control, and self-esteem.
o Encourage pleasurable physical activities such as sports and dancing.

How many children develop PTSD?

The above symptoms are normal reactions to trauma and do not necessarily mean that a child has acquired a disorder. However, a significant minority of children will develop posttraumatic stress symptoms (for more on Posttraumatic Stress Disorder, see PTSD in Children and Adolescents and Treatment for PTSD) after a terrorist attack. Findings from Oklahoma City indicate that:
· Children who lost a friend or relative were more likely to report immediate symptoms of PTSD than non-bereaved children.
· Arousal and fear presenting seven weeks after the bombing were significant predictors of PTSD (Pfefferbaum et al., 1999).
· Two years after the bombing, 16% of children who lived approximately 100 miles away from Oklahoma City reported significant PTSD symptoms related to the event (Pfefferbaum et al, 2000). This is an important finding because these youths were not directly exposed to the trauma and were not related to people who had been killed or injured.
· PTSD symptomatology was predicted by media exposure and indirect interpersonal exposure, such as having a friend who knew someone who was killed or injured.
· No study specifically reported on rates of PTSD in children following the bombing. However, studies have shown that as many as 100% of children who witness a parental homicide or sexual assault, 90% of sexually abused children, 77% of children exposed to a school shooting, and 35% of urban youth exposed to community violence develop PTSD.

When should you seek professional help for your child?
Many children and adolescents will display some of the symptoms listed above as a result of terrorist attacks. Most children will likely recover in a few weeks with social support and the aid of their families. Many of the above suggestions will help children recover more quickly. Other children, however, may develop PTSD, depression, or

anxiety disorders. Parents of children with prolonged reactions or more severe reactions may want to seek the assistance of a mental-health counselor. It is important to find a counselor who has experience working with children as well as with survivors of trauma. Referrals can be obtained through the American Psychological Association at 1-800-964-2000. For more information, please see our Seeking Help fact sheet.

References:

DeWolfe, D. (2001). *Mental Health Response to Mass Violence and Terrorism: A Training Manual for Mental Health Workers and Human Service Workers.*

Monahon, C. (1997). *Children and Trauma: A Guide for Parents and Professionals.* San Francisco: Jossey Bass.

Pfefferbaum, B., Nixon, S., Tucker, P., Tivis, R., Moore, V., Gurwitch, R., Pynoos, R., & Geis, H. (1999). Posttraumatic stress response in bereaved children after Oklahoma City bombing. *Journal of the American Academy of Child and Adolescent Psychiatry, 38,* 1372-1379.

Pfefferbaum, B., Seale, T., McDonald, N., Brandt, E., Rainwater, S., Maynard, B., Meierhoefer, B. & Miller, P. (2000). Posttraumatic stress two years after the Oklahoma City bombing in youths geographically distant from the explosion. *Psychiatry, 63,* 358-370.

Pynoos, R. & Nader, K. (1993). Issues in the treatment of posttraumatic stress in children and adolescents. In J.P. Wilson & B. Rapheal (Eds.), *International Handbook of Traumatic Stress Syndromes* (pp. 535-549). New York: Plenum.

For more information call the PTSD Information Line at (802) 296-6300 or send email to ncptsd@ncptsd.org.