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Evaluating the role of perceived access to support and school safety in adolescent exposure to trauma: a mixed methods study

Amanda H. Stoeckel

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UNIVERSITY OF NORTHERN COLORADO

Greeley, Colorado

The Graduate School

EVALUATING THE ROLE OF PERCEIVED ACCESS TO SUPPORT
AND SCHOOL SAFETY IN ADOLESCENT EXPOSURE
TO TRAUMA: A MIXED METHODS STUDY

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

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This Dissertation by: Amanda H. Stoeckel

Entitled: *Evaluating the Role of Perceived Access to Support and School Safety in Adolescent Exposure to Trauma: A Mixed Methods Study*

has been approved as meeting the requirement for the Degree of Doctor of Philosophy in College of Education and Behavioral Science in School of Applied Psychology and Counselor Education, Program of School Psychology

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ABSTRACT

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This mixed methods study evaluated lifetime trauma exposure, protective factors, and current psychological functioning among 78 adolescents from two public middle schools in rural and suburban communities. One hundred percent of adolescents reported experiencing at least one traumatic event at some point during their lives. After controlling for gender, ethnicity, socioeconomic status, and special education/general education placement, more trauma exposure was associated with more post-traumatic stress and depressive symptoms, more teacher-rated externalizing behaviors, and lower teacher-rated adaptive functioning. Perceived access to support and factors of school safety demonstrated protective effects in the relationship between trauma exposure and domains of psychological functioning. Such moderators were observed to provide a greater impact among adolescents from families of low socioeconomic status. The inclusion of qualitative interviews helped to illustrate the process by which these protective factors influence trauma-related symptoms. Implications of the results focus on the implementation of school-wide safety promotion programs in urban, suburban, and rural communities. Such programs should place emphasis on the sense of school connection and positive interpersonal relationships among students rather than violence associated with the presence of weapons or drugs.

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CHAPTER I

INTRODUCTION

In the wake of Hurricane Katrina and the more recent earthquake and subsequent tsunamis in Japan, adolescents in these areas continue to feel the devastating effects of these natural disasters. Experiencing such a horrific natural disaster has caused some adolescents in these regions to develop post-traumatic stress symptoms, such as flashback episodes of the event, a diminished interest or participation in significant activities, difficulty concentrating, and irritability that has persisted well after the disaster's occurrence (Yule, 1999). However, some adolescents have not developed post-traumatic stress symptoms but rather have maintained healthy psychological functioning. Over the past 30 years, a growing body of literature has explored what factors play a role in these adolescents' ability to adapt well in their daily lives despite experiencing such adversity (Luthar, Cicchetti, & Becker, 2000; Masten, 2001).

Although traumatic events of such severity and far-reaching effects are uncommon, being exposed to a significant adverse event in ones' lifetime is not. According to various statistics, more than two-thirds of individuals in the general population may experience a traumatic event during their lives, and as much as one-fifth of the U.S. population may be exposed to trauma in any given year (Breslau et al., 1998; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Resnick, Kilpatrick, Dansky,

Saunders, & Best, 1993). Along with natural disasters, traumatic events may include war-related traumas, criminal victimizations (e.g., shooting, physical assault, sexual assault, robbery), serious accidents, the death of a loved one, a personal illness or injury or that of a loved one, or witnessing interpersonal violence (Koopman, Classen, & Spiegel, 1997). The American Red Cross reported in 2005 that they responded to 72,883 disasters in the country and indicated that 92% of the disasters populations they served involved fire victims. In 2006, the New York State Department of Motor Vehicles noted that 7,867 children 17 years and younger were killed or seriously injured in a car accident during that year. The 2004 *National Crime Victimization Survey* conducted by the U.S. Bureau of Justice (2007) revealed that 24 million individuals 12 years and older were victims of violent and/or property crimes in the U.S.

The effects of trauma are as diverse as the traumatic experiences themselves. For some individuals, the effects of trauma can be devastating and lead to a variety of emotional, physical, and behavioral reactions with related problems. Trauma-related symptoms consist of recurrent and intrusive distressing recollections or dreams of the trauma, persistent avoidance of stimuli associated with the event, an increased startle response, and a perception of a foreshortened future. This grouping of symptoms is currently classified as post-traumatic stress disorder (American Psychiatric Association [APA], 2000). Although reports of rates of individuals who meet criteria for Post-traumatic Stress Disorder (PTSD) vary, the *Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition-Text Revision (DSM-IV-TR)* (APA, 2000) estimated that the prevalence of PTSD is approximately 8% of the adult population in the U.S.

Among other individuals who have experienced an adverse life event, the trauma may serve as a catalyst to enhance their lives (Lifton, 1993). Indeed, for certain individuals, facing trauma reorients them toward their goals and values. Models of resilience have helped to explain why some individuals are able to thrive despite experiencing a traumatic event and what protective factors are associated with healthy psychological functioning in the wake of trauma (Freitas & Downey, 1998; Garmezy, Masten, & Tellegen, 1984; Rutter, 1987, 1990). The general aim of the study was to explore how supportive social and school factors may protect adolescents against psychological deficits associated with trauma exposure.

Need for the Present Study

Adolescents in the U.S. are at a high risk for exposure to traumatic events. According to several community-based studies, prevalence rates for adolescent trauma exposure ranged from 21% to 82% (Breslau, Lucia, & Alvarado, 2006; Giaconia et al., 1995; Kilpatrick et al., 2003; Perkonigg, Kessler, Storz, & Wittchen, 2000; Storr, Ialongo, Anthony, & Breslau, 2007). Kilpatrick and Saunders (1997) reported that among a nationally representative sample of 4,023 adolescents in the U.S., 17% had experienced a serious physical assault and 8% a sexual assault; 39% had witnessed an incident of interpersonal violence. By the age of 23 years, the prevalence of exposure to a traumatic event was estimated at 83% among a cohort of urban youth in a large city in the U.S. with males (87%) more likely to be exposed to trauma than females (78%) (Breslau, Wilcox, Storr, Lucia, & Anthony, 2004). In another study in urban schools, adolescents reported being exposed to various forms of trauma: being shot at (11%), threatened with a knife

(23%) or gun (17%), stabbed (4%), shot (3%), and being sexually assaulted (3%) (Bell & Jenkins, 1993).

Given the high rates of trauma exposure among adolescents, it is imperative to recognize that adolescents who experience adversity may be at risk of developing trauma-related symptoms. Prevalence rates for PTSD among the total adolescent samples in several community-based studies varied from 1% to 9% (Giaconia et al., 1995; Kilpatrick et al., 2003; Perkonigg et al., 2000; Storr et al., 2007). In addition to post-traumatic stress symptoms, adolescents exposed to trauma may also exhibit a wide range of emotional and behavioral symptoms. Depression is a common reaction for adolescents exposed to trauma; some may experience survivor guilt, which is the guilt of having survived an event while others perished (Yule, 1999). Adolescents who have experienced a traumatic event may be described as more irritable, hyperactive, and angry. Such individuals may display externalizing behaviors, such as aggression, because they have become insensitive to violence or because it has been modeled to them (Capozzoli & McVey, 2000). Exposure to trauma among adolescents may also interfere with adaptive functioning in the academic environment by leading to social withdrawal and isolation and problems with concentration, making it more difficult to thrive in a classroom (Joseph, William, & Yule, 1997; Wolfe, 1999).

Theoretical Framework

As illustrated by the discrepancy between the prevalence of trauma exposure and development of PTSD among adolescents, many youth do not suffer deleterious psychological outcomes associated with experiencing a traumatic event. Researchers have explored why some individuals appear resilient in the face of adverse circumstances

(Luthar et al., 2000; Masten, 2001). To better understand the mechanisms of resilience, investigators have examined factors present in individuals' social ecologies that may serve to moderate the negative outcomes of trauma (Hammack, Richards, Luo, Edlynn, & Roy, 2004; Hoge, Austin, & Pollack, 2007; Jackson, Kim, & Delap, 2007). Perceived access to support has been shown to play a protective role for adolescents who have been exposed to trauma in several studies (Hammack et al., 2004; Hoge et al., 2007; Overstreet & Dempsey, 1999). Another protective factor that has been explored, although not as extensively, is safety of the school environment. Adolescents who report feeling safer at school have been rated by their teachers as having higher levels of adaptive functioning associated to exposure to violence (Ozer & Weinstein, 2004). Although there are additional variables that serve a protective role against adolescent trauma exposure, a school psychologist is likely to provide the greatest impact on the variables of perceived access to support and school safety. It is difficult to influence families and communities from within the school, and many of the individual variables are not amenable to change (e.g., intelligence).

Statement of the Problem

Among the research evaluating the role of perceived access to support and school safety as protective factors for adolescents exposed to trauma, very few studies have incorporated a qualitative component to explore the underlying mechanisms of such protective factors. Given the complexities and dynamics involved in the constructs of perceived access to support and school safety, the process by which such protective factors affect one's experience with trauma may be more richly elucidated through the voices of the adolescents.

The majority of investigations examining the role of protective factors in adolescent exposure to trauma have focused on urban samples of adolescents (e.g., Gorman-Smith & Tolan, 1998; Kliwer & Kung, 1998; Ozer & Weinstein, 2004). While rates of trauma exposure have been reported to be higher among youth living in urban areas than suburban communities, living in a particular community does not entirely insulate adolescents from trauma exposure or its potentially devastating effects (Breslau et al., 2006). Adolescents from rural and suburban communities appear to be a population that has been overlooked in much of the research exploring trauma exposure and protective factors.

Because adolescents spend much of their time at school, it is important to explore the ways in which the school environment and its perceived level of safety may act as a buffer from the negative effects of trauma. School safety has largely been evaluated as a protective factor for adolescents who have been exposed to specific types of trauma, such as community violence. Considering the multitude of types of trauma to which adolescents are exposed, it is important to investigate how the role of school safety may serve as a protective factor in general trauma exposure.

Unfortunately, school safety has not typically been assessed in a comprehensive manner. Some studies have included as few as five items to explore the role of school safety as a protective factor in adolescent trauma exposure (e.g., Ozer, 2005; Ozer & Weinstein, 2004). Such studies have advocated for future use of measures that evaluate school safety more comprehensively. Accordingly, research should consider examining how various aspects of school safety (e.g., school connection, relationships with teachers and students, drug usage) may play protective roles in adolescent exposure to trauma.

Further, it is important to understand how school safety factors might vary by gender, ethnicity, and socioeconomic status.

Purpose of the Study

The current mixed methods study addressed the role of perceived access to support and school safety in adolescent exposure to trauma among a school-based sample in rural and suburban communities. To help understand this relationship, the researcher used an embedded mixed method design in which a qualitative data set provided a supportive, secondary role for the quantitative data. The primary purpose of this study used psychological measures to evaluate how social support and school safety influence intra- and interpersonal functioning in relation to adolescents' exposure to trauma. A secondary purpose was to gather qualitative data through the use of interviews that explored adolescents' experiences with trauma to better understand the mechanisms by which perceived access to support and school safety may influence psychological functioning.

Research Questions

- Q1 Do adolescents who report a higher level of trauma exposure experience more deficits in psychological functioning (i.e., post-traumatic stress and depressive symptoms, externalizing problems, and adaptive functioning) than those who report lower levels?
- a. Do adolescents who report a higher level of trauma exposure endorse more post-traumatic stress symptoms?
 - b. Do adolescents who report a higher level of trauma exposure endorse more depressive symptoms?
 - c. Do adolescents who report a higher level of trauma exposure have more externalizing problems, as rated by their teachers?
 - d. Do adolescents who report a higher level of trauma exposure have lower adaptive functioning, as rated by their teachers?

- Q2 What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of protective factors (e.g., perceived access to support, school safety)?
- a. What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of perceived access to support?
 - b. What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of school safety with regard to Climate/Connection?
 - c. What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of school safety with regard to Incivility and Disruption?
 - d. What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of school safety with regard to Personal Safety?
 - e. What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of school safety with regard to Delinquency/Major Safety?
- Q3 What is the process by which adolescents' access to support and school safety shape their experience after a traumatic event? How do they perceive access to support and school safety in their own ability to function after trauma?

Definitions

Adaptive Functioning

As assessed in the present study, adaptive functioning is defined as appropriate emotional expression and control, daily-living skills, and communication skills, as well as prosocial, organizational, and study skills (Reynolds & Kamphaus, 2004). Adaptive functioning was assessed through the administration of *The Behavior Assessment System for Children-Second Edition-Teacher Rating Scale (BASC-2 TRS)* (Reynolds & Kamphaus, 2004).

Buffer

A buffer is a type of moderating variable that shows a decrease in the association between an independent variable and a dependent variable (Aiken & West, 1991).

Depressive Symptoms

Depressive symptoms, as assessed in the current study, include negative thoughts about oneself, one's life, or one's future; feelings of sadness, and physiological effects, such as somatic complaints and vegetative effects (Beck, Beck, Jolly, & Steer, 2005).

Depressive symptoms were assessed with *The Beck Depression Inventory for Youth (BDI-Y)*.

Externalizing Problems

Externalizing problems are characterized by disruptive-behavior problems, such as aggression, hyperactivity, and delinquency (Reynolds & Kamphaus, 2004).

Externalizing problems were assessed with *The Behavior Assessment System for Children-Second Edition-Teacher Rating Scale (BASC-2 TRS)* (Reynolds & Kamphaus, 2004).

Perceived Access to Support

Perceived access to support has been defined as a general perception of the availability of interpersonal relationships reflected in the daily, social ecology of development (Hammack et al., 2004). The current study assessed perceived access to support rather than actual support because it has been argued that adolescents' perception of support is at least as significant as the availability of support (Prince-Embury, 2007).

The Perceived Access to Support subscale of the Sense of Relatedness Scale (REL-

Support) from Prince-Embury's (2007) *Resiliency Scales for Children and Adolescents* was used to assess adolescents' perceived access to support

Post-traumatic Stress Symptoms

Rather than assessing PTSD, as the diagnosis should be made in the context of a face-to-face interview using criteria of the *DSM-IV-TR* (APA, 2000), the current study assessed post-traumatic stress symptoms. Post-traumatic stress symptoms are defined as the inclusion of intrusive thoughts, sensations, and memories of painful past events; nightmares; fears of women or women; and cognitive avoidance of negative thoughts and memories (Briere, 1996). The *Trauma Symptom Checklist for Children-Alternate Version-Post-traumatic Stress Scale (TSCC-A-PTS)* (Briere, 1996) was used to assess adolescents' trauma-related symptoms.

Protective Factor

A protective factor is a variable that mitigates trauma exposure through one of three ways: the disruption of the causal pathway between trauma exposure and adverse mental health, counteracting direct effects, or by buffering negative effects (Kuperminc & Brookmeyer, 2006).

Resilience

The definition of resilience has been characterized as dynamic mechanisms that comprise positive adaptation following a significant adverse life event (Luthar et al., 2000).

Risk Factor

Garnezy and Masten (1986) define risk factors in the following manner: “Risk factors imply that there are elements operative in persons or environments that result in a heightened probability for the subsequent development of a disease or disorder” (p. 509).

School Safety

The definition of school safety in the current study is characterized by a comprehensive model reflective of four factors of school safety developed and defined by Skiba et al. (2004): Climate/Connection, Incivility and Disruption, Personal Safety, and Delinquency/Major Safety. The Climate/Connection factor in a school is defined as the degree of connection students feel with the school and their perception of the responsiveness of the school environment. Incivility and Disruption of a school is described as the civility of interpersonal relationships among students as expressed by the frequency of name calling, arguments, and conflicts. Personal Safety at one’s school pertains to feelings of personal safety in a variety of settings. The Delinquency/Major Safety of a school refers to students’ awareness of the presence of drugs, alcohol, knives, and smoking on school property. School safety was assessed through the administration of the secondary student version of the *Safe and Responsive Schools (SRS) Safe Schools Survey* (Skiba et al, 2004).

Trauma

Trauma can encompass a wide variety of complex events and has been defined as an overwhelming shock or injurious event affecting a person’s development (Prince, 1998). Traumatic events were assessed in the current study with the *Life Incidence of Traumatic Events-Student Form (LITE-S)* (Greenwald, 2004). Traumatic events assessed

included being in a car accident or other kind of accident, being sick in the hospital, seeing someone else get hurt, someone in the family being in the hospital, the death of a family member, having a friend being very sick or hurt or died, being in a fire, being in a natural disaster, parents breaking things or hurting each other, parents' separation or divorce, being taken away from one's family, being hit, whipped, beaten, or hurt by someone; being tied up or locked in a small space, being made to do things of a sexual nature, being threatened, and being robbed or having one's house robbed (Greenwald, 2004).

Vulnerability

Garnezy and Masten (1986) define vulnerability as "the susceptibility or predisposition of an individual to negative outcomes" (p. 509).

Limitations

The sample in the current study was conducted at two schools in rural and suburban areas, limiting the generalizability of the results. Because the quantitative methodology was a correlational design and not causal, it is unknown what variables truly contributed to the influence of adolescents' psychological functioning. A significant limitation of the study is the self-report manner in which trauma exposure was assessed. Due to various perspectives on what individuals, particularly adolescents, consider to be traumatic events, it is difficult to determine whether their responses reflect truly traumatic experiences. Further, the study did not control for the time at which the traumatic event occurred and its influence on subsequent psychological functioning.

CHAPTER II

REVIEW OF THE LITERATURE

Theoretical models of trauma indicate that there is a broad scope of outcomes in how adolescents react to traumatic experiences (Bonnano, 2004; Wilson & Thomas, 2004). In the following literature review, prevalence rates, sources of trauma, and effects of trauma among adolescents are presented, as well as risk factors for developing trauma-related symptoms. Alternatively, models of resilience provide a framework by which to understand why some adolescents are able to thrive despite experiencing a traumatic event in their lives. This review of the literature examines the variables that play a protective role in adolescent trauma exposure.

Adolescent Trauma

Prevalence of Trauma Exposure

Exposure to trauma is all too common among today's adolescents. While several studies have assessed for PTSD in youth following specific stressors (e.g., Ozer, 2005; Ozer & Weinstein, 2004), few community-based investigations have assessed adolescent exposure to a wide range of traumatic events. Copeland, Keler, Angold, and Costello (2007) evaluated the epidemiology of trauma and post-traumatic stress in a longitudinal community sample of 1420 children of ages 9, 11, and 13 years. Trauma, post-traumatic

stress, risk factors, and DSM-IV disorders were examined from child and parent reports on the Child and Adolescent Psychiatric Assessment (Angold & Costello, 2000) annually until the children reached 16 years of age. Results suggested that more than two-thirds of youth reported at least one traumatic event by age 16, with 13% of these youth developing post-traumatic stress symptoms. The most commonly reported traumatic events were witnessing or learning about a traumatic event. Few post-traumatic stress symptoms or psychiatric disorders were observed among youth experiencing their first traumatic event, and any effects were noted to be short-lived. Violent or sexual trauma was related to the highest rates of symptoms (Copeland et al., 2007).

Considering the multitude of community-based research assessing the prevalence of PTSD, increased efforts have been placed on examining prevalence estimates of youth trauma exposure in large epidemiological studies and government surveys. Finkelhor, Ormrod, Turner, and Hamby (2005) employed the *Developmental Victimization Survey* (DVS; Finkelhor et al., 2005) to evaluate exposure to 34 forms of victimization in a nationally representative sample of 2,020 children between the ages of 2 and 17 years. Additionally, the DVS assessed exposure to assaults by peers and siblings, nonsexual assaults to the genitals, dating violence, bias and hate crimes, and property theft. Results revealed widespread exposure to victimization incidents, with 71% exposed to one or more victimization incidents in the past year. Nearly 70% of victimized children were found to experience exposure to multiple events, with an average of three differing forms of victimization reported.

Nearly 10 years earlier, a similar finding was reported. In their telephone survey of a nationally representative sample of 4,023 U.S. youth, Kilpatrick and Saunders (1997)

reported that 17% had experienced a serious physical assault and 8% a sexual assault; 39% had witnessed one or more incidents of serious interpersonal violence. In other words, 64% reported some type of trauma.

In an urban sample, Breslau et al.'s (2004) investigation found that by the age of 23 years, the lifetime occurrence of exposure to any trauma was 83%, with males (87%) more likely to be exposed than females (78%). These findings seemed to suggest that urban youth may be experiencing trauma at higher rates than a nationally representative sample. Even early work in this area indicated higher rates of trauma among urban youth. For example, Bell and Jenkins (1993) administered a survey to 1,011 students from four high schools and two middle schools in Chicago. Participants reported experiencing events as: being shot at (11%), threatened with a knife (23%) or a gun (17%), stabbed (4%), shot (3%), and being sexually assaulted (3%). Many youth also reported having witnessed a stabbing (35%), shooting (39%), or killing (25%).

The 2009 National Youth Risk Behavior Survey (YRBS) monitored health-risk behaviors among youth from 9th through 12th grade students in public and private schools in the U.S (<http://www.cdc.gov/healthyyouth>). Results of the YRBS indicated that 31.5% reported being physically assaulted one or more times during the 12 months before the survey. Of the total sample of participants, 7.7% of students had been threatened or injured with a weapon (e.g., gun, knife, or club) on school property one or more times during the 12 months before the survey. This finding points to the need of schools to provide a safe place in which students can be protected from the high prevalence of trauma. As the above prevalence rates suggest, the sources of traumatic events that adolescents are exposed to are widely varied.

Sources of Adolescent Trauma and Prevalence of PTSD

Studies have used clinical samples to estimate the prevalence rates of post-traumatic stress associated with various sources of trauma exposure. Much of the research has emphasized war-related trauma, criminal victimizations, natural disasters, and motor vehicle accidents.

War-Related Trauma

Research on the trauma-related symptoms among children and adolescents following war-related trauma, such as terrorist attacks, air strikes, and genocide have found important implications surrounding the epidemiology of PTSD. Almqvist and Broberg (1999) evaluated the psychological functioning of 40 Iranian refugees between the ages of 4 and 8 who had resettled in Sweden with their families. Participants were reported to have experienced traumatic events such as air raids or attacks by long range missiles and/or had witnessed a parent being assaulted. Results suggested that 18% of the children met full criteria for PTSD and another 18% presented with severe clinical symptoms but did not meet full criteria for PTSD.

More recently, Elbedour, Onwuegbuzie, Ghannam, Whitcome, and Heine (2007) assessed for PTSD among Palestinian adolescents living in the Gaza Strip during the Second Uprising of 2000. Participants reported experiencing traumatic events such as witnessing a friend or family member being injured or killed, seeing their home being destroyed, being shot or physically assaulted, and being exposed to the firing of missiles. PTSD was assessed through the administration of the DSM-IV (APA, 1994) version of the *PTSD Inventory* (Watson, Juba, Manifold, Kucala, & Peterson, 1991). Elbedour et al. observed an alarming PTSD prevalence rate of 69%.

Criminal Victimization

Researchers have examined PTSD rates among adolescents who were victims of crime, such as shootings, muggings, armed robbery, gang violence, homicide, and physical or sexual assault. Pynoos, Frederick, and Nader (1987) assessed the psychological functioning of 159 youth one month after a sniper opened fire on a Los Angeles elementary school playground, killing one student and wounding 13 others. Results suggested that 60% of the sample met full criteria for PTSD. Fourteen months after the shooting, Nader, Pynoos, Fairbanks, and Frederick (1990) conducted follow-up evaluations with 100 youth from the original sample and found that 29% of the sample continued to experience PTSD at follow-up. Nadar et al.'s results illustrate that a traumatic event can cause psychological deficits that persist long after the occurrence of the event.

In a two-team investigation (Berman, Kurtines, Silverman, & Serafini, 1996; Berton & Stabb, 1996), the prevalence of PTSD was examined among urban high school students who had been exposed to violent neighborhood crimes. Trauma exposure included experiencing or witnessing a mugging, knife attack, shooting, suicide, or murder, or having seen a dead body. PTSD rates were reported at 29% and 35% among two samples. Ackerman, Newton, McPherson, Jones, and Dykman (1998) evaluated three cohorts of abused youth. Within their sample of 204 youth, 127 children reported being sexually abused, 43 children physically abused, and 34 children reported experiencing both physical and sexual abuse. The researchers observed that 34% of the total sample met criteria for PTSD. They reported that youth who had been both physically and sexually abused had a higher prevalence rate of PTSD (55%) relative to the youth who

had been sexually abused (32%) or physically abused (26%). In this study, prior trauma increased the likelihood of PTSD among youth who had suffered an additional traumatic event, suggesting the need for assessing a wide range of traumatic events.

Natural Disasters

Natural disasters are often unexpected traumatic events that can cause injury, death, and destruction in a grand scope. Reports from the National Comorbidity Survey (Breslau et al., 1998) reported that 15% of women and 19% of men experience a natural disaster at least once in their lifetime. Considering the potential for far-reaching devastating effects, survivors of a natural disaster are at increased risk for developing PTSD (Norris et al., 2002).

Goejian et al. (2001) studied 158 Nicaraguan adolescents of three cities six months after the occurrence of Hurricane Mitch. The authors observed PTSD prevalence rates for the most, second most, and least affect cities to be 90%, 55%, and 14%, respectively. Piyavhatkul, Pairojkul, and Suphakunpinyo (2008) studied the psychological functioning of youth affected by the Asian tsunami in the Ranong province of Southern Thailand 10 months after the tsunami occurred. The sample included 47 males and 47 females between the ages of 1 and 18 years who were impacted by the disaster. The authors reported that 33% of the youth met criteria for PTSD.

Motor Vehicle Accidents

Surviving a motor vehicle accident can often lead to the development of PTSD. Di Gallo, Barton, and Parry-Jones (1997) examined 49 youth between the ages of 5 and 18 years who received care at hospitals after a motor vehicle accident. PTSD was

assessed 12 to 15 weeks after the accidents. The authors reported that 49% of the youth met full criteria for a PTSD diagnosis.

Other studies have reported lower rates of PTSD associated with a motor vehicle accident. Meiser-Stedman, Yule, Smith, Glucksman, and Dalgeish (2005) evaluated 106 youth between the ages of 10 and 16 years who were admitted to the hospital emergency room after suffering a motor vehicle accident. Youth were interviewed within four weeks of the accident and six months later. The investigators indicated that 13% of the youth met criteria for PTSD six months after the accident.

The PTSD rates in the above studies are difficult to compare due to the timing of the administration of the measures, the various instruments involved in the diagnosis of PTSD, and the differing time frames related to the trauma in each study. These differences in the field of trauma research help to explain not only the wide range of prevalence rates of adolescent trauma exposure and PTSD but also the differing prevalence rates of other trauma-related psychological deficits.

Other Trauma-Related Psychological Deficits

Along with PTSD, adolescent trauma exposure has been linked to psychological deficits in various domains, such as depression, anxiety, and externalizing problems (e.g., attention-deficit hyperactivity disorder (ADHD), aggression, conduct problems). For example, Kinzie, Sack, Angell, Manson, and Rath (1986) evaluated a sample of Cambodian adolescents who experienced severe trauma in the Pol Pot concentration camps as children. The authors indicated that 85% of their sample met diagnoses for both PTSD and depressive disorders, and 35% had anxiety disorders. A number of studies

have also found that PTSD is associated with high rates of concurrent psychiatric disorders (Faustman & White, 1989).

Comorbidity is not unusual among children and adolescents but it appears to be especially prevalent among those individuals with PTSD. Perekonigg et al. (2000) investigated trauma-related symptoms among a sample of adolescents and reported that 88% of participants who met criteria for PTSD had at least one additional diagnosis, and 78% had two or more additional diagnoses. Furthermore, in most comorbid occurrences, depressive disorders (69%), agoraphobia as well as substance abuse (71%) were occurring simultaneously or were secondary.

This degree of comorbidity not only complicates diagnosis but also interventions and research. It is difficult to tease apart the symptoms of each of the disorders. Additionally, sometimes the sum is more than the parts, and youth with multiple co-occurring disorders may find themselves to be homeless, without support, and on heavy cocktails of medication. Symptoms of ADHD (e.g., hyperactivity, impulsivity, restlessness, irritability, and distractibility) are often characteristic of adolescents who have experienced a traumatic event (Linning & Kearney, 2004; Merry & Andrews, 1994). Famularo, Fenton, Kinscherff, and Augustyn (1996) indicated that 37% of severely maltreated youth who met criteria for PTSD also received a diagnosis of ADHD. Among the sample, 24% of youth diagnosed with PTSD also presented with conduct disorder or oppositional defiant disorder. In addition, Famularo et al. reported a prevalence rate of 39% of PTSD and comorbid anxiety disorders and 32% of unspecified comorbid mood disorders. Researchers have explored how various factors may impact the prevalence of post-traumatic stress and other trauma-related symptoms.

Factors Affecting Psychological Functioning Associated with Trauma

Risk Factors

Along with competency, adversity in one's life is an important construct in the study of resilience (Luthar & Cushing, 1999). A wide range of risk factors exist that place adolescents exposed to trauma at risk for psychological deficits. Risk factors encompass an array of variables that are associated with poor outcomes and include both individual and environmental influences (Compas, Hinden, & Gerhardt, 1995). Garmezy and Masten (1986) define risk factors in the following manner: "Risk factors imply that there are elements operative in persons or environments that result in a heightened probability for the subsequent development of a disease or a disorder" (p. 509). A factor which has been a main focus for its influence on increasing the likelihood of psychological deficits related to trauma is a family's socioeconomic status (e.g., Garmezy, 1991; Werner & Smith, 1982, 1992).

Garmezy (1991) explored factors that may place youth at risk for developing psychological deficits, including post-traumatic stress symptoms. In his study of disadvantaged youth in urban U.S. cities who were subjected to extreme stressors, Garmezy observed that these youth were twice as likely to die in the first year of life, be born prematurely, suffer low birth weight, have mothers who had inadequate prenatal care, and have parents who were unemployed. These youth were three times more likely to have mothers die during delivery, be forced to live in foster care, or die from abuse. Such findings have been suggested to represent a vast scope of detrimental effects to

attachment processes, vulnerability to stressors, and the development of social competencies (Agaibi & Wilson, 2005).

A family's socioeconomic status may result in risk factors that directly affect adolescents and lead to a higher prevalence of post-traumatic stress symptoms and other psychological deficits. (Kinsie, 1994). These risk factors may include poor nutrition, domestic violence, and substance abuse (Agaibi & Wilson, 2005). As Garmezy (1991) noted, the combination of social, biological, and environmental risk factors increases the risk of psychological deficits among adolescents. Adolescents living in impoverished environments may tend to have poorer health, drop out of school, and, as a result, have limited job opportunities, continuing the cycle of poverty and associated difficulties (Agaibi & Wilson, 2005). Another problem associated with low socioeconomic status may be living in unsafe neighborhoods with higher rates of violence and substance abuse.

Vulnerability

Although the terms risk factor and vulnerability are often used interchangeably throughout resiliency literature, they are distinct processes. The construct of vulnerability has been incorporated in the development of several models of resilience (Garmezy et al., 1984; Rutter, 1987, 1990). Garmezy and Masten (1986) define vulnerability as “the susceptibility or predisposition of an individual to negative outcomes” (p. 509). Sources of vulnerability to trauma can be present in an adolescent's personality and coping strategies or in the environment and can function independently or in an additive manner (Wilson, Friedman, & Lindy, 2001). Compas and Phares (1991) have delineated five sources of vulnerability: coping strategies and styles, age or developmental level,

personal characteristics that relate to gender, social-cognitive factors, and the stress and symptoms experienced by close family members.

Resilience

Resilience has been defined as “a dynamic process encompassing positive adaptation within the context of significant adversity” (Luthar et al., 2000). The study of resilience began with the paradigm shift from evaluating risk factors that led to mental health issues to identifying strengths of an individual (Richardson, 2002). Such strengths may be related to one’s competence, extending to the successful adaptation of trauma exposure.

Werner and Smith (1982, 1992) examined the psychological functioning of Hawaiian youth with risk factors of poverty and low parental education. One-third of the sample was considered to be resilient because they had not developed psychological problems at ages 10, 18, and 30. Compared to youth who developed psychological problems, youth who were considered to be resilient received more attention as infants and presented as more active and socially responsive, per their mothers. In contrast, youth who do not receive adequate attention from caregivers due to the stressors associated with low socioeconomic status are more vulnerable to developing psychological deficits (Caffo & Belaise, 2003).

Models of Resilience

Differing explanatory models of resilience have been developed based on the constructs of competence, risk factors, and vulnerability. Kaplan (1999) has argued that “the meaning of resilience may be properly understood only in the context of causal models that attempt to explain some outcome that has socially evaluative significance”

(p. 30). These models provide various ways of conceptualizing the relationship between trauma and resilience.

Three explanatory models of resilience have been identified by Garmezy et al. (1984): a compensatory, a challenge, and the “immunity-versus-vulnerability model” (Garmezy et al., 1984, p. 102). Garmezy et al. characterized the compensatory model as an additive model in which the culmination of trauma and individual traits predicts competence. As such, trauma may be “counteracted” by an individual’s strengths (p. 102). In contrast, the challenge model is based on the assertion that exposure to moderate amounts of stress may act to increase competence. Garmezy et al.’s third model takes into consideration both individual strengths and weaknesses in relation to trauma, thus decreasing or increasing the impact of trauma based on personal attributes.

Since Garmezy et al.’s (1984) early development of resilience models, researchers have advocated for the need of an interactive model to provide a more comprehensive explanation of resilience (Freitas & Downey, 1998; Rutter, 1987, 1990). Rutter (1987, 1990) reported interactions between trauma and variables such as gender, temperament, relationships, and risk factors. It was posited that such predictor variables would interact differently based on their designation as a vulnerability factor or protective factor. Although protective factors will be discussed later in greater detail, one can be defined as a variable that mitigates trauma exposure through one of three ways: the disruption of the causal pathway between trauma exposure and adverse mental health, counteracting direct effects, or by buffering negatives (Kuperminc & Brookmeyer, 2006).

Accordingly, Rutter (1990) built upon a paradigm in which vulnerability and protective factors reflected a continuum of effects on trauma. Rutter considered

vulnerability and protective factors as a unified concept rather than discrete entities: “Vulnerability and protection are the negative and positive poles of the same concept, not different concepts” (p. 185). This interactive model was extended to include mechanisms of mediation to explore potential processes that lead to the development of resilience. Potential processes examined by Rutter include self-esteem development, reducing negative events, increasing opportunity, and reducing the effect of trauma.

Another interactive model of resilience was offered by Freitas and Downey (1998) in an effort to explain differing responses among individuals to specific risk factors. To help understand why some protective factors equally benefit individuals regardless of the presence of the risk factor and others benefit differentially based on the presence of risk factors, Freitas and Downey drew upon Mischel and Shoda’s (1995) theory of Cognitive-Affective Personality System. Freitas and Downey described the model as one that focuses on how psychological mediators interact with one’s environment and other mediators. Mediators were characterized as personal characteristics, such as competencies. Resilience was thus thought to be determined by the association between the mediators and the environment.

Competence

Competence is characterized by positive beliefs about one’s self, task performance, and problem solving (Weisaeth, 1995). Masten and Coatsworth (1998) have identified three main areas of adolescent competency related to external and internal traits: social competence with peers, behavioral conduct, and academic functioning. Competence in these areas may promote resiliency by helping to compensate for the coping resources that are inevitably taxed through the experience of a traumatic event

(Yehuda, 1998). Research has suggested that competence is related to one's ability to effectively utilize psychosocial resources (Caffo & Belaise, 2003). Deficits in psychological functioning have been linked to being overly reactive to stress, having a history of low resource utilization, and inadequate competence in coping with stressors (Masten et al., 1999). While resources to develop competence are fewer among adolescents growing up in adversity, competence can develop with sufficient resources even in the presence of chronic stressors (Agaibi & Wilson, 2005). The development of competency can be supported by environmental resources. For example, Agaibi and Wilson reported that effective parenting is associated with development of cognitive skills that facilitate greater competence in managing various stressors. Competency can also be associated with internal traits. Intelligence has been shown to be related to social competence, which may help to prevent antisocial behavior among at-risk adolescents (Masten et al., 1999). However, intelligence is not amenable to change and, therefore, not as useful to target as a variable to promote resilience. In addition to competence, various protective factors also contribute to resilience.

Protective Factors

As discussed above, protective factors have been introduced as constructs in interactive models of resilience. Whereas vulnerability factors increase the impact of trauma, protective factors reduce its impact (Masten, 1994). Garmezy (1988) delineated three categories of protective factors associated with resilience in adolescents: individual disposition characteristics, the influence of the family, and external supports. Blum (1998) also identified dispositional, familial, and external factors as contributors of resilience.

Masten et al. (1999) studied potential protective factors among a sample of 205 adolescents, focusing on parental qualities, intelligence, and characteristics that distinguish resilient from nonresilient adolescents. It was found that healthy psychological functioning was associated with resources (e.g., parental quality and intelligence); however, these resources were often not observed in settings with high risk factors. Adolescents who reported high risk factors and lacked resources generally showed more psychological deficits. Masten et al. noted the important role of parenting, as the quality of parenting was associated with psychological functioning, even after controlling for socioeconomic status and intelligence. While effective parenting can be encouraged and promoted from within a school as a school psychologist, it would be difficult to effect change significantly in the area of parenting as a protective factor. However, access to support in an area in which school psychologists may provide a greater impact.

Werner and Smith's (1982) study of Hawaiian youth, mentioned earlier in a discussion of risk factors for adolescents, also examined protective factors against psychological deficits. Resilient adolescents were more likely to seek out external informal support from individuals such as friends, family members, and teachers. These adolescents also reported a sense of security from family members and maintained a positive perception of their family, school, and themselves. Resilient participants with a dysfunctional family system reported feeling detached from family members, suggesting the need for researchers to assess beyond family support as a protective factor. The dispositional characteristics that differentiated the resilient adolescents from nonresilient adolescents consisted of responsibility, socialization, communality, achievement, and

feminine qualities. Gender differences were observed among resilient adolescents: females reported a higher locus of control and endorsed more personality traits related to self-assertion. Both resilient females and males, however, demonstrated a social sensitivity that, according to Werner and Smith, indicated that resilient male adolescents may be more androgynous than nonresilient male adolescents. Another socially-related protective factor that has surfaced in the literature relates to social expressiveness.

Protective, vulnerability, and compensatory factors related to resilience were explored by Luthar (1991). Within the sample of 144 adolescents, Luthar observed an internal locus of control and social expressiveness as playing protective roles in psychological functioning. These factors were related to particular competencies; an internal locus of control was associated with classroom assertiveness, while social expressiveness was linked to peer popularity. While intelligence and positive life events were identified as vulnerability factors, ego development was found to be a compensatory factor. Grossman et al. (1992) also studied the relationship between risk and protective factors among a sample of 179 adolescents. Identified protective factors were family cohesion, internal locus of control, and adolescent communication with parents. The presence of such protective factors was typically associated with healthy psychological functioning; however, interaction effects between protective factors and risk factors were not significant. Grossman et al. indicated that more global factors may promote protection regardless of the presence of risk factors and suggested that future research should investigate how particular protective factors may be beneficial in the context of certain risk factors among specific populations. As such, the current study's methodology included the use of three-way interactions to assess how specific protective factors (e.g.,

perceived access to support and school safety) impacted adolescents' psychological functioning within risk factors (e.g., low socioeconomic status).

Perceived access to support. Social support has long been examined as a protective factor against psychological deficits among adolescents exposed to trauma (e.g., Barrera, 1986; Caplan, 1976; Compas, 1987; Gillock & Reyes, 1999; Ozer & Weinstein, 2004; Werner & Smith, 1982, 1992). Perceived access to support has been defined as “a general perception of the availability of interpersonal relationships reflected in the daily, social ecology of development” (Hammack et al., 2004). Past research has indicated that perceived access to support may be more effective at predicting psychological functioning than other types of support (e.g., Berman et al., 1996). Further, an adolescent's perception of support has been argued to be at least as significant as the availability of support (Prince-Embury, 2007).

Although perceived access to support has shown to protect adolescents against psychological deficits associated with trauma exposure among some samples, its impact has been observed to vary according to variables such as socioeconomic status, ethnicity, gender, and sources of support. Several studies have demonstrated that adolescents from low-income families appear to benefit less from perceived access to support. Gillock and Reyes (1999) investigated trauma, social support, and academic achievement in a low-income sample of Mexican-American adolescents. These adolescents reported feeling supported by family members and friends; however, this support was not shown to buffer the effects of adverse life events. It was suggested by the authors that the environmental stressors associated with low socioeconomic status and being of an ethnic minority may explain the insufficiency of the support. An alternate explanation relates to the use of one

outcome variable (i.e., academic achievement) and the potential differences that may have been observed in other domains of functioning.

The impact of perceived access to support among low-income adolescents has also been shown to vary by other demographic variables, as was observed in Cauce, Felner, and Primavera's (1982) early study exploring the relationship between perceived support, adverse life events, and academic performance of adolescents from low-income families. The impact of support differed based on the adolescent's age, gender, and, particularly, ethnicity. African American and Caucasian adolescents reported support as more helpful than did Hispanic adolescents. Females also reported support as more useful than did males.

Other studies, however, have demonstrated that adolescents from low-income families do, in fact, benefit from perceived access to support as a protective factor in trauma exposure, particularly in the domain of adaptive functioning. Wills, Vaccaro, and McNamara (1992) observed a significant relationship between support and adaptive functioning among a sample of 1,289 adolescents from low-income families. There was a significant interaction between social support and adverse life events in the prediction of adaptive functioning, suggesting an increased importance of adequate support among adolescents from low-income families. A qualitative study by Ratri Hestyanti (2006) also provides evidence for perceived support as a protective factor among adolescents from low-income families. Through the use of semi-structured interviews among a group of 50 economically disadvantaged Indonesian youth who survived a tsunami, six participants maintained healthy psychological functioning, as evidenced by the absence of trauma-related symptoms. Data gathered from interviews revealed that support from

significant others served a protective role against trauma-related symptoms among these participants.

Although results are inconsistent across investigations, studies have shown that adolescents from higher income families also benefit from perceived access to support as a protective factor against psychological deficits associated with trauma exposure.

Ystgaard (1997) observed that among a sample of adolescents from families with at least a moderate level of income, perceived support reduced the impact of adverse life events.

In a sample of adolescents from families of a similar economic status, Licitra-Klecker and Waas (1993) measured depressive symptoms and externalizing problems associated with negative life events and found that, while perceived support buffered against depressive symptoms, it did not predict externalizing problems.

Gender, as mentioned briefly above, is another variable which has shown to influence the impact of perceived access to support as a protective factor in adolescent exposure to trauma. In Ystgaard, Tambs, and Dalgard's (1999) longitudinal study of 211 adolescents, perceived access to support played a buffering role in psychological functioning associated with adverse life events only among males; females did not benefit from this association. As suggested by the authors, support received by the females may have been ineffective, or females may have experienced more adversity than their male counterparts. Regardless of the reason for this discrepancy, this finding helps to establish the need for the inclusion of multiple variables when examining the role of perceived access to support as a protective factor among adolescents.

Gore and Aseltine (1995) considered the source of support as a variable that may influence the impact of perceived access to support on psychological functioning among

adolescents exposed to trauma. In a large sample of 1,036 adolescents, both family and friend supports were observed to play a buffering role in the development of depressive symptoms associated with negative life events. Among adolescents from disadvantaged families, however, neither support from family nor friends was able to protect adolescents from developing depressive symptoms when exposed to trauma. Gender differences were also found, as females were less apt to be buffered by friend support when experiencing a negative life event. The effectiveness of female support may be related to the extent to which it is centered around problem solving. Males, conversely, were more protected by friend support in the wake of trauma. Gore and Aseltine's work offers additional support for an interactive model as best predicting psychological functioning associated with trauma exposure.

Similarly, Cauce, Mason, Gonzales, Hiraga, and Liu (1996) explored how perceived access to support among various sources influences the psychological functioning of adolescents who have experienced adverse life events. Depressive symptoms and externalizing behaviors of a sample of African American adolescents from low-income families were assessed. The researchers observed that, while both familial and friend support was associated with healthy psychological functioning, friend support provided a greater impact. Adolescents who reported a high level of support from their peers endorsed significantly fewer depressive symptoms and externalizing problems as trauma exposure increased. Cauce et al. suggested that peer support may be related to variables associated with a culture in which adolescents spend a majority of their time immersed: the school environment.

School safety. Considered to be an external protective factor by Garmezy's (1988) classification, school safety has also been explored, although not as extensively as perceived access to support, as a protective factor against psychological deficits among adolescents exposed to trauma. Similar to perceived access to support, school safety is a factor that school psychologists are more likely to impact within the school setting. Adolescents spend a significant amount of time at school, and the school environment is an important setting for adolescent development. As Masten and Coatsworth (1998) posit, developmental milestones associated with competencies in adolescence, such as academic achievement, peer relationships, and prosocial behavior, are related to one's behavior in the school environment. Similarly, nationally representative studies of adolescents conducted in the U.S. indicate that school experiences are strongly linked to the psychological functioning among adolescents (Ozer, 2005).

Much of the recent research surrounding school safety has focused on school connection. Findings from the *National Longitudinal Study of Adolescent Health* suggested that adolescents who reported feeling more connected to school displayed lower levels of emotional problems, risky behavior, and externalizing problems, such as aggression (Resnick et al., 1997). In Resnick et al.'s investigation, school connection was operationalized in terms of happiness, belonging, safety, closeness, and fair treatment by teachers. Additionally, adolescents' connection at school has been linked to better educational and psychological functioning over time (National Center for Education Statistics [NCES], 1997). Interventions focused to increase young children's bonding to school have also yielded positive long-term effects on risk behavior in late adolescence (Hawkins, Guo, Hill, Battin-Pearson, & Abbott, 2001). Such findings concerning school

connection and bonding and their implications as a protective factor have attracted the attention of individuals in the education fields (Ozer, 2005).

There is debate surrounding whether school connection does, in fact, play a protective role in adolescents' psychological functioning, or that adolescents who demonstrate higher functioning and are more prosocial simply feel more connected to school. The question of whether or not school connection promotes higher functioning or is a correlate of higher functioning remains unclear due to the primarily cross-sectional data collected in this area of research (e.g., Resnick et al., 2007). More research is needed to provide evidence for school connection as a protective role in adolescents' psychological functioning and explore the underlying mechanisms of this process.

The process by which school connection plays a protective role in adolescents' psychological functioning has generally only been conceptualized. The effects of school connection on externalizing behaviors have been hypothesized to occur because adolescents who connect to their schools have been shown to more likely adopt and internalize prosocial behavior and norms associated with those institutions (Hawkins et al., 2001). The mechanisms by which school connection may affect adolescents' internalizing symptoms have not been fully explored. It has been suggested, however, that this construct is related to basic qualities of the interaction between adolescents and their schools that are necessary for healthy development, such as their perceptions of safety and the quality of their interpersonal relationships (Masten & Coatsworth, 1998). Although prior research on school connection has not examined the experiences of adolescents that lead to a sense of connection to one's school, Ozer (2005) asserted that aspects of students' education, including positive social interactions, participation in

satisfying roles, and experiences of feeling effective in academic and/or social domains may affect their level of connection to school. This deficiency in the literature speaks to the need for more qualitative research in this area, as the voices of adolescents who have been subjected to adverse life events may richly elucidate the process by which protective factors such as school connection influence psychological functioning.

While research on the protective factor of perceived access to support has explored various moderating variables to help explain its effects on differing groups of individuals, existing literature examining school safety and, in particular, school connection has not focused on such factors. One demographic variable that has received attention as a possible influence on the role of school safety as a protective factor against trauma is socioeconomic status. Felner, Aber, Primavera, and Cauce (1985) observed that among a sample of adolescents from low-income families, characteristics associated with school connection had a greater impact on psychological functioning than did perceived access to support from family or peers. Similarly, DuBois, Felner, Brand, Adan, and Evans (1992) assessed the relationship between negative life events, support, and school connection among a sample of adolescents from low-income families. While school connection was found to be significantly associated with healthy psychological functioning, support from family and friends did not yield this association. These findings emphasize the role of school connection for adolescents from low-income families. DuBois et al. observed that adolescents who reported a high level of connection to their school did not endorse as many psychological deficits in response to negative life events and suggested that adolescents with less family support may use the sense of connection to their school in a compensatory manner.

Unfortunately, school safety has generally not been assessed in a comprehensive manner in the past. Due to the lack of comprehensive measures of school safety, it has generally been assessed through the use of one to five items in prior research exploring its role as a protective factor in adolescent trauma exposure (e.g., Ozer & Weinstein, 2004; Ozer, 2005). Skiba, Simmons, Peterson, and Forde (2006) have questioned the construct validity of such assessment and have argued that research may not have fully and accurately captured the domain of school safety. Skiba et al. reported that, while many measures of school safety focus on dramatic violence (e.g., fights with weapons, drug usage), models of school violence prevention indicate that lower intensity, higher frequency events such as minor disruption, bullying, or incivility may be more important in predicting overall school safety. Before the development of Skiba et al.'s (2004) *Safe and Responsive Schools (SRS) Safe Schools Survey*, little was known about which factors contribute to students' perceptions of school safety.

Through the development of the *SRS Safe Schools Survey*, Skiba et al. (2004) created a comprehensive model of school safety reflective of four main factors: Climate/Connection, Incivility and Disruption, Personal Safety, and Delinquency/Major Safety. Skiba et al. defined the Climate/Connection of a school as the degree of connection students feel with the school and their perception of the responsiveness of the school environment. Incivility and Disruption is described as the civility of interpersonal relationships among students as expressed by the frequency of name calling, arguments, and conflicts. Personal Safety at one's school pertains to feelings of personal safety in a variety of settings, while the Delinquency/Major Safety refers to students' awareness of the presence of drugs, alcohol, knives, and smoking on school property. This four-factor

model is the lens through which school safety will be assessed as a protective factor in adolescent trauma exposure in the current study.

Based on the review of literature presented, it can be concluded that adolescents are often exposed to a wide range of traumatic events. Although exposure to trauma may not induce PTSD or post-traumatic stress symptoms in all adolescents, it appears that adolescents exhibit varying degrees of psychological deficits after exposure to extremely stressful incidents. Along with post-traumatic stress symptoms, adolescents exposed to trauma may develop other psychological problems, such as depressive symptoms, externalizing behaviors, and poor adaptive functioning. A wide range of risk factors exist that place adolescents exposed to trauma at risk for psychological deficits. However, protective factors, such as access to support and school safety, may help adolescents successfully adapt to the traumatic event and promote resilience.

CHAPTER III

METHODOLOGY

Mixed methodology was used to explore the relationship between trauma exposure and adolescents' psychological functioning as moderated by access to support and sense of school safety. Creswell and Plano Clark (2007) define mixed methodology as follows:

Mixed methods research is a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phases in the research process. As a method, it focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone. (p. 5)

A mixed methods design was selected as the preferred methodology because it was thought that quantitative results would be inadequate to provide a comprehensive understanding of the process involved in adolescents' functioning. Qualitative data were anticipated to enrich and help explain the quantitative results through the words of the participants.

Specifically, a concurrent embedded-correlational model was employed to fully explore the underlying mechanisms of this association. A concurrent embedded correlational design can be defined as one in which qualitative data are embedded within a quantitative design, during which data sets are collected, analyzed, and interpreted at

approximately the same time (Creswell & Plano Clark, 2007). In this design, the qualitative data set serves a supportive, secondary role in a study based primarily on the quantitative data set. The rationale for this approach was that the quantitative data and embedded qualitative data provided an in-depth explanation of the mechanisms that relate the predictor and outcome variables in the study. The framework of the concurrent embedded-correlational model as outlined by Creswell and Plano Clark can be applied to address the research problem in the following manner: to facilitate understanding of the relationship between trauma exposure and adolescents' psychological functioning as moderated by access to support and sense of school safety, qualitative interviews were embedded within the primarily quantitative study about adolescents' perspectives on the mechanisms by which access to support and sense of school safety have influenced their psychological functioning associated with trauma exposure. See Figure 1 for a visual diagram of the methodology of the current study within the structure of the concurrent, embedded-correlational design.

Participant Sample

Participants were a primarily ethnically homogenous group of 78 seventh graders (36 females, 42 males) from two public schools from the Midwest and Mountain West Regions. According to data provided by the 2007 U.S. Census Bureau (<http://www.census.gov/econ/census07/>), the rural town of the Midwest Region school has a population of 3,635 residents and an unemployment rate of 9.3%. Its household median income was estimated to be \$35,240, while 13.83% were thought to have attained at least a bachelor's degree. The suburban community of the Mountain West Region school has a population of 27,760 residents and an unemployment rate of 9%. Its

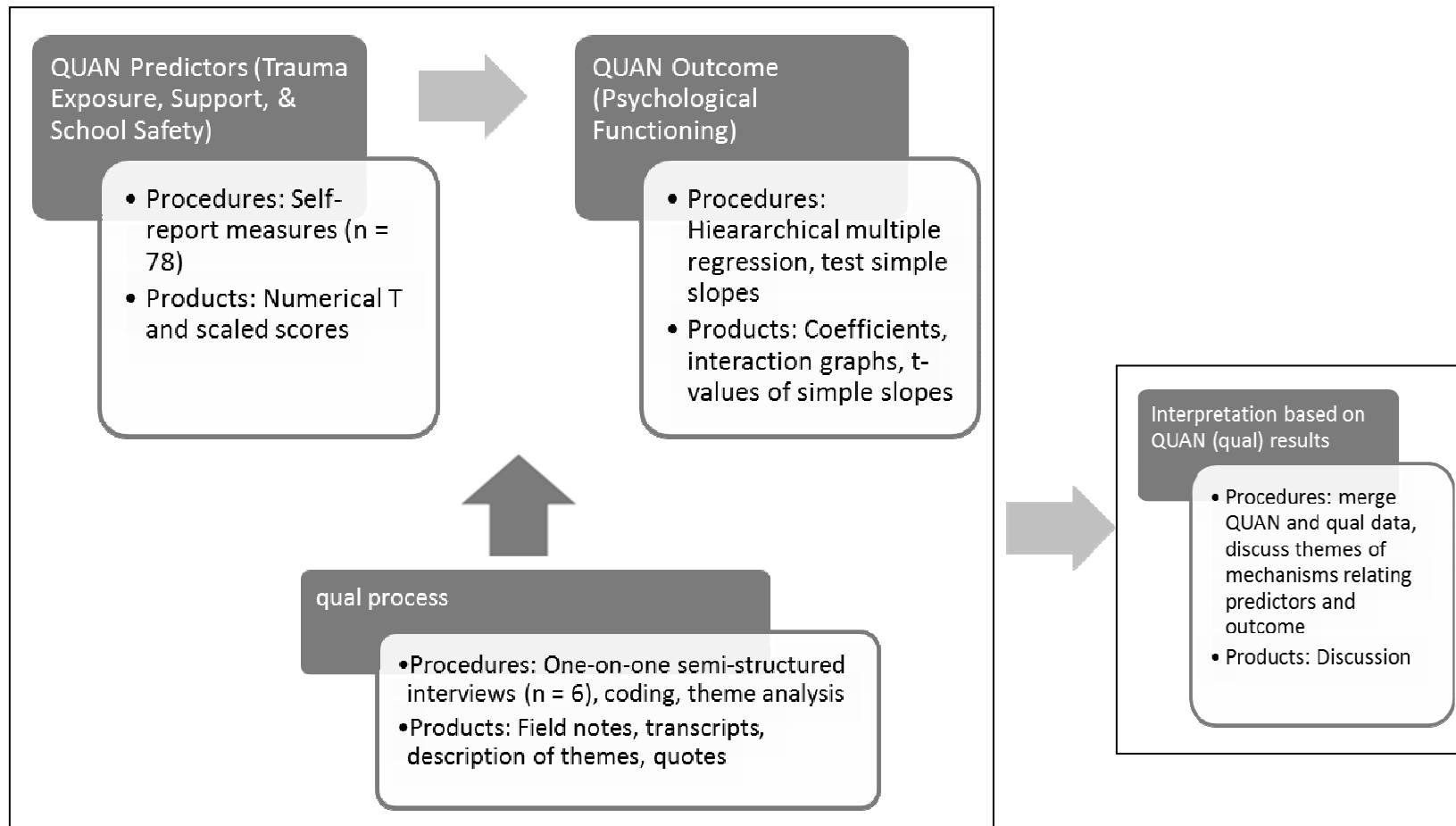


Figure 1. *Visual Diagram of the Procedures of the Concurrent, Embedded-Correlational Design*

household median income was estimated to be \$48,236, while 18.56% were thought to have attained at least a bachelor's degree.

Eighty-five percent of participating adolescents identified their ethnicity as White/European American, 8% as Latino/Latina, 4% as Native American, and 4% as Asian American. Along with gender and ethnicity, subjects were also asked to provide information about whether or not they received special education services or free/reduced lunches. Twelve percent of adolescents reported receiving special education services. Special education services listed by adolescents included support for math, reading, and speech/language. Of participating adolescents, 35% reported receiving free/reduced lunches. Of the six participants who agreed to be interviewed for the qualitative data collection, two were male and four were female, five identified their ethnicity as White/European American and one as Latino/Latina, one indicated receiving special education services in the area of math, and two reported receiving free/reduced lunches. Both schools were represented by participants who were interviewed for the qualitative data collection.

Instruments

Several self-report and one teacher-report measures were administered to assess trauma exposure, the protective factors of perceived access to support and school safety, various domains of psychological functioning (post-traumatic stress symptoms, depressive symptoms, externalizing behaviors, and adaptive functioning).

Life Incidence of Traumatic Events-Student Form

The *Life Incidence of Traumatic Events-Student Form (LITE-S)* (Greenwald, 2004) was used to assess adolescents' lifetime trauma exposure. The *LITE-S* consists of

16 items and requires the adolescent to circle yes or no to indicate what adverse life events have happened to him/her and estimate the emotional impact at both the time of occurrence and the present by circling how much the event upset him or her then and now (none, some, or lots). There is not a standardized way of scoring the *LITE-S*; however, through consultation with the author, Dr. Greenwald, and reviewing past studies which employed the *LITE-S*, in the present study participant responses were scored by summing the number of endorsed events. As such, only the number of endorsed traumatic events was considered in the analysis, and the degree to which the event upset the participant was not incorporated in the analysis. Therefore, the possible score range for this instrument was 0 to 16, with higher scores indicating a greater number of traumatic events having been reported by the participant.

The *LITE-S* has demonstrated satisfactory psychometric properties concerning validity and test-retest reliability. In a validation study, Greenwald and Rubin (1999) administered the *LITE-S* and the *Child Report of Post-traumatic Symptoms* to 206 female and male students in grades 3 through 8 in rural and urban schools. The correlation between the two measures was .56 ($p < .001$), supporting criterion validity of the *LITE-S*. Test-retest reliability of the *LITE-S* was demonstrated in a study conducted to investigate traumatic events and the effects of the trauma based on reported symptoms among 84 female and male students in 8th and 9th grade in schools from different socio-economic areas (Nilsson, Gustafsson, & Svedin, 2010). Three weeks after the first administration, students completed the *LITE-S* a second time, and test-retest reliability was observed at $r = .76$, suggesting that this instrument has adequate psychometric properties for use with an adolescent population.

*Perceived Access to Support Subscale of the Sense of
Relatedness Scale of the Resiliency Scales for
Children and Adolescents*

To examine role of social support as a protective factor for adolescents' trauma exposure, the Perceived Access to Support subscale of the Sense of Relatedness Scale (REL-Support) from Prince-Embury's (2007) *Resiliency Scales for Children and Adolescents* was used to assess adolescents' perceived access to support. The REL-Support Subscale consists of six items, such as "There are people who will help me if something bad happens." Adolescents were required to respond to a frequency-based, 5-point Likert scale: 0 (Never), 1 (Rarely), 2 (Sometimes), 3 (Often), 4 (Almost Always). The REL-Support Subscale total raw score is converted to a scaled score with a mean of 10 and standard deviation of 3.

This measure has been used in several studies examining the role of support for adolescents within normative populations (e.g., Prince-Embury, 2009; Prince-Embury & Steer, 2010). The REL-Support Subscale has demonstrated good reliability and validity with a young adolescent population. In a sample of 224 female and male participants ages 12 to 14 years, internal consistency was reported at .71, while test-retest reliability was demonstrated at .70 by administering the measure two times to 49 female and male participants, ages 9 to 14 years (Prince-Embury, 2007). Some evidence for convergent validity was observed with a diverse sample of 24 females and 25 males between the ages of 15 to 18 years by comparing the scores on the REL-Support Subscale and the *Piers-Harris Children's Self-Concept Scale, Second Edition* (Prince-Embury, 2007). The sample was composed of. The correlation between the measures was reported at .45.

Safe and Responsive Schools Safe Schools Survey

Due to the significant amount of time adolescents spend at school, it is important that adolescents feel safe in their school environment. Research has suggested that a positive school climate may be a protective factor for youth (Whitlock, 2006). To explore the role of school safety as a protective factor for adolescents exposed to trauma, adolescents completed the secondary student version of the *Safe and Responsive Schools (SRS) Safe Schools Survey* (Skiba et al, 2004). The *SRS Safe Schools Survey* was selected due to its construction based on a comprehensive model of school safety by which serious violence and school climate are both assessed. Consisting of 45 items, the *SRS Safe Schools Survey* required the adolescents to record their responses using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Skiba et al. (2004) used a principal components analysis to establish four distinct scales that accounted for 51.67% of the shared variance: Climate/Connection, Incivility and Disruption, Personal Safety, and Delinquency/Major Safety. The Climate/Connection Scale includes 19 items describing the degree of connection students feel with the school and their perception of the responsiveness of the school atmosphere (e.g., “I am proud of this school”). The Incivility and Disruption Scale contains 7 items about the civility of interpersonal relationships among students as observed by the frequency of name calling, conflicts, and arguments (e.g., “Groups of students cause problems or conflicts at school”). The Personal Safety Scale consists of 8 items focused on the feelings of personal safety in various settings (e.g., “I feel safe in the school hallways”). The Delinquency/Major Safety Scale includes 6 items representing students’ awareness of the presence of drugs, alcohol, knives, and smoking on school grounds (e.g., “I have seen

students with drugs or alcohol at school”). Scores of each scale of the *SRS Safe Schools Survey* are calculated by averaging the adolescents’ responses to items included in the scale. Therefore, the score for each subscale will range from 1 to 5. Higher scores reflect a greater sense of safety with respect to each assessed factor. On the Climate/Connection Scale and the Personal Safety scale, higher scores reflect a greater sense of connection and safety, respectively. On the Incivility and Disruption and Delinquency/Major Safety scales, higher scores are reflective of less perceived problems in the school environment.

Because the *SRS Safe Schools Survey* and other school safety measures were not created with the intention to be part of student-specific assessments, traditional psychometric analyses have generally not been conducted on these scales (Furlong, Morrison, Cornell, & Skiba, 2004). However, in the original development of the instrument, the sample consisted of a large, representative group with 2,277 female and male students in grades 6 through 12. Over 90% of the sample was reported to be White, 4.1% was reported to be biracial, multiracial, or other; and the remaining 5.4% was reported to be African American, Hispanic, Native American, or Asian/Pacific Islander. Skiba et al. (2004) argued that multivariate analyses revealing the four underlying factors of the *SRS Safe Schools Survey* provided a test of the construct validity of the measure. The *SRS Safe Schools Survey* has been used in subsequent studies investigating students’ perceptions about school safety (e.g., Booren, Handy, & Power, 2011; Skiba et al., 2006).

*Trauma Symptom Checklist for Children-Alternate
Version-Post-traumatic Stress Scale*

The *Trauma Symptom Checklist for Children-Alternate Version-Post-traumatic Stress Scale (TSCC-A-PTS)* (Briere, 1996) was used to assess adolescents’ trauma-related symptoms. After a principal at one of the participating schools expressed concerns about

items tapping sexual symptoms and preoccupation, it was decided that the alternate version of the *TSCC*, the *TSCC-A*, which makes no reference to sexual issues, would be used. It appears that similar concerns were raised when the *TSCC* was initially produced, as all subjects in the normative sample who were tested in schools were also administered the alternate version of the *TSCC* (Briere, 1996). The *TSCC-A-PTS* consists of ten items reflecting classic post-traumatic symptoms, including intrusive thoughts, sensations, and memories of painful past events; nightmares, fears of men or women; and cognitive avoidance of negative thoughts and memories. Participants were required to indicate how often he/she experiences each symptom by responding to a frequency-based, 4-point Likert scale: 0 (It never happens), 1 (It happens sometimes), 2 (It happens lots of times), or 3 (It happens almost all of the time). The *TSCC-A-PTS* is scored by adding the item responses to obtain a raw score, which is then converted to a *T*-score, with a mean of 50 and standard deviation of 10. Higher scores on the *TSCC-A-PTS* are indicative of more post-traumatic stress symptomatology.

The *TSCC* has been normed on various population samples and has been shown to be strongly correlated with children's report of behavioral problems as measured by the *Child Behavior Checklist* (Achenbach, 1991; Briere & Lanktree, 1995) and with adolescents' reports of experiencing trauma (Singer, Anglin, Song, & Lunghofer, 1995). Construct validity was examined in Singer et al.'s (1995) study, in which 2,399 female and male students between 14 and 19 years of age from urban and suburban schools were administered the *TSSC-A*. Participants' exposure to violence was found to be associated with a significant amount of variance in the *TSSC-A-PTS* score (.22). Regarding reliability, high internal consistency (.87) was observed for the *TSCC-A-PTS* in the

normative sample, which consisted of 3,008 female and male students from urban and suburban locations. Of these participants, 44% were reported to be Caucasian, 27% Black, and 22% Hispanic.

Beck Depression Inventory for Youth

Depression is a common internalizing disorder resulting from exposure to trauma. *The Beck Depression Inventory for Youth (BDI-Y)* was used to assess adolescents' depressive symptoms. The *BDI-Y* consists of 20 items that reflect the adolescents' negative thoughts about himself or herself, his or her life, and future; feelings of sadness; and physiological indications of depression. Adolescents were required to indicate how frequently each statement is true for them, including today. To score the *BDI-Y*, responses of the items are added to obtain a total raw score, which was converted to a *T*-score, resulting in a mean of 50 and standard deviation of 10. Higher scores are suggestive of a greater severity of depressive symptoms.

The *BDI-Y* has demonstrated satisfactory psychometric properties for identifying clinically depressed youth. Internal consistency was observed at $r = .86$ to $r = .92$, and test-retest reliability coefficients ranged from $.91$ to $.92$ (Beck et al., 2005). Beck et al. also demonstrated validity of the *BDI-Y* by correlating it with the *Children's Depression Inventory* (Kovacs, 1992), an instrument commonly used to assess depression among youth. The correlation between these two measures was found to be $.72$. The population sample used in these investigations consisted of 800 females and males, ages 7 through 14, from rural and urban communities across the United States. Sampling was stratified to match the U.S. census by ethnicity and by parent education level.

*The Behavior Assessment System for Children-Second
Edition-Teacher Rating Scale*

To gain a second perspective of participating adolescents' psychological functioning, teachers were administered selected items of *The Behavior Assessment System for Children-Second Edition-Teacher Rating Scale (BASC-2 TRS)* (Reynolds & Kamphaus, 2004). Because adolescents have been shown to be the most sensitive reporters of internalizing symptoms (Kazdin, 1994), the present study focused on teachers' ratings of adolescents' externalizing behavior problems and adaptive functioning. Teachers were asked to complete two composites of the *BASC-2 TRS*. The Externalizing Problems Composite consists of 33 items and reflects the adolescent's overall disruptive behavior symptoms and includes the Aggression (i.e., tendency to act in a verbally or physically threatening manner toward others, such as name calling and hitting), Conduct Problems (i.e., tendency to engage in antisocial or rule-breaking behavior, such as stealing and cheating in school), and Hyperactivity (i.e., tendency to be overly active and impulsive) Subscales. The Adaptive Skills Composite includes 39 items and assesses appropriate emotional expression and control, daily-living skills inside and outside the home, and communication skills, as well as prosocial, organizational, study, and other adaptive skills. The teachers were required to rate various behaviors on a four-point scale of frequency, ranging from *Never* to *Almost Always*.

Composites are scored by summing the item scores of each subscale to obtain a total raw score, which is converted to a *T*-score for the subscale; the *T*-scores of the subscales are then summed and converted to the *T*-score for the composite. *T*-scores are standardized to have a mean of 50 and standard deviation of 10. Only *T*-scores of the Externalizing Problems and Adaptive Skills Composites were used in analyses. Higher

scores on the Externalizing Problems Composite are indicative of a greater number of externalizing problems, whereas higher scores on the Adaptive Skills Composite are suggestive of more adaptive skills.

The *BASC-2 TRS* is the most widely used measure of children's behaviors in the classroom (Reynolds & Kamphaus, 2004). Test-retest reliability estimates were reported as .89 for ages 4 to 5, .91 for ages 6 to 11, and .82 for ages 12 to 18 (Reynolds & Kamphaus, 2004). Construct validity was established by administering the *Achenbach Teacher Report Form* (Achenbach, 1991) to 50 teachers who had also completed the *BASC-2 TRS*. Correlations between the two instruments ranged from .73 to .92 for the composite scores, indicating that the two scales measured similar constructs.

Procedures

Before data were collected, institutional approval was obtained from the University of Northern Colorado Institutional Review Board (IRB). See Appendix A for a copy of the IRB Approval. Schools were recruited by contacting principals who were known by the researcher or the researcher's assistant. The researcher then described the study to the principals, who identified teachers who may be interested in participating. Each school was visited to discuss the study and review the administered measures with the principal and participating teachers. To maximize representation at each school, the sample included students in mandatory classes (i.e., math/science, English, or general advisory classes rather than elective, honors, or remedial classes). All adolescents in the participating classes were invited to participate in the study. A consent form describing the study in the students' native languages was distributed to students to take home for parental consent; in addition, students were provided an assent form which described the

study. See Appendix B for copies of the consent and assent forms. Only students who had obtained parental consent and provided assent participated in the study.

Quantitative Data Collection

As a group, participating adolescents completed the previously described psychological measures administered by the researcher or researcher's assistant during an allotted 45-minute period of time in class. The order in which measures were presented was consistent across participants, as it was unlikely that a fatigue effect was a factor after only 45 minutes of test administration.

Identity of participants was protected by using numeric identifiers on psychological measures. Because there was a possibility that completing psychological measures related to trauma exposure and psychological functioning may cause psychological discomfort, the researcher's assistant, who is a licensed psychologist, was present while adolescents completed the measures and available after completion of the measures to meet with participants who were experiencing psychological discomfort related to the measures' content. There did not appear to be any participants who were experiencing overt psychological discomfort during or after completion of the measures. Students who did not participate in the study were allowed to use the time as a "study hall", during which they read, studied, or completed homework independently at their desks. While participating adolescents completed the psychological measures, teachers rated adolescents' externalizing behavior problems and adaptive functioning. All students in participating classes, regardless if they participated in the study or not, were rewarded with a pizza party approximately two weeks after data collection, and participating

teachers and principals received a \$20.00 gift card from Barnes and Noble as a measure of gratitude for participation in the study.

Qualitative Data Collection

To understand the underlying mechanisms of the relationship between trauma exposure and adolescents' psychological functioning as moderated by access to support and sense of school safety, qualitative data were embedded and served as a secondary role within the quantitative data set described above. Specifically, semi-structured interviews were conducted with adolescents who shared their perspectives on the process by which access to support and sense of school safety have influenced their psychological functioning associated with trauma exposure. At the end of the packet of psychological measures completed by adolescents participating in the quantitative data collection, participants were asked to indicate if they would be interested in sharing their experience of how support and school safety influenced their psychological functioning related to trauma exposure with the researcher in a later interview by checking a yes/no box. Interested adolescents, identified by their previously assigned numeric identifiers, were contacted at their school through their teacher who participated in the quantitative data collection, to confirm interest in the interview. An additional consent form was given to potential interviewees for parental consent, and an additional assent form was provided to potential interviewees. See Appendix B for copies of the consent and assent forms. Only participants who obtained additional parental consent were allowed to participate in the interview.

Six adolescents indicated interest in participating in the interviews and were interviewed for the qualitative data collection of the study. To determine which interview

questions would be selected for the study, other studies exploring protective factors for youth exposed to trauma which incorporated a qualitative component were examined (Ratrin Hestyanti, 2006; Ozer & Weinstein, 2004). Interview questions were developed based on ideas gleaned from these investigations and research questions specific to the current study. Generally, the interview protocol was consistent among participants, and 15 general questions focused on the type of trauma experienced, perspectives of one's psychological functioning, including post-traumatic stress and depressive symptoms; one's perception about the level of access to support and sense of safety at school with regard to climate/connection, incivility/disruption, personal safety, and delinquency/major safety; and the ways by which support and sense of school safety relate to their psychological functioning associated with trauma exposure. Sample interview questions/items included "Tell me about the people in your life who care about you", "What is your sense of belonging at your school—how do you fit in?", "How did people help you when you experienced your traumatic event", and "How did the level of conflicts among students at school impact your emotional state?" Please refer to Appendix C for the complete interview protocol.

Interviews were conducted approximately one week after the quantitative data set was collected. Most of the interviews were about 30 minutes in duration and all were digitally recorded. They were conducted at the participant's school after the school day in the counselor's office and coordinated with the participants and parents/guardians. Similar to the quantitative data collection, there was a possibility that participating in the interview may induce psychological discomfort for adolescents who have experienced a traumatic event. To help alleviate and process any potential psychological discomfort,

participants and their parents/guardians were informed that the researcher's assistant, a psychologist, was available during the interview and after completion of the interview to meet with any participants experiencing psychological discomfort related to the interview's content. All six adolescents who participated in the interview declined offers for such assistance, although it appeared that one participant experienced a moderate level of psychological discomfort (i.e., intermittent crying) during the interview.

Data Analysis

Quantitative Data Analysis

Descriptive statistics and hierarchical multiple regression was used to analyze the quantitative data set and answer the following research questions:

- Q1 Do adolescents who report a higher level of trauma exposure have more deficits in psychological functioning (i.e., post-traumatic stress and depressive symptoms, externalizing problems, and adaptive functioning)?
- a. Do adolescents who report a higher level of trauma exposure endorse more post-traumatic stress symptoms?
 - b. Do adolescents who report a higher level of trauma exposure endorse more depressive symptoms?
 - c. Do adolescents who report a higher level of trauma exposure have more externalizing problems, as rated by their teachers?
 - d. Do adolescents who report a higher level of trauma exposure have lower adaptive functioning, as rated by their teachers?
- Q2 What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of protective factors (e.g., perceived access to support, school safety)?
- a. What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of perceived access to support?
 - b. What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of school safety with regard to Climate/Connection?

- c. What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of school safety with regard to Incivility and Disruption?
- d. What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of school safety with regard to Personal Safety?
- e. What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of school safety with regard to Delinquency/Major Safety?

Prior to testing the research questions, student demographic data and simple descriptive statistics, including correlations, means, and standard deviations were calculated for each variable. Statistical analyses were conducted using the Predictive Analytics Software (PASW) (Statistical Package for the Social Sciences) Statistics-Version 18.0. These preliminary statistics were conducted to investigate whether any demographic variables were influencing outcomes and would need to be statistically controlled in subsequent analyses. Hierarchical multiple regression was used to predict adolescents' psychological functioning. Hierarchical multiple regression is a variant of multiple regression in which several independent variables, which may include interaction terms, are entered in different steps to predict a dependent variable (Tabachnick & Fidell, 1989). It reveals how well each independent variable predicts the dependent variable, controlling for all of the other independent variables in the regression equation. Before hierarchical multiple regression was conducted, however, data were analyzed to assure they met the assumptions of regression.

Possible moderating variables of the relationship between trauma exposure and psychological functioning were also investigated. A moderating variable is one which interacts with the independent variable to predict an outcome (i.e., dependent variable) (Aiken & West, 1991). After hierarchical multiple regressions were conducted,

significant interactions were plotted, and simple slopes at low, medium, and high levels of each moderating variable (i.e., support, school climate, personal safety) were tested to determine if they differed significantly from zero. The purpose of creating differing levels of the moderating variable is to provide various data points with which to plot the interaction for interpretation because an interaction may be significant at one value of the variable and insignificant at another (Aiken & West, 1991). Thus, specific levels of a moderating variable under particular conditions (e.g., low, medium, and high levels) of the independent variable may predict differing levels of the dependent variable.

One standard deviation below the mean, the mean, and one standard deviation above the mean were used to establish the low, medium, and high levels of each moderator variable (Aiken & West, 1991). The potential moderating variables investigated in the study were perceived access to support and school safety with regard to climate/connection, incivility and disruption, personal safety, and delinquency/major safety. Any demographic variables that appeared to be influencing psychological functioning as assessed by significant differences revealed in preliminary analyses were also investigated to determine its potential as a moderator.

Qualitative Data Analysis

Qualitative and quantitative data analysis was conducted concurrently. Coding, content analysis and thematic generation were used to analyze the qualitative data set and answer the following research question:

- Q3 What are the underlying mechanisms relating adolescents' access to support and school safety and their psychological functioning? How do they perceive access to support and school safety in their own ability to function after trauma?

Digital recordings of the interviews were transcribed into a word-processing file for analysis. Data were explored by reading through the transcripts to gain a general understanding of the database. Analysis was conducted by hand-coding the data, dividing the text into small units, and assigning a label to each unit. Coding can be defined as the process of grouping evidence and labeling ideas so they reflect increasingly broader perspectives (Creswell & Plano Clark, 2007). The label for each unit was then used to generate themes of the data.

Results of the qualitative data set were presented as themes that emerged from interviews, along with accompanying quotes from participants to illustrate their perspectives. Names of adolescents included in quotes from the interviews have been changed to protect the identity of participants.

The trustworthiness of the qualitative data was established in three ways. First, data were triangulated by building evidence for a theme from several individuals. Validity was confirmed through reporting disconfirming evidence, which is information that presents a perspective contrary to the one indicated by the established evidence (Creswell & Plano Clark, 2007). A colleague of the researcher, who is familiar with qualitative research, also examined the data by reading the transcripts of all interviews, coding, and developing themes. After comparing the colleague's themes with that of the researcher, no changes were deemed necessary due to the themes' similarities.

CHAPTER IV

RESULTS

Quantitative Results

The primary purpose of the study was to evaluate how perceived access to support and school safety influence psychological functioning in relation to adolescents' exposure to trauma. Descriptive statistics and hierarchical multiple regression were used to answer the research questions in the study. These analyses revealed that adolescents who reported a higher level of trauma exposure were observed to have more deficits in each assessed domain of psychological functioning. The relationship between trauma exposure and psychological functioning of adolescents who reported varying levels of possible protective factors appeared to differ by particular demographic variables.

Descriptive Results

Because data were collected from two different schools, the possibility of school effects in the dependent variables was examined to test the independence assumption, which states that the errors associated with one observation are not correlated with the errors of any other observation. Other demographic variables (e.g., gender, ethnicity, special education/general education placement, and free/reduced lunch status) for each school were also examined to determine how similar they are in representation. The independence assumption was met, as the value of the Durbin-Watson Test was less than 2 for all dependent variables, and demographic variables were considered to be fairly

equally represented by each school. As such, data were analyzed across the sample of adolescents from both schools.

One-hundred percent of adolescent subjects reported experiencing a traumatic event in their lifetime, as measured by the *Life Incidence of Traumatic Events-Student Form (LITE-S)*. Events endorsed by adolescents included “being hit, whipped, beaten or hurt by someone”, “seen someone else get hurt”, “someone in the family in the hospital (hurt or sick)”, “someone in the family died”, “parents separated or divorced”, “been in a car accident”, “been hurt in an accident other than a car accident or sick in the hospital”, “been tied up or locked in a small space”, “friend very sick, hurt, or died”, “parents (or grown-ups) broke things or hurt each other”, “been threatened (someone said they would do something bad)”, “been robbed (or house robbed)”, “been in tornado”, and “been taken away from family” (see Table 1 for a complete listing of events and sample responses).

The average number of lifetime traumatic events endorsed by adolescents was 9.96. While past studies employing the *LITE-S* have interestingly not reported the average number of lifetime traumatic events, the prevalence of trauma exposure in the current study is slightly higher than what has been reported in past studies. Whereas 100% of adolescents in the current sample reported experiencing at least one traumatic event in their lives, Greenwald and Rubin (1999) and Nilsson et al. (2010) reported estimates of at least 50% and 90% among their samples, respectively. However, some of the events endorsed in the current study may not have been traumatic, suggesting one to interpret the high prevalence of trauma exposure with caution. For the present sample, the reliability of the *LITE-S* was .77, suggesting a moderate level of internal consistency.

Table 1. *Percentage of Sample Exposed to Various Traumatic Events During Lifetime*

	Total	Male	Female
Been in car accident	12 (9)	14 (6)	4 (3)
Been hurt in accident other than car accident or sick in the hospital	42 (33)	50 (21)	33 (12)
Seen someone else get hurt	65 (51)	71 (30)	58 (21)
Someone in the family in the hospital (hurt or sick)	58 (45)	43 (18)	75 (27)
Someone in the family died	77 (60)	57 (24)	100 (36)
Friend very sick, hurt, or died	8 (6)	14 (6)	0 (0)
Been in a fire	0 (0)	0 (0)	0 (0)
Been in a tornado	8 (6)	7 (3)	8 (3)
Parents broke things or hurt each other	8 (6)	14 (6)	0 (0)
Parents separated or divorced	42 (33)	36 (15)	50 (18)
Been taken away from family	8 (6)	7 (3)	8 (3)
Been hit, whipped, beaten, or hurt by someone	23 (18)	36 (15)	3 (8)
Been tied up or locked in a small space	4 (3)	7 (3)	0 (0)
Been made to do sex things	1 (1)	0 (0)	1 (1)
Been threatened (someone said they would do something bad)	12 (9)	14 (6)	8 (3)
Been robbed (or house robbed)	8 (6)	14 (6)	0 (0)

Note: Percentages are followed by the number of participants in parentheses.

Regarding psychological functioning, the overall mean T-scores were 45.92 for the *Trauma Symptom Checklist for Children Post-traumatic Stress Subscale (TSCC-A-PTS)*, 44.35 for the *Beck Depression Inventory-Youth (BDI-Y)*, 46.73 for the *Behavioral Assessment System for Children-Second Edition Teacher Rating Scale-Externalizing Composite (BASC-2 TRS Externalizing Composite)*, and 57.62 for the *BASC-2 TRS Adaptive Skills Composite*. Overall, these mean scores indicate that the sample was not indicating symptoms of post-traumatic stress disorder or externalizing behaviors, and their adaptive behavior was in the average range. This instrument demonstrated a high level of internal consistency with a Cronbach's alpha of .83 for the Externalizing Problems Composite of the *BASC-2 TRS*, and .84 for the Adaptive Skills Composite of the *BASC-2 TRS*.

The overall mean scaled score for the predicted resiliency factor of social support, as measured by the *Perceived Access to Support Subscale of the Sense of Relatedness Resiliency Scale for Children and Adolescents (REL-Support)*, was 9.69. The overall mean scores of the scales of the *Safe Schools Survey-Secondary Student Form* were 4.14 for Connection/Climate, 2.96 for Incivility/Disruption, and 3.52 for Delinquency/Major Safety. See Table 2 for a display of correlations, means, and standard deviations of all variables. The reliability of these measures for the current study sample also demonstrated moderate to high internal consistency (.82 for the *REL-Support*, .81 for the Climate/Connection Scale of the *SRS Safe Schools Survey*, .79 for the Incivility and Disruption Scale of the *SRS Safe Schools Survey*, .80 for the Personal Safety Scale of the *SRS Safe Schools Survey*, and .76 for the Delinquency/Major Safety Scale of the *SRS Safe Schools Survey*).

Adolescents' Psychological Functioning by Demographics

Prior to testing the research questions, preliminary statistics were conducted to investigate whether any demographic variables were influencing outcomes and would need to be statistically controlled in subsequent analyses. These analyses revealed differences between adolescents' psychological functioning by particular demographic variables. However, the following statistics need to be interpreted with caution, as there were unequal sample sizes of each level of some variables, particularly regarding special education/general education placement and ethnicity. There were 9 participants who indicated receiving special education services, whereas 69 participants reported receiving general education. Similarly, 66 participants identified their ethnicity as White/European

Table 2. *Correlations, Means, and Standard Deviations of Variables*

	1	2	3	4	5	6	7	8	9
1. Trauma Exposure	--	-.42**	-.21	-.37**	-.40**	.86**	.79**	.61**	-.40**
2. Access to Support		--	.51**	.24*	.24*	-.63**	-.63**	-.40**	.47**
3. School Safety (Climate/Connection)			--	.34**	.42**	-.39**	-.33**	-.15	.02
4. School Safety (Incivility/Disruption)				--	.66**	-.46**	-.29**	-.23*	-.06
5. School Safety (Delinquency/Major Safety)					--	-.45**	-.29**	-.30**	.08
6. PTS Symptoms						--	.86**	.69**	-.47**
7. Depressive Symptoms							--	.74**	-.47**
8. Teacher-Rated Externalizing Behaviors								--	-.51**
9. Teacher-Rated Adaptive Functioning									--
Mean	9.96	9.69	4.14	2.96	3.52	45.92	44.35	46.73	57.62
Standard Deviation	10.12	3.76	.55	.78	.88	11.72	13.58	6.63	10.50

Note: *p < .05, **p < .01

American, while 12 participants identified their ethnicity as Latino/Latina, Asian, or Native American.

Adolescents' report of post-traumatic stress symptoms varied by gender and special education/general education placement. One-way ANOVAs were conducted and showed that males ($M = 49.79$) reported more post-traumatic stress symptoms than females ($M = 41.42$, $F = 11.19$, $p < .01$), while adolescents receiving special education services also reported more post-traumatic stress symptoms ($M = 54.67$) than those not receiving special education services ($M = 44.78$, $F = 6.03$, $p < .05$). There were no significant differences in adolescents' report of post-traumatic stress symptoms by ethnicity or free/reduced lunch status.

Significant differences in adolescents' endorsed depressive symptoms existed between gender, special education/general education placement, and free/reduced lunch status. Again, males ($M = 47.14$) endorsed more depressive symptoms than females ($M = 41.08$, $F = 4.01$, $p < .05$), and adolescents receiving special education services also endorsed more depressive symptoms ($M = 58.00$) than those not receiving special education services ($M = 42.57$, $F = 11.72$, $p < .01$). Adolescents who reported receiving free/reduced lunches endorsed more depressive symptoms ($M = 48.56$) than those who reported not receiving free/reduced lunches ($M = 42.12$, $F = 4.13$, $p < .05$). Adolescents' report of depressive symptoms did not significantly vary by ethnicity. The gender differences observed in the current study contrast with much of the past research, which has reported that females exposed to trauma tend to endorse more post-traumatic stress symptoms and internalizing problems, such as depressive symptoms than males (e.g.,

Schaal & Elbert, 2006; Shannon, Lonigan, Finch, & Taylor, 1994). It is unclear why this gender difference was observed in the current sample.

Teachers' report of adolescents' externalizing behaviors varied by special education/general education placement and free/reduced lunch status. Adolescents receiving special education services ($M = 53.33$) were rated by their teacher as having more problems with externalizing behaviors than those not receiving special education services ($M = 45.87$, $F = 11.45$, $p < .01$). Teachers rated adolescents who reported receiving free/reduced lunches ($M = 50.67$) as having more problems with externalizing behaviors than those who reported not receiving free/reduced lunches ($M = 44.65$, $F = 17.69$, $p < .01$). Significant differences were not observed among adolescents' externalizing problems by gender or ethnicity.

Teachers' report of adolescents' adaptive functioning differed by ethnicity, special education/general education placement, and free/reduced lunch status. Post hoc tests revealed that European American ($M = 58.5$) and Asian ($M = 71.0$) adolescents were rated significantly higher than Latino/Latina ($M = 42.5$) adolescents by their teachers regarding adaptive functioning ($p < .01$). Adolescents receiving special education services were rated by their teacher as having lower adaptive functioning ($M = 41.00$) than those not receiving special education services ($M = 59.78$, $F = 37.53$, $p < .01$). Teachers rated adolescents who reported receiving free/reduced lunches as having lower adaptive functioning ($M = 48.89$) than those who reported not receiving free/reduced lunches ($M = 62.24$, $F = 44.66$, $p < .01$). Adolescents' adaptive functioning did not significantly differ by gender. The differences in externalizing problems and adaptive functioning by special education/general education placement have also been

observed in prior research. Such studies found that adolescents receiving special education are more likely to experience problems with externalizing behaviors and adaptive functioning (Pastor & Reuben, 2009; Talbott & Fleming, 2003).

Prediction of Adolescents' Psychological Functioning

Hierarchical multiple regression was used to predict adolescents' current level of psychological functioning. Before hierarchical multiple regression was conducted, however, data were analyzed to assure they met the assumptions of regression. Data were checked for outliers and tested for normality through examination of the residuals plots. The majority of the residuals were near the center of the plot for each value of the predicted score, suggesting a fairly normal distribution, and no cases existed which appeared to produce outliers that were not part of the same population as the other cases. Linearity was tested by examining the residuals plots; the relationship between residuals and predicted dependent variables was fairly linear. The assumption of homoscedasticity was verified through confirming that the residuals plots were the generally the same width for all values of the predicted dependent variables. Multicollinearity, the condition in which independent variables are highly correlated, was tested by examining correlations among the independent variables. To prevent redundancy of independent variables and a weak analysis, it is recommended to not include two independent variables that correlate with one another at .70 or greater (Aiken & West, 1991). Because independent variables School Safety (Personal Safety) and School Safety (Climate/Connection) were highly correlated ($r = .72$), School Safety (Personal Safety) was deleted as variable, as it correlated more highly with other constructs of school safety

(i.e., incivility/disruption and delinquency/major safety) than did School Safety (Climate/Connection) (Aiken & West, 1991).

- Q1 Do adolescents who report a higher level of trauma exposure have more deficits in psychological functioning (i.e., post-traumatic stress and depressive symptoms, externalizing problems, and adaptive functioning)?
- a. Do adolescents who report a higher level of trauma exposure endorse more post-traumatic stress symptoms?
 - b. Do adolescents who report a higher level of trauma exposure endorse more depressive symptoms?
 - c. Do adolescents who report a higher level of trauma exposure have more externalizing problems, as rated by their teachers?
 - d. Do adolescents who report a higher level of trauma exposure have lower adaptive functioning, as rated by their teachers?

To predict adolescents' current level of psychological functioning, hierarchical multiple regression was conducted, with demographic variables (e.g., gender, ethnicity, special education/general education placement, and free/reduced lunch status) included as control variables. More exposure to trauma was found to be significantly related to more deficits in each of the assessed areas of psychological functioning: post-traumatic stress symptoms ($B = .80, p < .01$), depressive symptoms ($B = .74, p < .01$), teacher-rated externalizing problems ($B = .52, p < .01$), and teacher-rated adaptive functioning ($B = -.25, p < .01$).

- Q2 What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of protective factors (e.g., perceived access to support, school safety)?
- a. What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of perceived access to support?
 - b. What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of school safety with regard to Climate/Connection?
 - c. What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of school safety with regard to Incivility and Disruption?

- d. What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of school safety with regard to Personal Safety?
- e. What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of school safety with regard to Delinquency/Major Safety?

*Possible Moderators of the Relationship Between
Adolescent Exposure to Trauma and
Psychological Functioning*

Possible moderating variables of the relationship between trauma exposure and psychological functioning were investigated using hierarchical multiple regressions. Demographic variables (ethnicity, gender, special education services, free/reduced lunches) were included as control variables. Categorical variables with more than two levels (i.e., ethnicity) were dummy-coded. All continuous variables were centered by subtracting the mean from each observed value (Aiken & West, 1991). Centering has been recommended by Aiken and West to reduce multicollinearity (high correlations among predictor variables). Interaction terms were entered after control variables, trauma exposure, and moderating variables contributing to the interaction term (see Table 3). Significant interactions were plotted and simple slopes at low, medium, and high levels of each moderating variable were tested to determine if they differed significantly from zero. The purpose of creating differing levels of the moderating variable was to provide various data points with which to plot the interaction because an interaction may be significant at one value of the variable and insignificant at another. As such, one standard deviation below the mean, the mean, and one standard deviation above the mean were used to establish the low, medium, and high levels of each moderator variable (Aiken & West, 1991).

Table 3. *Hierarchical Multiple Regressions Predicting Psychological Functioning*

	PTS Symptoms			Depressive Symptoms			Teacher-Rated Externalizing Problems			Teacher-Rated Adaptive Functioning		
	Adj R ²	R ² change	B	Adj R ²	R ² change	B	Adj R ²	R ² change	B	Adj R ²	R ² change	B
Trauma Exposure	.79	.60**	.80**	.74	.51**	.74**	.52	.25**	.52**	.71	.06**	-.25**
Interactions												
Social Support	.84	.01**	-.26**	.80	.03**	-.21**	.52	.01	.24**	.71	.01	.13
Social Support x Trauma	.86	.04**	-.20**	.79	.02**	-.19**	.75	.20**	-.61**	.71	.00	.02
School Safety (Climate/Connection)	.80	.01*	-.27**	.74	.00	-.09	.53	.01	-.01	.72	.01	-.07
School Safety (Climate/Connection) x Trauma	.85	.04**	-.31**	.73	.00	-.05	.59	.06**	-.37**	.72	.01	.16
School Safety (Incivility/Disruption)	.80	.01*	-.14*	.73	.00	-.06	.52	.00	-.13	.73	.02*	-.10
School Safety (Incivility/Disruption) x Trauma	.80	.00	-.10	.75	.01*	-.21*	.61	.09**	-.55**	.77	.04**	.37**
School Safety (Delinq./Major Safety)	.80	.01	-.08	.74	.00	.06	.52	.00	-.08	.71	.01	-.12
School Safety (Delinq./Major Safety) x Trauma	.80	.00	-.12	.74	.01	.16	.52	.01	.19	.74	.02**	.30**

Note: Displayed are two-way interaction terms, which were rotated in after controlling for gender, ethnicity, special education placement, and free/reduced lunch status, and entering trauma exposure; B represents standardized beta coefficients. *p < .05, **p < .001

Based on results of preliminary analyses suggesting that demographic variables were influencing outcomes, three-way interactions were also conducted to determine if particular demographic variables, along with the following protective factors, influenced adolescents' psychological functioning related to trauma exposure. Ethnicity and special education/general education placement were not included in three-way interactions due to the unequal sample sizes of each variable, which would yield results that are difficult to interpret in a meaningful way. Thus, three-way interactions (Trauma Exposure x Possible Protective Factor x Gender; Trauma Exposure x Possible Protective Factor x Free/Reduced Lunch Status) were assessed for each area of psychological functioning. Results below will focus on the significant two-way interactions to provide containment within the scope of the study; however, significant three-way interactions will be described within each of the following potential protective factors.

*Adolescents' Perceived
Access to Support*

Higher trauma exposure was found to be associated with more post-traumatic stress symptoms under low ($t = 13.50, p < .01$), medium ($t = 11.24, p < .01$), and high ($t = 8.98, p < .01$) levels of perceived social support (see Figure 2). This interaction demonstrated that perceived access to support played a buffering role as a variable by yielding a decrease in the association between trauma exposure and post-traumatic stress symptoms. Although this association held true for both males and females, it was more significant for males than females. Males with more access to support were associated with less post-traumatic stress symptoms as trauma exposure increased than males with less access to support. Among adolescents who indicated receiving free/reduced lunch, more access to support was associated with less post-traumatic symptoms as trauma

exposure increased, while this association was not observed among adolescents who indicated not receiving free/reduced lunch.

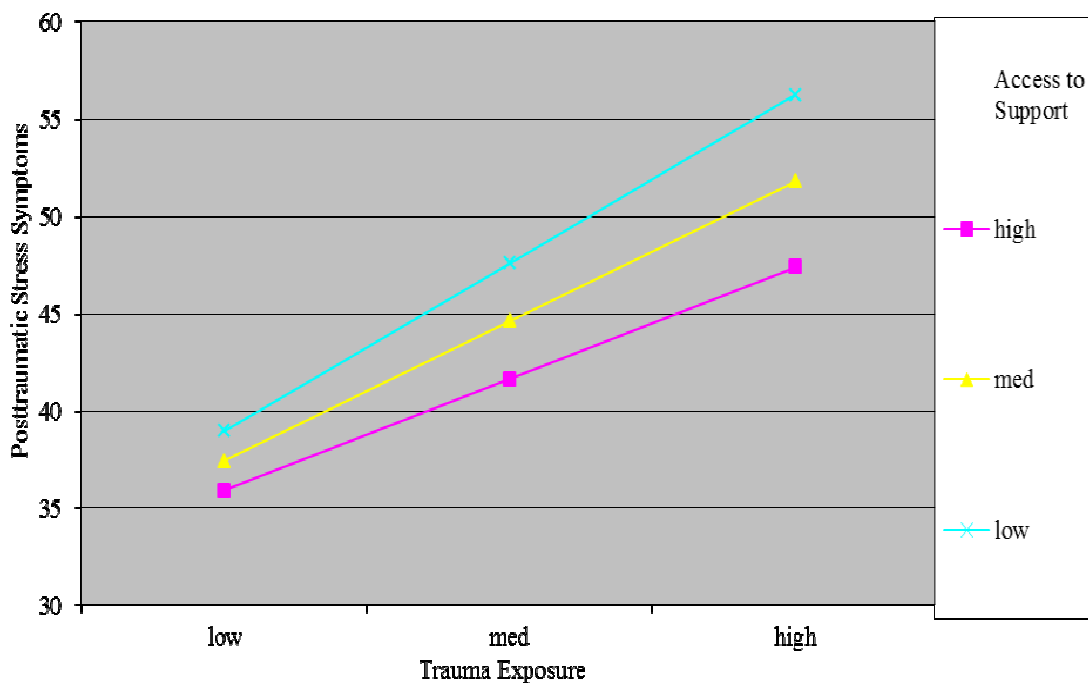


Figure 2. Trauma as Predictor of Post-traumatic Stress Symptoms by Access to Support

A similar relationship was observed for depressive symptoms: higher trauma exposure was associated with more depressive symptoms under low ($t = 42.43, p < .01$), medium ($t = 7.68, p < .01$), and high ($t = 42.43, p < .01$) levels of social support (see Figure 3). Again, perceived access to support appeared to play a buffering role by showing a decrease in the relationship between trauma exposure and depressive symptoms. This relationship was only significant among males. Males with more access to support were associated with less depressive symptoms as trauma exposure increased than males with less access to support, whereas females' levels of access to support was not associated with a difference in depressive symptoms. When free/reduced lunch status was entered as a variable, it was found that only adolescents who did not indicate

receiving free/reduced lunch were associated with less depressive symptoms. Such adolescents who reported more access to support endorsed less depressive symptoms than those who reported less access to support.

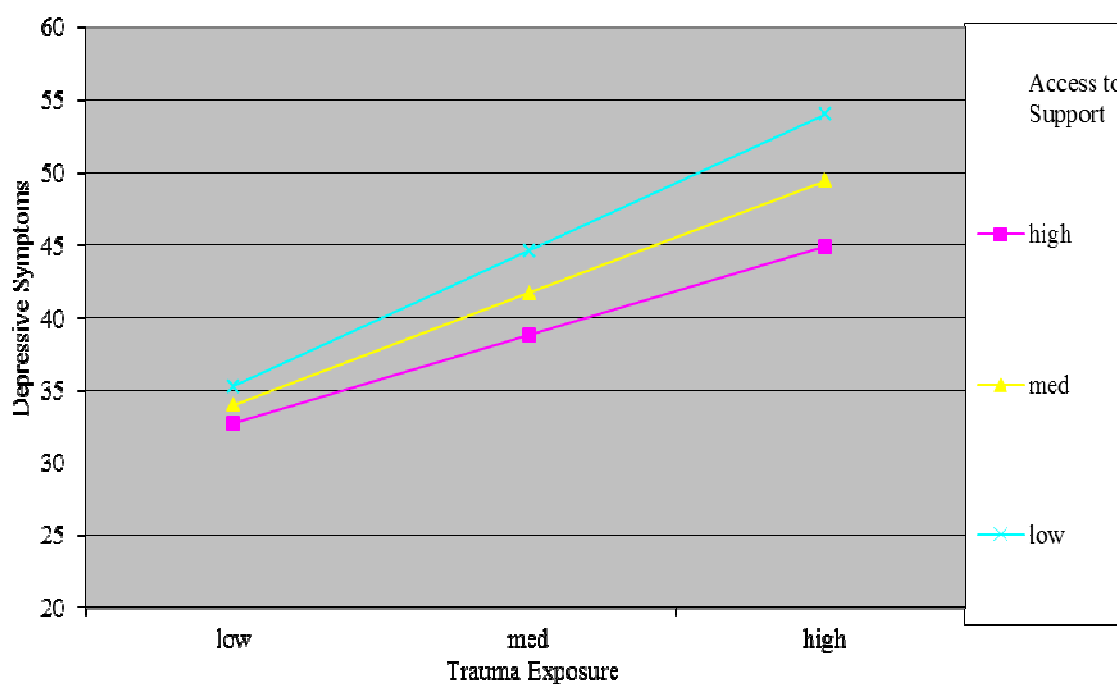


Figure 3. Trauma as Predictor of Depressive Symptoms by Access to Support

Adolescents who reported low ($t = 7.59, p < .01$) and medium ($t = 3.66, p < .01$) levels of perceived access to support were rated by their teachers as having more externalizing behavior problems as trauma exposure increased, whereas adolescents who reported a high level of perceived access to support did not experience a significant change in externalizing behavior problems, as rated by their teachers ($t = -1.66, p = .10$; see Figure 4). With gender entered as a variable, males who reported more access to support were rated by their teachers as having less externalizing problems as trauma exposure increased than males with less access to support. This association was not observed for females. More access to support was also associated with less externalizing

problems among adolescents who indicating receiving free/reduced lunch, whereas adolescents who did not indicate receiving free/reduced lunch were not associated with this difference. A significant interaction did not exist between trauma exposure as a predictor of adaptive functioning by perceived access to support.

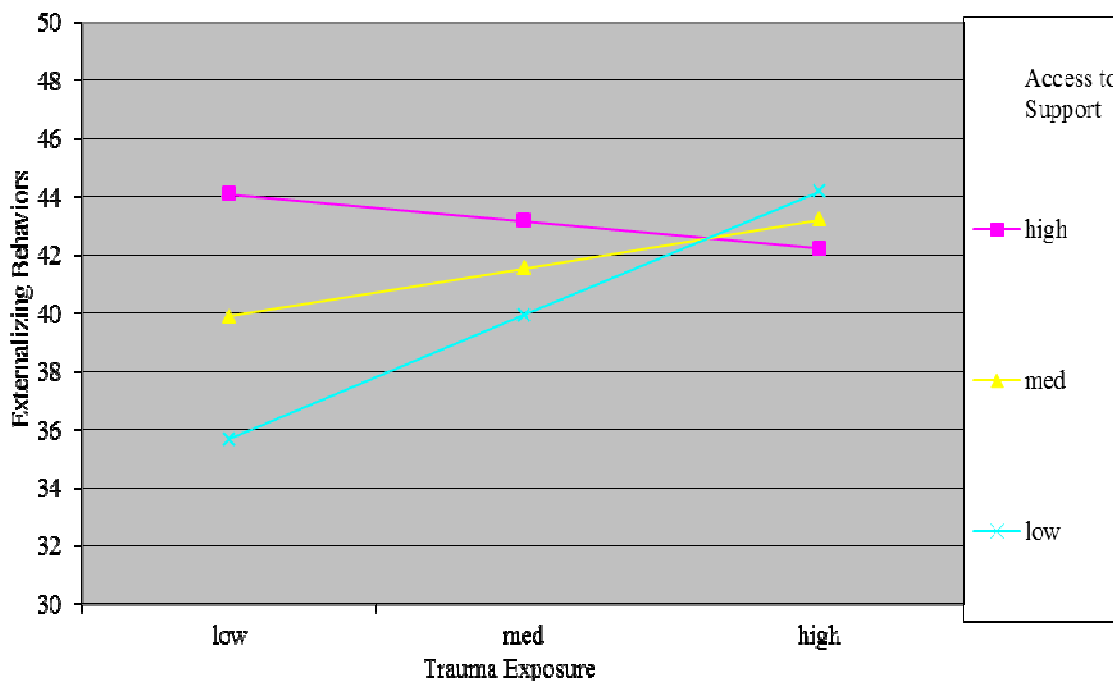


Figure 4. Trauma as Predictor of Externalizing Behaviors by Access to Support

Adolescents' Sense of School Safety with Regard to Climate/Connection

Higher trauma exposure was observed to be related to more post-traumatic stress symptoms under low ($t = 19.51, p < .01$), medium ($t = 3.47, p < .01$), and high ($t = 2.49, p = .0151$) levels of school safety (Climate/Connection) (see Figure 5). Adolescents' sense of school safety with regard to its climate played a buffering role as a variable by yielding a decrease in the association between trauma exposure and post-traumatic stress symptoms. This association held true only among adolescents who indicated receiving

free/reduced lunch. Such adolescents who reported more school safety with regard to its climate were associated with less post-traumatic stress symptoms as trauma exposure increased than those who reported less school safety with regard to its climate, whereas adolescents who indicated not receiving free/reduced lunch were not associated with this difference.

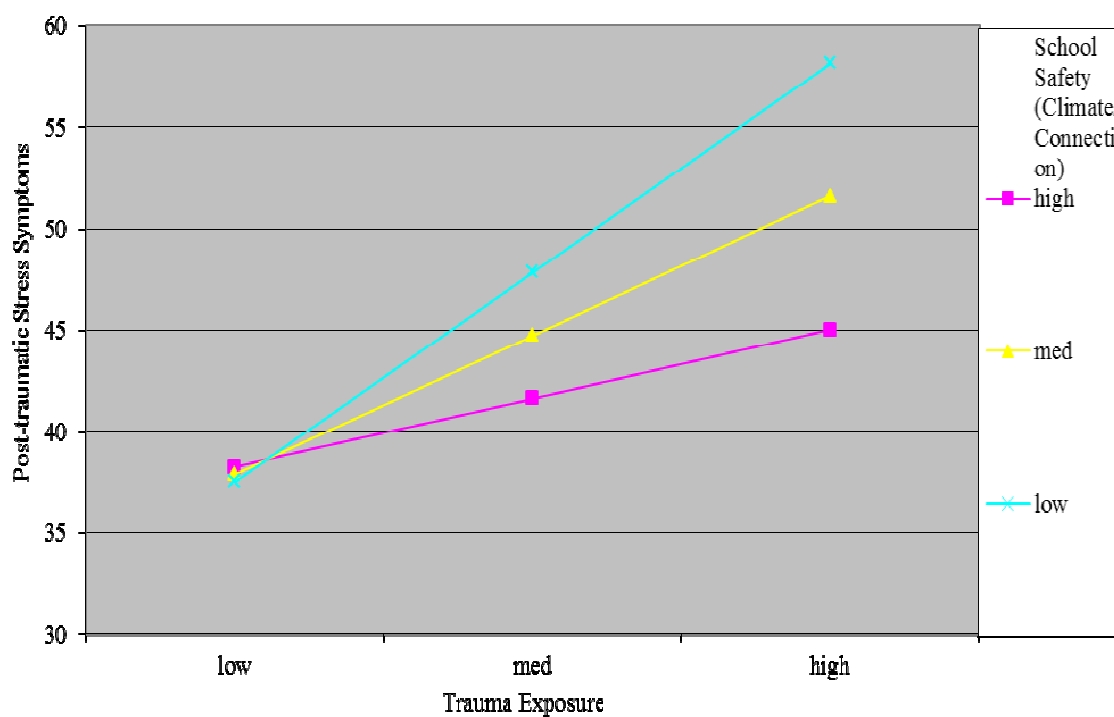


Figure 5. Trauma as Predictor of Post-traumatic Stress Symptoms by School Safety (Climate/Connection)

Adolescents who reported a low ($t = 7.50, p < .01$) level of school safety with regard to Climate/Connection were rated by their teachers as having more externalizing behavior problems as trauma exposure increased, whereas adolescents who reported high ($t = -0.30, p = .77$) or medium ($t = 1.70, p = .09$) levels of sense of school safety with regard to Climate/Connection did not experience a significant change in externalizing behavior problems, as rated by their teachers (see Figure 6). Again, only those indicating

free/reduced lunch status benefited from this association. As trauma exposure increased, those indicating receiving free/reduced lunch were associated with less teacher-rated externalizing problems, while those who did not indicate receiving free/reduced lunch were not associated with a significant decrease in externalizing behaviors. There was not a significant interaction between trauma exposure as a predictor of depressive symptoms by school safety with regard to climate and connection, nor was there a significant interaction between trauma exposure as a predictor of adaptive functioning.

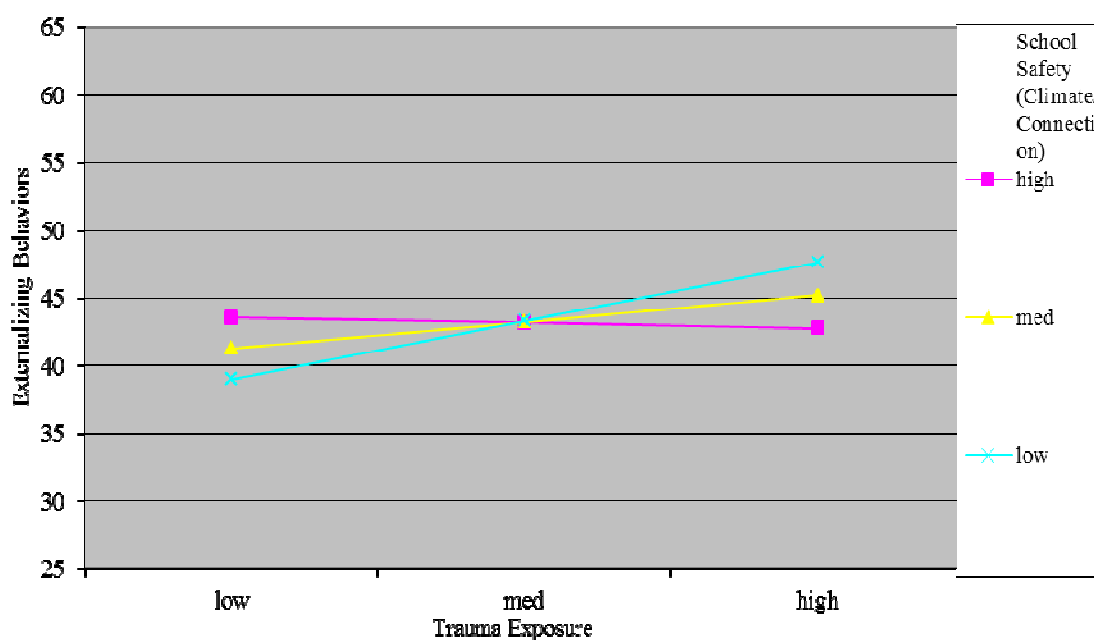


Figure 6. Trauma as Predictor of Externalizing Behaviors by School Safety (Climate/Connection)

Adolescents' Sense of School Safety with Regard to Incivility and Disruption

Adolescents who reported low ($t = 11.45, p < .01$) and medium ($t = 2.43, p = .017$) levels of sense of school safety with regard to Incivility and Disruption endorsed more depressive symptoms as trauma exposure increased, whereas adolescents who

reported a high level of sense of school safety with regard to Incivility and Disruption did not experience a significant increase in depressive symptoms ($t = 1.80, p = .077$; see Figure 7). However, this association was stronger among males. Males who feel safer at school with regard to Incivility and Disruption endorsed less depressive symptoms as trauma exposure increased than females who feel safer at school at school with regard to Incivility and Disruption. This association was also only significant for adolescents who indicated receiving free/reduced lunch. Such adolescents who feel safer at school with regard to Incivility and Disruption endorsed less depressive symptoms as trauma exposure increased than those who felt less safe, whereas adolescents who indicated not receiving free/reduced lunch were not associated with this difference.

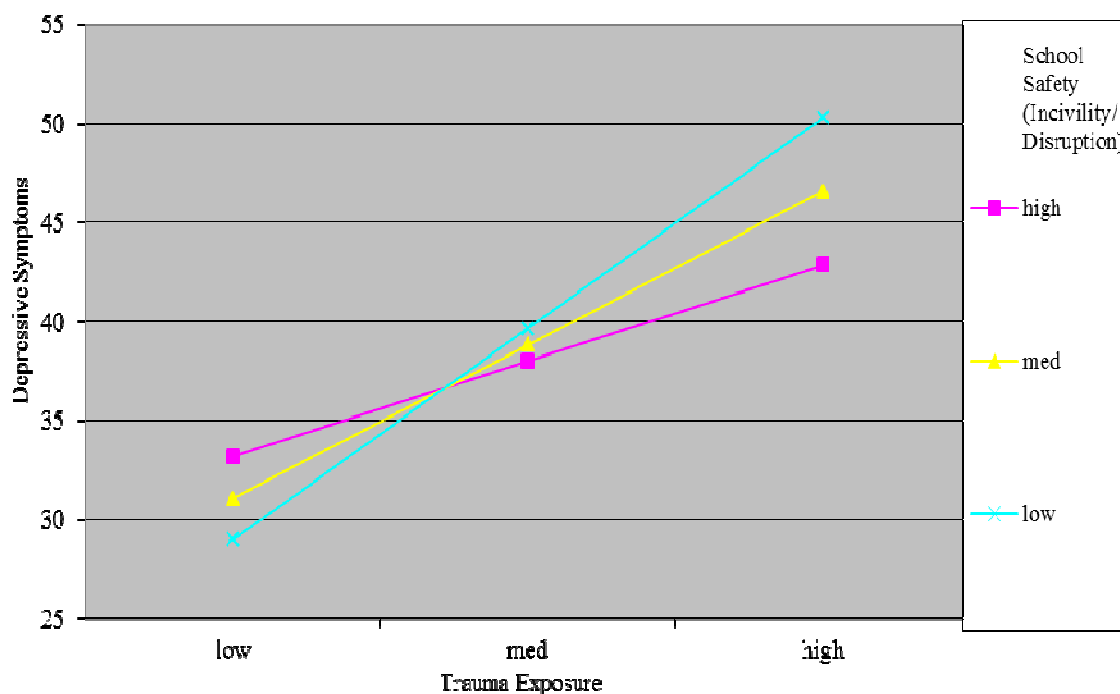


Figure 7. Trauma as Predictor of Depressive Symptoms by School Safety (Incivility/Disruption)

A significant interaction of trauma exposure x school safety with regard to Incivility and Disruption was observed for teacher-rated externalizing behavior problems (see Figure 8). As levels of trauma exposure increased, adolescents who felt less safe at school with regard to Incivility and Disruption exhibited more teacher-rated externalizing behavior problems ($t = 7.27, p < .01$), whereas adolescents who felt more safe at school with regard to Incivility and Disruption exhibited less teacher-rated externalizing behavior problems ($t = -2.02, p < .05$). The simple slope for the medium level of school safety with regard to Incivility and Disruption was not significantly different from zero ($t = .42, p = .67$).

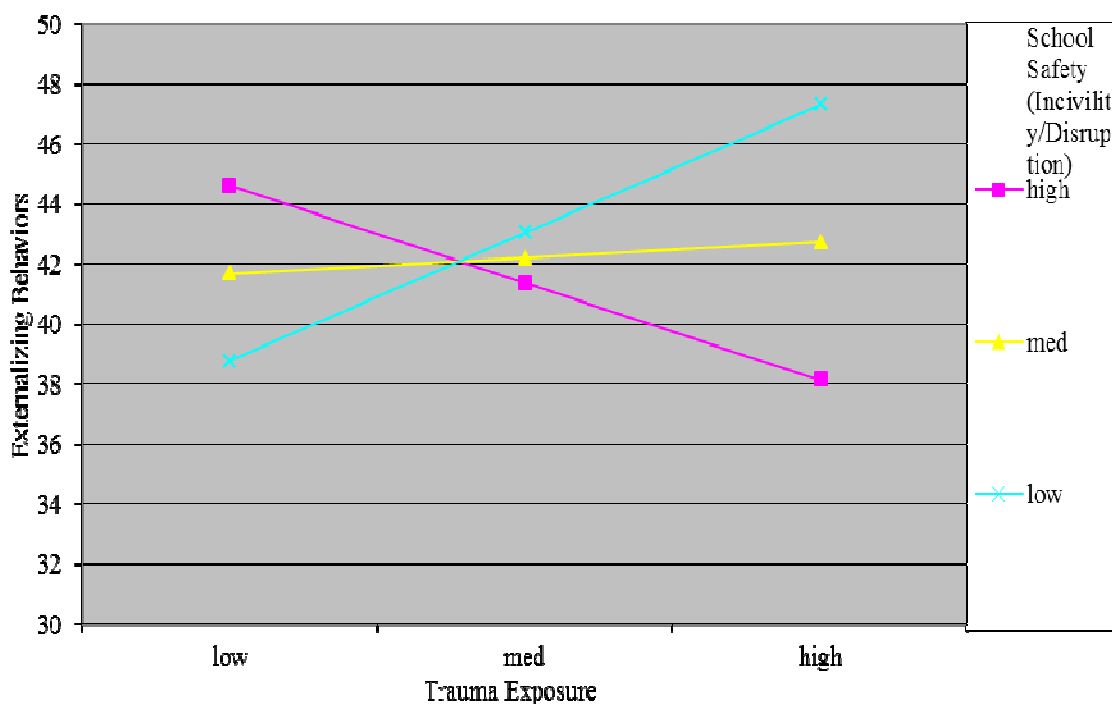


Figure 8. Trauma as Predictor of Externalizing Behaviors by School Safety (Incivility/Disruption)

A similar pattern was found for teacher-rated adaptive functioning. As levels of trauma exposure increased, adolescents who felt less safe at school with regard to

Incivility and Disruption were rated by their teachers as demonstrating lower adaptive functioning ($t = -6.73, p < .01$), while adolescents who felt more safe at school with regard to Incivility and Disruption were rated by their teachers as demonstrating higher adaptive functioning ($t = 1.96, p = .054$; see Figure 9). Again, the simple slope for the medium level of school safety with regard to Incivility and Disruption was not significantly different from zero ($t = -0.25, p = .80$). This protective effect was significant only among adolescents who indicated receiving free/reduced lunch. As trauma increased, such adolescents who felt safer at school with regard to incivility and disruption showed higher adaptive functioning than those who felt less safe. Adolescents who indicated not receiving free/reduced lunch were not associated with this difference.

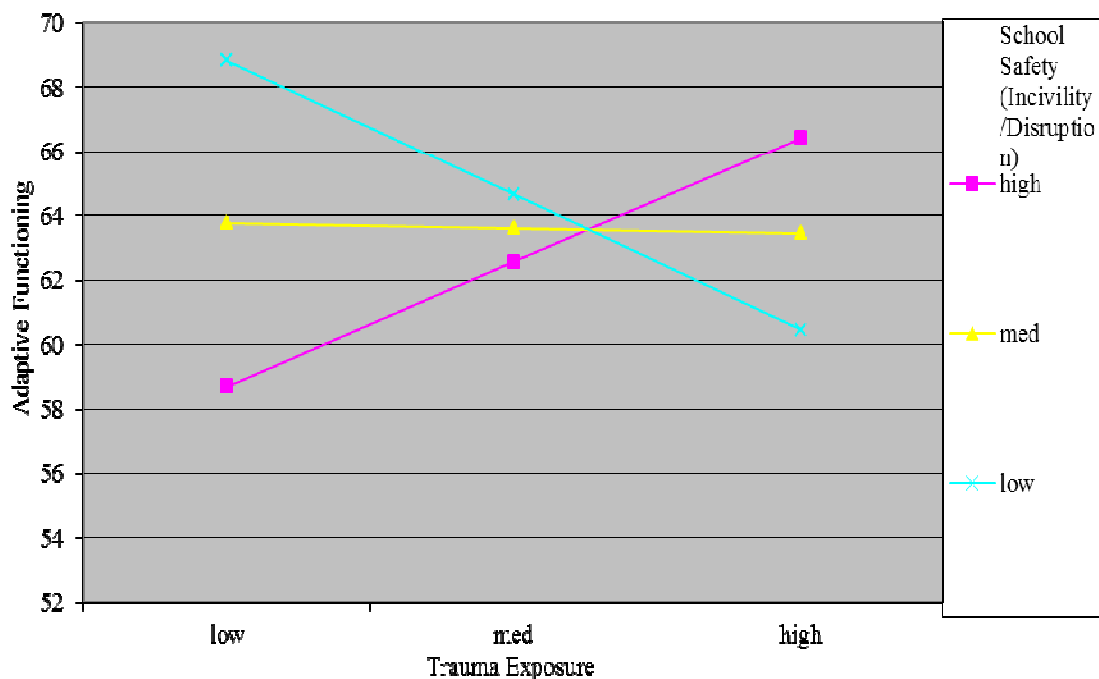


Figure 9. Trauma as Predictor of Adaptive Functioning by School Safety (Incivility/Disruption)

There was not a significant interaction between trauma exposure as a predictor of post-traumatic stress symptoms by school safety with regard to Incivility and Disruption. However, when free/reduced lunch status was entered as a variable, a significant three-way interaction was observed, suggesting that adolescents who reported receiving free/reduced lunch benefit more from feeling safe at school with regard to Incivility and Disruption by experiencing less post-traumatic stress symptoms. While the association held for adolescents in both groups, it was stronger for those receiving free/reduced lunch. Adolescents receiving free/reduced lunch who reported feeling safer endorsed less post-traumatic stress symptoms as trauma exposure increased than those who reported feeling less safe.

*Adolescents' Sense of School
Safety with Regard to
Delinquency/Major Safety*

Higher trauma exposure was found to be associated with lower adaptive functioning under the condition of low level ($t = -5.05, p < .01$) of school safety with regard to Delinquency/Major Safety (see Figure 10). Adolescents who reported a medium or high level of sense of school safety with regard to Delinquency/Major Safety did not experience a significant change in adaptive functioning, as their respective simple slopes did not significantly differ from zero ($t = -1.01, p = .31$ for medium level, $t = 0.92, p = .36$ for high level). There were no significant interactions between trauma as a predictor of post-traumatic stress symptoms, depressive symptoms, or externalizing behavior problems by school safety with regard to Delinquency/Major Safety. However, when gender was entered as a variable, there was a significant three-way interaction involving externalizing problems. Males who reported feeling safer at school with regard to

Delinquency/Major Safety were reported to have less teacher-rated externalizing problems as trauma increased than those who reported feeling less safe. This association was not significant among females.

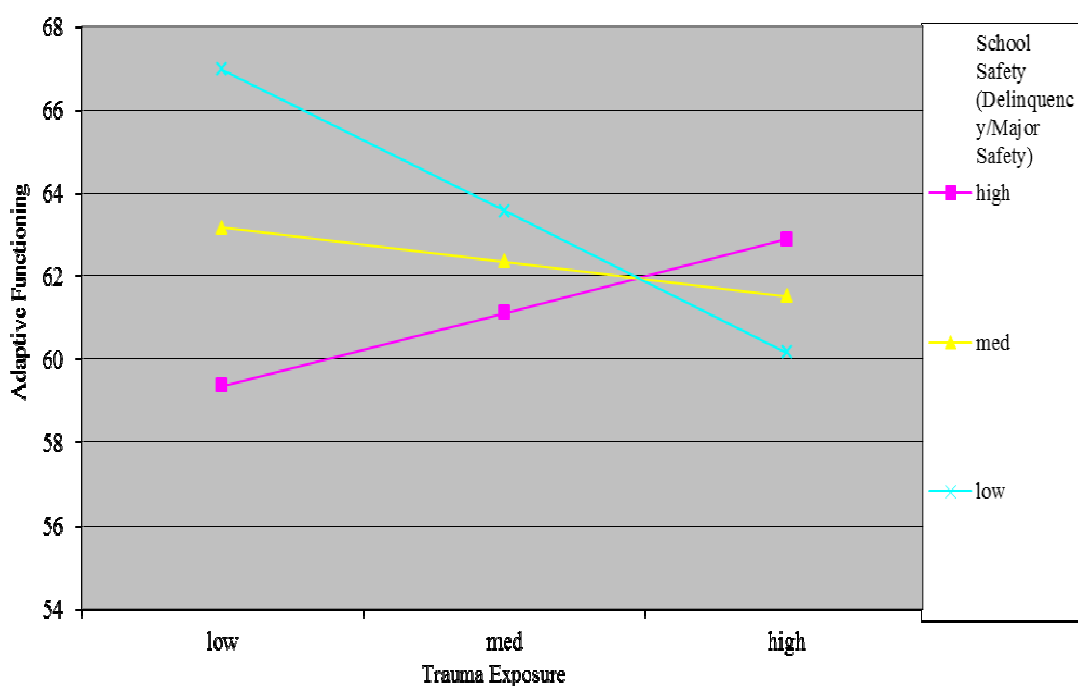


Figure 10. Trauma as Predictor of Adaptive Functioning by School Safety (Delinquency/Major Safety)

In summary, more exposure to trauma was found to be significantly related to more deficits in each of the assessed areas of psychological functioning (post-traumatic stress symptoms, depressive symptoms, externalizing behaviors, and adaptive functioning). Males reported more post-traumatic stress and depressive symptoms than females, which contrasts with much of the literature. Perceived access to support and factors of school safety demonstrated protective effects in the relationship between trauma exposure and domains of psychological functioning. Such moderators were

generally observed to provide a greater impact among adolescents from families of low socioeconomic status.

Qualitative Results

A secondary purpose of the study was to gather qualitative data through the use of interviews that explored adolescents' experiences with trauma to better understand the mechanisms by which perceived access to support and school safety may influence psychological functioning. Results of the qualitative data set were produced through coding, content analysis, and thematic generation of semi-structured interviews with six adolescents to understand how they perceive these potential protective factors in their own ability to function after trauma.

Generated themes were organized according to each protective factor (i.e., perceived access to support, school safety with regard to climate/connection, school safety with regard to incivility and disruption, and school safety with regard to delinquency/major safety). Additional themes were identified as they emerged.

Perceived Access to Support

Students were asked about their belief that there are others to whom he or she can turn to when faced with an adverse life event. Adolescents seemed to vary in their responses based on the source of the trauma. For example, for these participants, the typical place for support, the home, was also the source of their trauma. In those instances, they did not believe they had anyone to turn to. Kate, a 13-year-old female who reported witnessing physical and verbal abuse between her parents almost on a daily basis until their recent divorce, reflected adamantly, "Reaching out to my family is never productive because they all take sides and never pay any attention to how it's affecting

me!” In fact, she seemed to be disconnected from others and described herself as “a zombie around people” as she described her problems related to post-traumatic stress. Lee, a 13-year-old male who was repeatedly physically abused by his stepfather, similarly commented about accessing support from his mother, “I don’t think she really cares about me because she stood by him even though he was lying.”

Unfortunately, some of the participants believed there was no one that they could approach to access support. When asked about her belief in being able to go to others for help, Beth, a 12-year-old female who experienced regular physical abuse when she was younger, replied, “I stopped going to others for help because it didn’t help—it kept right on happening.” After Kate deplored her family’s lack of support, she appeared bewildered by probes into alternate sources of support and commented, “I only have like one other person that I talk to that I have sleepovers with.”

Conversely, others found that they had an extended network of individuals that they could go to for support. Joe, a 13-year-old male who reported that his father died approximately one year ago, expressed much support from his Aunt:

“She and I just talk about things. She’s always kinda been there for me. She’s been to all my baseball games. Kind of just like your Godmom, kind of. If anything ever happened to my Mom I’d go to her.”

Meg, a 12-year-old female who suffered broken ribs and a concussion during a car accident 4 months ago, expressed “My Grandma has always been there—that’s the thing—she’s always been someone I can go to.” In both of these instances, the source of the trauma did not involve betrayal of trust as did the other reports. It may be that youth who have experienced trauma that is not caused by another may be more willing to continue to seek out support.

Disconfirming evidence for the theme was found. Anna, a 13-year-old female who reported that she was sexually abused by her mother's ex-husband, expressed support from her friends: "My friends were very supportive when I first told them about it—they told me I'd get through it."

When describing the type of support that was most helpful, participants found it helpful when their supporters could "sense" when support was needed. For example, Anna noted: "My friends will try and get me to talk about it when they tell I'm down but I don't usually want to talk about it." Joe also explained,

"Usually I'm not one that just goes and opens up. If my Aunt knows that I'm sad or something, she'll be like, 'Well, talk about it. Let's talk about it.' I might not want to talk about it right away but I can just call her whenever, and she's ready to talk, even if she's working. She's always there."

It appeared that perceived access to support was associated with supporters' ability to sense when support was needed and not necessarily solicited.

Participants described how perceived access to support has impacted their psychological functioning. In a discussion about his current psychological functioning, Joe shared, "Because of the support I have—the people I have in my life—I'm not how I used to be, smoking weed to self-medicate or whatever—that's what my therapist calls it—which just made me feel more depressed." Again, though, support was not perceived to have much impact for some individuals who have experienced trauma. Despite Anna's reported adequate level of perceived access to support, her long description of her own post-traumatic stress and depressive symptoms is heartbreaking; she ends by tearfully stating, "Nothing has really helped—not even my friends."

While some adolescents, particularly those who suffered non-sexual abuse, reported feeling as though they had no one to turn to, others who did seek out support

often turned to individuals outside of their immediate family, such as an aunt, grandmother, or friend. Support appeared to be most beneficial when providers offered help in a proactive manner and used an open-door policy. Unfortunately, this support was not always helpful, and the effects of the trauma seemed too great to overcome.

School Safety (Climate/Connection)

Participants were asked to share their perceptions about how connected they feel to their school and how the school's atmosphere has impacted their experience with trauma. A general theme that appeared among adolescents who reported feeling unconnected to their school was feeling isolated in one's experience, leading to a lack of belonging. Kate expressed:

“There's no one at my school who can relate to what I went through—there's no one. They really don't understand because, like, they really don't have to deal with it so they don't even know how to help at all.”

In a discussion about her perspective on her connection with her school, Anna concurred, “I don't feel connected to my school like at all, like the therapist at my school doesn't help me feel that way—I think it's because she hasn't worked with any kids who went through what I did, so she doesn't know what to do.” Beth shared how a teacher's response to her frequent health complaints related to her past abuse have contributed to her sense of school climate:

“I have really bad health because of what happened when I was little. I seem to get sick often, and he just doesn't believe it. So I'm behind in my work, and I really do try but he's always on me about it—it makes me feel like I can't just *be*.”

In contrast, a salient theme generated among adolescents who felt connected to their school related to how the social structure of school induces a sense of connectedness, albeit perhaps artificially. Lee explained: “Just having a bunch of other

kids around you—sometimes it’s easier to just put on a happy face and be like the rest of them. The happy feeling doesn’t last but at least it’s something.” Meg reiterated this theme by incorporating the concept of both structure and adaptation: “School’s a place where I’m set up to do something every day. If I have to do something that’s supposed to be fun and I’m not feeling it, I have to adapt to act like I’m having fun with everyone.”

Feeling connected to one’s school appeared to serve as a protective factor for adolescents in the sense that it allows a time period during which painful internal experiences may be reduced—a type of diversion. For these adolescents, school may be safe place in which they can push aside their problems for a while and focus at the given academic/social tasks at hand. Lee reflected this possibility when he further discussed his sense of school safety with regard to Climate/Connection:

“When I’m at school, I’m not on guard, so a lot of times, when I’m working on class stuff, I don’t feel anything. Back then, I knew when I got home, I would have to try to do homework and get to bed before my Stepdad got home.”

School Safety (Incivility and Disruption)

Participants were asked about the quality of interpersonal relationships among students at their school and it may have benefited them in their experience of trauma. Adolescents appeared to perceive the quality of interpersonal relationships at their school by how open, nonjudgmental, and transparent their peers are. Joe shared:

“That’s why I like it here, because everyone’s just—they’re themselves. They don’t try to be anyone else, they don’t try to put anyone else down, they just—they’re just friends with everyone. The fact that they weren’t judgmental really helped me get my depression under control after my Dad died—they weren’t out there calling me a “pothead” and stuff like that.”

Meg also perceived her peers as nonjudgmental, which was particularly useful in helping her get through the negative effects of her car accident. She noted:

“No one in this school was quick to blame my sister. Lots of my parents’ friends were blaming my sister because she was driving us. But it was an accident. Accidents happen. I’m glad that people at school get like that because I know she already felt bad. Knowing that people at school weren’t pointing the finger at her helped me feel better.”

Beth described how the lack of transparency of her peers revolving around her health issues associated with her past trauma impacted her:

“All of these rumors go around about why I’m so tired and sick all the time. Every day, down the hall, I’ll hear things whispered about me, like ‘she’s doing drugs’ and all this. I wish they would just say it to my face. It’s gotten to the point where, well, I just don’t feel alive anymore. I don’t see why humans search for happiness—I mean, I see why they do but I don’t feel strong enough to. But, maybe I just don’t want to deal with the rumors anymore.”

School Safety (Delinquency/Major Safety)

Adolescents were asked about their awareness of drugs and weapons at school and how their presence may affect their functioning. Through coding and content analysis, it appeared as though feeling safer at school served as a protective factor by shielding one from dangers outside of school. An illustration of this theme was provided by Meg:

“School’s been one of the only places where I don’t have flashbacks of it. I feel safe when I’m here cause I made it here safe and know I won’t get hurt when I’m here. Sometimes I don’t want to leave and go back out in the real world, where keeping yourself safe is not a sure thing.”

Kate related,

“I know that at school, I can just, like, sit there, and things will be safe. No one will start to yell or hit at each other out of the blue, like what would happen almost every night. But, like, when I was sitting there, I knew that when I got home, everything would repeat. At least it made me feel not as bad about going home, cause I knew I’d get a break from it the next day.”

Not needing to be concerned about major safety issues at school seems to provide a respite for adolescents and perhaps even reduces negative emotions, an effect that may

carry over to outside environments. Again, school appears to be a diversion for some adolescents—a place in which their worries may be forgotten, if only for a short while.

Joe discussed how the lack of school safety with regard to delinquency influenced his psychological functioning within the context of being among peers with whom he previously used drugs:

“They’ll sit there and they don’t really offer me anything but they’ll make me laugh, and I’ll get on their good sides again, and they’ll be like ‘Come on, let’s go smoke. It’ll be like old times.’ And I’m like, Crap. Are you only gonna be my friend if I do that? And a lot of them, they’ll still be my friend and all but I do have a couple people that hang around after school and are like, ‘Well, let’s see if we can get some money out of him.’ Or, ‘Let’s see if he can get us high’ or something. It makes me feel down that they weren’t really true friends, you know? It’s hard.”

Joe’s illustration provides disconfirming evidence for this theme. While school is generally a safe place to be, there are some peer aspects that may lure students to revert to old, ineffective habits.

In summary, qualitative interviews were conducted to better understand the mechanisms by which perceived access to support and school safety influenced adolescents’ psychological functioning. A main theme that was generated regarding perceived access to support related to the supporters’ ability to “sense” what support was needed and act in a proactive way to provide help. School safety appeared to protect participants from trauma-related problems by serving as a diversion—a time during which adolescents can temporarily be removed from stressors outside of school and sources of their trauma.

CHAPTER V

DISCUSSION

Experiences of trauma are all too common for today's youth. The purpose of this mixed methods study was to explore the relationship between reported trauma, psychological functioning, and the potentially moderating effects of perceived access to support and factors of school safety with middle school students in rural and suburban communities. Perceived access to support and factors of school safety demonstrated protective effects in the relationship between trauma exposure and domains of psychological functioning. Such moderators were generally observed to provide a greater impact among adolescents from families of low socioeconomic status. The inclusion of qualitative interviews helped to illustrate the process by which these protective factors influence trauma-related symptoms.

Much of the research related to trauma has focused on urban populations (e.g., Ozer & Weinstein, 2004; Rialon, 2011), which has contributed to the assumption that trauma may be less prevalent for suburban and rural youth. The results from the current study's sample of 7th grade adolescents from two schools, one rural and one suburban, reflected the high prevalence of trauma exposure during the lifetime of these adolescents. Although the sample was not particularly ethnically diverse, with 85% of participants identifying themselves as European American, the results demonstrated that trauma exposure and its devastating effects transcend ethnicity and specific communities, such as

those characterized as “urban” or “inner-city”. In fact, the level of reported trauma exposure in the current study was slightly higher than in previous studies with adolescents, which have reported lifetime trauma exposure rates of 66% to 91% using the measure employed in this study (Copeland et al., 2007; Greenwald & Rubin, 1999). It is unclear why this group reported higher levels of trauma. The sources of trauma were varied and did not seem related to a unique community event (e.g., natural disaster) and, in fact, most appear to be related to child abuse or the death of a family member.

In the current study, gender differences existed among particular aspects of psychological functioning. Male adolescents reported more post-traumatic stress and depressive symptoms. This finding contrasts with much of the past research that has either found that there were no gender differences or that females endorsed a higher prevalence of post-traumatic stress symptoms and depressive symptoms (e.g., Ahmad, Sofi, Sundelin-Wahlsten, & von Knorring, 2000; Broman-Fulks et al., 2006; Elbedour et al., 2007). Past studies have predominantly found that females exposed to trauma endorse significantly more internalizing problems, such as depressive symptoms, whereas males tend to display more externalizing problems (e.g., Shannon et al., 1994). It has been argued that females are more adept at emotional expression, which may be a protective factor in trauma exposure by decreasing the level of trauma symptoms experienced by adolescents (Lowery & Stokes, 2005). Perhaps females in the current study utilize emotional expression of their traumatic experiences more effectively than their male counterparts, causing particular domains of their psychological functioning (i.e., post-traumatic stress and depressive symptoms) to remain more intact. Unexpectedly, though,

no significant gender differences existed related to adaptive functioning or externalizing problems.

Adolescents from lower socioeconomic backgrounds reported more depressive symptoms and were rated by their teachers as having more externalizing problems and lower adaptive functioning than their peers. This finding has been supported by prior studies examining various areas of psychological functioning among adolescents from low-income families (Barrera et al., 2002; Faust & Kaatchen, 2004). Such research has found that economic instability is associated with disruptions in parenting and maternal depression, each of which has been connected to the emergence of emotional and behavioral problems among youth.

While there were significant differences between adolescents' psychological functioning by ethnicity and special education/general education placement, these findings should be interpreted with caution due to the unequal sample sizes of each level of these demographic variables. Nonetheless, the current findings are consistent with past research which has observed that adolescents receiving special education are more likely to experience problems with externalizing behaviors and adaptive functioning (Pastor & Reuben, 2009; Talbott & Fleming, 2003). It is difficult to determine, though, whether these symptoms are associated with trauma or related to the disability itself.

Even after controlling for significant differences among gender, ethnicity, special education/general education placement, and free/reduced lunch status, more trauma exposure was related to more post-traumatic stress and depressive symptoms and externalizing problems and lower adaptive functioning. This finding parallels previous

research investigating trauma exposure among adolescents (e.g., Horowitz, Weine, & Jekel, 1995; Schaal & Elbert, 2006; Singer et al., 1995).

Protective Factors From Deficits in Psychological Functioning Associated with Trauma

Perceived Access to Support

While trauma exposure was related to more deficits in psychological functioning, less post-traumatic stress and depressive symptoms and teacher-rated externalizing problems were reported among adolescents who reported greater access to support. Perceived access to support appeared to serve a buffering role in adolescents' trauma exposure. A buffer can be defined as a moderating variable that shows a decrease in the association between a negative independent variable and a negative dependent variable (Aiken & West, 1991). Previous studies have also suggested that access to support may serve as a buffer from adverse life events (Prince-Embury, 2008; Werner & Smith, 1992). The results from these studies have suggested that internal mechanisms reflecting the cumulative experience of previous support may shield the adolescent from potential negative psychological impact of particular events.

The current study's finding is consistent with investigations exploring the role of social support as a moderator of the relationship between exposure to adverse life events and post-traumatic stress and depressive symptoms within school and community samples (e.g., Guay, Billette, & Marchand, 2006; Ozer & Weinstein, 2004). However, other studies have found that perceived social support did not seem to influence post-traumatic stress or depressive symptoms (e.g., Cowan, 2007; McCarthy & Thompson, 2010; Reyes, 2008). The population samples in these studies, though, were less normative

and consisted of adolescents who were homeless, sexually abused, or runaways. It has been suggested that adolescents among community samples may experience less feelings of alienation from potential sources of support, which may contribute to more sense of purpose and hope for the future (Benard, 1995). Current results from qualitative data indicate that adolescents whose trauma involved the betrayal of trust experienced more post-traumatic stress and depressive symptoms, perhaps because they were less willing to seek out support. This is consistent with past research, which has found that youth exposed to trauma inflicted by a known person in their lives experienced higher rates of PTSD than youth exposed to trauma that did not involve a known person in their lives (Lawyer et al., 2006).

Results of the current study revealed that males appeared to benefit more from perceived access to support as a protective factor against post-traumatic stress and depressive symptoms than females. It has been posited that females, in general, may be more adept at expressing their emotional experiences to sources of support than males, which may help to decrease their level of post-traumatic stress and depressive symptoms (Lowery & Stokes, 2005). This was illustrated qualitatively, as a male reported during the interview that he is not “one that goes and opens up”. Perhaps for males, being able to access support by expressing their feelings to individuals of their support network produces a greater impact on the level of post-traumatic stress and depressive symptoms they may experience with trauma exposure.

An alternative explanation is that certain sources of support in males’ lives may be aware that males often struggle with emotional expression and help to compensate for this by reaching out in a proactive way after recognizing that the adolescent male may

need support. Whereas females may access support by more freely expressing their emotions, males may rely more heavily on the initiation of people in their lives to encourage emotional expression and provide support in times of need, contributing to a benefit that is more unique among males. When describing the type of support that was most helpful during interviews, males and females both discussed how helpful it was when their supporters could “sense” when support was needed and then reached out to the adolescents. Another avenue to explore when explaining this difference relates to who adolescents seek out for support and what type of support is provided. Among the adolescents interviewed, males were more likely to discuss support from adults, whereas females often mentioned friends’ support. Perhaps the support from adults is more focused on problem solving and perceived to be more effective than support from peers.

Perceived access to support also served a protective role in adolescents’ externalizing problems. Adolescents who reported lower levels of perceived support were rated by their teachers as having more externalizing problems as trauma exposure increased. While past studies investigating protective factors in violence exposure among school samples of adolescents have examined teacher-rated internalizing problems (e.g., depressive and anxiety symptoms) as an area of psychological functioning (Ozer & Weinstein, 2004), the teacher-rated externalizing problems associated with general trauma exposure have not been examined. Ozer and Weinstein found that teacher-rated internalizing problems of adolescents associated with violence exposure were not influenced by potential protective factors. Because adolescents have been shown to be most sensitive reporters of internalizing symptoms, the present study focused on teachers’ ratings of adolescents’ externalizing problems as a second perspective of adolescents’

psychological functioning. Attachment theory suggests that adolescents who present with a high level of externalizing problems in the context of an unstable, supportive environment may be attempting to connect with or seek attention from salient authority figures in their lives (e.g., caregivers and teachers) (Allen & Land, 1999). Adolescents exposed to trauma who perceive a low level of access to support may, in an attempt to gain the support that is lacking in other areas of their lives, signal this need by externalizing their emotions toward their teachers. Only males were observed to benefit from perceived access to support in the relationship between trauma exposure and externalizing problems.

School Safety

Consistent with past research, school safety was demonstrated to play a protective role in the effects of negative life events experienced by adolescents (Loukas, Roalson, & Herrera, 2010; Whitlock, 2006) In the current study, several factors of school safety seemed to play a buffering role against various domains of psychological functioning as trauma exposure increased. A study that pioneered the exploration of school safety as a protective factor against psychological deficits associated to adverse life events, conducted by Ozer and Weinstein (2004), demonstrated that school safety played a protective role in adolescents' adaptive functioning but failed to show any effect on adolescents' endorsement of post-traumatic stress symptoms or depressive symptoms. However, this study used only one item by which to assess school safety.

The current study used an instrument measuring a comprehensive model of school safety, which resulted in findings that suggested that various factors of school safety served as a buffer from deficits in domains of psychological functioning after trauma

exposure, including post-traumatic stress and depressive symptoms and teacher-rated externalizing behaviors and adaptive functioning. In the current study, adolescents' sense of safety with regard to Climate/Connection played a buffering role by yielding a decrease in the association between trauma exposure and post-traumatic stress symptoms and teacher-rated externalizing problems. These results are supported by those of Skiba et al. (2006) who found that a school's climate/connection was the largest contributing factor in predicting overall feelings of school safety among students.

Past research has suggested that when adolescents feel safe and, in particular, connected to their schools, they are more buffered from negative influences and primed to make appropriate decisions about their welfare (Rodney, Johnson, & Srivastava, 2005). Feeling safe at school with regard to Climate/Connection for these adolescents may help to compensate for the lack of positive climate or connection they experience in other environments, helping to decrease post-traumatic stress symptoms and externalizing problems. In qualitative interviews, some adolescents appeared to perceive school as a safe place where they do not to be "on guard" about potential maltreatment from adults, something they experienced on a daily basis at home.

In the current study, the Incivility and Disruption Scale appeared to be the most effective protective factor for adolescents exposed to trauma. Significant two- or three-way interactions involving the Incivility and Disruption Scale were observed for each assessed domain of psychological functioning. The Incivility and Disruption Scale tapped into the civility of interpersonal relationships among students as expressed by the frequency of name calling, arguments, and conflicts. Adolescents who perceived interpersonal relationships at school to be less civil endorsed more depressive symptoms

as trauma exposure increased. Qualitative data suggested that the openness of peers and not feeling judged contributed to students' perceptions regarding the Incivility and Disruption aspect of school safety, which led to fewer depressive symptoms. The Incivility and Disruption Scale was also the only protective factor to demonstrate a protective-enhancing effect for areas of psychological functioning. Luthar et al. (2000) describes a protective-enhancing effect as one in which adjustment is better in the presence of increased risk, likely because the protective factor promotes positive engagement with stress.

The psychological domains in which school safety with regard to Incivility and Disruption demonstrated a protective-enhancing effect were externalizing problems and adaptive functioning. Those adolescents who reported feeling safer at school showed fewer externalizing symptoms and appeared to have a higher level of adaptive functioning despite reporting higher levels of trauma exposure. Ozer and Weinstein (2004) observed general school safety, albeit assessed by one item, playing a similar role for adolescents' adaptive functioning associated to violence exposure. This current finding illustrates how a protective factor (i.e., school safety with regard to Incivility and Disruption) may be related to higher functioning after experiencing an adverse life event. Past research investigating protective factors against trauma-related symptoms have also suggested that facing adversity may, for some individuals, result in positive outcomes (Bonanno, 2004; Masten & Obradović, 2006; Ratin Hestyanti, 2006). In the current study, civil interpersonal relationships among students appeared to promote positive engagement, as evidenced by fewer teacher-rated externalizing problems and higher teacher-rated adaptive functioning.

The final factor of school safety that served as a protective factor in adolescents' psychological functioning associated with trauma exposure is Delinquency/Major Safety, which focuses on students' awareness of the presence of drugs, alcohol, knives, and smoking on school property. Skiba et al. (2006) found this factor to be the least contributor of students' overall sense of school safety. Similarly in the current study, school safety with regard to Delinquency/Major Safety demonstrated the least effectiveness as a protective factor in adolescents' psychological functioning associated with trauma, only playing a buffering role against deficits in teacher-rated adaptive functioning and externalizing behaviors.

Higher trauma exposure was found to be associated with lower adaptive functioning among adolescents who reported a low level of safety with regard to Delinquency/Major Safety. Unlike the Incivility and Disruption Scale, school safety with regard to Delinquency/Major Safety did not have a protective-enhancing effect for adaptive functioning. There was a significant three-way interaction involving externalizing problems and gender, indicating that school safety with regard to Delinquency/Major Safety was a protective factor only for males. As discussed earlier, males tend to exhibit more externalizing problems than females when exposed to trauma (Shannon et al., 1994), so the addition of a protective factor may not account for much variance in externalizing problems associated with trauma. Males exposed to trauma appeared to benefit more than females when they perceived that their peers were not engaging in delinquent behaviors. This behavior may be modeled, leading to a decrease in their own conduct problems (i.e., externalizing problems). Such an assertion was illustrated in qualitative interviews, which suggested that being among peers who used

substances tempted some of the adolescents who had been exposed to trauma to revert to maladaptive ways of functioning.

The Impact of Perceived Access to Support and School Safety within Socioeconomic Status

In the current study's examination of perceived access to support and school safety as protective factors for adolescents who have been exposed to trauma, it was found that adolescents from low-income families generally appeared to benefit more from each protective factor. Greater perceived access to support was associated with less post-traumatic stress symptoms with trauma exposure only among adolescents from low-income families. Prior research has suggested that families of lower socio-economic-status are less likely to have strong social support networks that may buffer against stressors (Graham-Bermann, Coupet, Egler, Mattis, & Banyard, 1996; Maton, 1989). Support may have an exponential effect on decreasing post-traumatic stress symptoms when it does exist among adolescents from families with low incomes. Perceived access to support was also only beneficial as a protective factor against externalizing problems for adolescents from low-income families. This finding contrasts with prior research with a community sample of adolescents from low-income families, which found that access to support did not protect against externalizing problems, such as aggression (Cowan, 2007). Externalizing problems in Cowan's study, however, were self-reported and not specific to functioning at school.

Factors of school safety also provided a greater impact to adolescents from low-income families. Only adolescents from low-income families benefited from school safety with regard to Climate/Connection as a protective factor against post-traumatic stress symptoms and teacher-rated externalizing problems as trauma exposure increased.

It may be posited that adolescents from families of higher incomes may possess other protective factors outside school (e.g., parents who are more emotionally available, greater access to health care) that act as a buffer from trauma-related symptoms.

Adolescents from low-income families, however, may experience an amplified effect from feeling safe at school with regard to Climate/Connection due to less protective factors outside of school. Feeling safe at school in terms of Incivility and Disruption also provided a greater impact for adolescents from low-income families. There is evidence that adolescents from low-income families are less likely to benefit from access to support within their family due to a higher prevalence of an unstable family system and conflicts than more advantaged families (Ickovics et al., 2006; Kilmer, Cowan, & Wyman, 2001). Perhaps adolescents from low-income families experience more civil interpersonal interactions and a more predictable structure at school than in their home environments, contributing to more validation and reassurance and fewer depressive symptoms associated with trauma exposure.

Protective factors have been argued to be particularly necessary among economically disadvantaged youth in the development of positive outcomes following a traumatic event (Parsons, 1994). Furthermore, it has been found that organizational or institutional settings that promote a positive self-image increase the likelihood of successful functioning after trauma exposure (Rutter, 1990). Because adolescents from low-income families are more likely to experience interpersonal conflict within the family system, they may be more likely to benefit from civil interpersonal interactions in other environments (i.e., school), which may help foster a healthy self-image and contribute to enhanced adaptive functioning with trauma exposure. The current findings

are in line with prior research which has observed that a sense of connection to one's school provided a greater impact on the psychological functioning among adolescents from low-income families (DuBois et al., 1992; Felner et al., 1985). As these authors also suggest, adolescents from low-income families may have less family support and may use the sense of connection to their school in a compensatory manner.

Limitations

As mentioned previously, the current sample was not particularly diverse, with 85% of participants identifying themselves as European American, and relatively small. As such, meaningful interpretations could not be made as to how the protective factors of perceived access to support and school safety may impact individuals from various ethnic groups in differing ways. Considering that seeking out support and a sense of connection is often thought to be valued among some ethnic groups while looked down upon in others, one might hypothesize observing differences in how these protective factors influence psychological functioning associated with trauma exposure among a larger, ethnically diverse sample.

Although the *LITE-S* was employed in the current study as a trauma exposure measure due to its brief administration and wide-range assessment of traumatic events, it lacks a standardized method by which to assess trauma severity. The protective factors of perceived access to support and school safety may have shown to impact psychological functioning differently among varying levels of trauma severity rather than by the number of traumatic events experienced in one's lifetime. Due to the broad range of potentially traumatic events of the *LITE-S*, it is difficult to determine how participants interpreted these events, as all participants endorsed some type of trauma.

Throughout both processes of quantitative and qualitative data collection, it was observed that some variables appeared moderately related, particularly perceived access to support and the Climate/Connection and Incivility and Disruption factors of school safety. This was especially illustrated during the qualitative interviews, during which participants appeared to use the characteristics of access to support and one's connection and relationships associated with school interchangeably. It may be that these variables tap a broader construct in slightly different ways. While this speaks to the importance of how relationships formed among peers and teachers at school can help to provide support for adolescents who have been exposed to trauma, it also suggests the consideration of exploring the role of specific sources of support (e.g., particular family members, teachers, friends) rather than the support network as a whole. This consideration is highlighted by past research on the social support of adolescents, which has provided evidence for the differential effects of support from particular individuals on adolescents' functioning (Cauce et al., 1982).

Implications and Suggestions for Future Research

The results of the current study have several implications for interventions to promote healthy psychological functioning among adolescents who have experienced a traumatic event during their lives. Findings suggesting that perceived access to support served a protective role in psychological functioning emphasize the important function of individuals such as family members, peers, and teachers in dealing with a traumatic event. The support from peers and teachers may be particularly beneficial among adolescents from low-income families. Encouraging supportive relationships and conversations focused on problem solving among peers may strengthen resources,

especially surrounding issues that adolescents may not feel comfortable sharing with their parents. School mental health professionals should also be aware of students who appear to be in need of support and offer help in a proactive way, as qualitative results suggested that adolescents may not always seek out support when it is needed. Supporters' ability to "sense" when help is needed may contribute to the resilience of adolescents who have experienced a traumatic event.

The current findings suggest that factors of school safety may also play a protective role in the mental health among adolescents who have experienced a traumatic event. While there is limited understanding of the process by which factors of school safety contribute to healthy psychological functioning, qualitative results from the present study suggest that the school environment may function as a diversion for adolescents who have been exposed to trauma, allowing them a safe place in which they are temporarily removed from the outside environment, which may be associated with their trauma experience. As findings from prior research and the current study suggest, the idea of school serving as a respite may be more impactful among adolescents from low-income families by compensating for a potentially less supportive environment at home (DuBois et al., 1992). It would then behoove teachers, school psychologists, and school administrators among urban, suburban, and rural communities to be especially attuned to the perceptions of school safety among students who may be socio-economically disadvantaged and implement school-wide programs that promote characteristics of school safety.

The findings from the current study provide further evidence to suggest that a sense of feeling connected to one's school and perceiving there to be positive

interpersonal relationships at school may be more important in predicting overall school safety and provide a greater impact to the psychological functioning among adolescents exposed to trauma than perceptions about the presence of drugs and weapons in school. As such, school-wide safety promotion should focus on these elements. School mental health professionals can help promote resilience in adolescents who have been exposed to trauma by conducting group work to help students feel a sense of pride about their school and monitoring behavior for name calling, arguments, and conflicts. Future longitudinal research on the effects of the implementation of such interventions may provide valuable information as to how they may, over time, enhance psychological functioning among adolescents who have been exposed to trauma.

Conclusion

This mixed methods study suggests that lifetime trauma exposure is associated with post-traumatic stress and depressive symptoms, teacher-rated externalizing problems, and lower teacher-rated adaptive functioning among a school-based sample of adolescents from rural and suburban communities. Quantitative results identified moderators of the relationship between trauma exposure and various domains of psychological functioning and revealed that moderators may provide a greater impact among individuals of a particular demographic, such as low socioeconomic status. Information gleaned from qualitative interviews helped to elucidate the process by which perceived access to support and factors of school safety played a protective role in adolescents' psychological functioning associated with trauma exposure. Prospective research should examine the long-term effects of the implementation of school-wide safety promotion programs in urban, suburban, and rural communities on the

psychological functioning of adolescents who have experienced trauma. It is recommended that such programs place emphasis on the sense of school connection and positive interpersonal relationships among students rather than violence associated with the presence of weapons or drugs.

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APPENDIX A
INSTITUTIONAL REVIEW BOARD APPROVAL

STUDENT'S COPY

March 15, 2011

TO: Mark Montemayor
 School of Music

FROM: Maria Lahman, Co-Chair *ML*
 UNC Institutional Review Board

RE: Expedited Review of Proposal, *Evaluating the Role of Social Support and School Safety in Adolescent Exposure to Trauma*, submitted by Amanda H. Stoeckel (Research Advisor: Achilles Bardos)

First Consultant: The above proposal is being submitted to you for an expedited review. Please review the proposal in light of the Committee's charge and direct requests for changes directly to the researcher or researcher's advisor. If you have any unresolved concerns, please contact Maria Lahman, Applied Statistics and Research Methods, Campus Box 124, (x1603). When you are ready to recommend approval, sign this form and return to me.

I recommend approval as is.

Walt
 Signature of First Consultant

April 5, 2011
 Date

see enclosures.

The above referenced prospectus has been reviewed for compliance with HHS guidelines for ethical principles in human subjects research. The decision of the Institutional Review Board is that the project is approved as proposed for a period of one year: *4-7-11* to *4-7-11*.

ML
 Maria Lahman, Co-Chair

4-7-11
 Date

Comments:

APPENDIX B
CONSENT AND ASSENT FORMS

SUBJECT CONSENT FORM FOR PARTICIPATION OF HUMAN SUBJECTS IN RESEARCH
UNIVERSITY OF NORTHERN COLORADO

Project Title: Evaluating the Role of Social Support and School Safety in Adolescent Exposure to Trauma
Researcher: Amanda H. Stoeckel, Doctoral Student, Phone: 970.381.6322
Research Advisor: Robyn Hess, Ph.D., School Psychology

I am a student at the University of Northern Colorado. My research advisor, Dr. Hess, and I are interested in understanding the role of social support and school safety in students who may have been exposed to trauma. In order to understand how social support and school safety may help protect against posttraumatic stress symptoms, we are asking students and their teacher to complete questionnaires evaluating emotional/behavioral functioning.

If you agree to allow your child and child's teacher to participate in the study, your child will be asked to complete questionnaires about their social support, their perception of school safety, any adverse life events he or she may have experienced, and potential related symptoms of posttraumatic stress and depression. Your child's teacher will be asked to complete a behavioral rating scale about your child. We will make every effort to protect the confidentiality of the results. Your child's name will not be included on the questionnaires or behavioral rating scale, nor will your child's name be mentioned in the final write up of the study. To protect the identity of your child, numeric identifiers will be used.

There is minimal risk to your child for participating in this study. There is a possibility that responding to questionnaires related to any exposure to trauma may create psychological discomfort for individuals who may have experienced a traumatic event in the past. To help alleviate this possibility, the researcher's assistant, a psychologist, will be present during completion of these questionnaires to meet with those who may be experiencing any psychological discomfort related to the nature of the questionnaires.

At any point, for any reason, you can stop your child from participation in the study. Even after you have signed this form you may simply tell me or your child's teacher that you have changed your mind and would rather not participate. There is no penalty for not completing the questionnaires. Students who do not participate in the study will use the time as a "study hall", during which they may read, study, or complete homework independently at their desks.

AUTHORIZATION: Participation is voluntary. You may decide not to allow your child to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you or your child are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact the Sponsored Programs and Academic Research Center, Kepner Hall, University of Northern Colorado, Greeley, CO 80639; 970.351.1907.

Participant's Name

Signature of Parent or Legal Guardian

Date

Researcher's Signature

Date

UNIVERSITY *of*
NORTHERN COLORADO



ASSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH
UNIVERSITY OF NORTHERN COLORADO

Hi!

My name is Amanda Stoeckel, and I'm a student at the University of Northern Colorado. I am doing research on how social support and school safety might help adolescents who have experienced traumatic events in their lives.

If you would like to participate in my study, you will be asked to complete questionnaires about your social support, your perception of school safety, any negative events you have experienced in your life, and possible related symptoms of posttraumatic stress and depression. Your teacher will also be asked to complete a behavioral rating scale about you. We will make every effort to protect the confidentiality of your responses. Your name will not be included on the questionnaires or the behavioral rating scale.

There is minimal risk for participating in the study. There is a possibility that completing questionnaires related to negative events you may have experienced might create psychological discomfort. Because of this, the researcher's assistant, a psychologist, will be present when you complete the questionnaires and can meet with you in case you experience any discomfort.

At any point, for any reason, you can stop participation in the study. There is no penalty for not completing the questionnaires. Students who don't participate in the study will use the time to read, study, or complete homework independently at their desks.

By completing the questionnaires, you indicate your assent to participate in the study. Thank you!

SUBJECT CONSENT FORM FOR PARTICIPATION OF HUMAN SUBJECTS IN RESEARCH
UNIVERSITY OF NORTHERN COLORADO

Project Title: Evaluating the Role of Social Support and School Safety in Adolescent Exposure to Trauma
Researcher: Amanda H. Stoeckel, Doctoral Student, Phone: 970.381.6322
Research Advisor: Robyn Hess, Ph.D., School Psychology

I am a student at the University of Northern Colorado. My research advisor, Dr. Hess, and I are interested in understanding the role of social support and school safety in students who may have been exposed to trauma. After obtaining your initial informed consent, your child has participated in this study by completing questionnaires about emotional/behavioral functioning, social support, school safety, and any traumatic events he or she may have experienced. Your child responded to a questionnaire item indicating that he or she may be interested in sharing his or her story about coping with a traumatic experience in an interview with the researcher.

If you agree to allow your child to participate in this aspect of the study, you will be contacted to coordinate scheduling an interview with your child and the researcher at your child's school counseling office after the school day, which will be digitally recorded. Interview questions will focus on how your child was able to cope with the traumatic experience, including factors such as social support and school safety. Be assured that we intend to keep the results private. To further maintain confidentiality, your child's name will not be mentioned during the interview or any subsequent information related to the study.

There is minimal risk to your child for participating in this study. There is a possibility that participating in an interview related to exposure to trauma may create psychological discomfort for individuals who may have experienced a traumatic event in the past. To help alleviate this possibility, the researcher's assistant, a psychologist, will be available during the interview and after the interview to meet with your child if he or she is experiencing any psychological discomfort related to the interview.

At any point, for any reason, you can stop your child from participation in the study. Even after you have signed this form you may simply tell me that you have changed your mind and would rather not have your child participate. There is no penalty for your child not participating in the interview.

AUTHORIZATION: Participation is voluntary. You may decide not to allow your child to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you or your child are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact the Sponsored Programs and Academic Research Center, Kepner Hall, University of Northern Colorado, Greeley, CO 80639; 970.351.1907.

_____ **Parent/Legal Guardian Phone Number:** _____
Participant's Name

Signature of Parent or Legal Guardian **Date** **Researcher's Signature** **Date**

APPENDIX C
INTERVIEW PROTOCOL

1. Please describe the traumatic event who have experienced.
2. How did it affect you then?
3. How does it affect you now?
4. Tell me about the people in your life who care about you.
5. How did people help you when you experienced your traumatic event?
6. If something bad happens, who do you go to for help?
7. How do you fit in at your school?
8. In what ways do you feel accepted or unaccepted at school?
9. Tell me about the level of alcohol and drug use at your school.
10. How do teachers at your school respect their students?
11. What is your perspective on the level of violence at your school, both physical and verbal?
12. What is the presence of bullying like in your school?
13. What is the level of student pride at your school?
14. How does the level of conflict among students impact you?
15. If you get upset, who do you talk to?

APPENDIX D

SUMMARY OF RESEARCH IN ARTICLE FORMAT

ABSTRACT

This mixed methods study evaluated lifetime trauma exposure, protective factors, and current psychological functioning among 78 adolescents from two public middle schools in rural and suburban communities. One hundred percent of adolescents reported experiencing at least one traumatic event at some point during their lives. After controlling for gender, ethnicity, socioeconomic status, and special education/general education placement, more trauma exposure was associated with more post-traumatic stress and depressive symptoms, more teacher-rated externalizing behaviors, and lower teacher-rated adaptive functioning. Perceived access to support and factors of school safety demonstrated protective effects in the relationship between trauma exposure and domains of psychological functioning. Such moderators were observed to provide a greater impact among adolescents from families of low socioeconomic status. The inclusion of qualitative interviews helped to illustrate the process by which these protective factors influence trauma-related symptoms. Implications of the results focus on the implementation of school-wide safety promotion programs in urban, suburban, and rural communities. Such programs should place emphasis on the sense of school connection and positive interpersonal relationships among students rather than violence associated with the presence of weapons or drugs.

Introduction

In the wake of Hurricane Katrina and the more recent earthquake and subsequent tsunamis in Japan of 2011, adolescents of these areas continue to feel the aftermath of its devastating effects. Experiencing such a horrific natural disaster has caused some adolescents in these regions to develop post-traumatic stress symptoms, such as flashback episodes of the event, a diminished interest or participation in significant activities, difficulty concentrating, and irritability that has persisted well after the disaster's occurrence. However, some adolescents have not developed post-traumatic stress symptoms but rather have maintained healthy psychological functioning. Over the past 30 years, a growing literature has explored what factors play a role in these adolescents' ability to adapt well in their daily lives despite experiencing such adversity (Luthar, Cicchetti, & Becker, 2000; Masten, 2001).

Although traumatic events of such severity and far-reaching effects are uncommon, being exposed to a significant adverse event in ones' lifetime is not. According to various statistics, more than two-thirds of individuals in the general population may experience a traumatic event during their lives, and as much as one-fifth of the United States population may be exposed to trauma in any given year (Breslau et al., 1998; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). Along with natural disasters, traumatic events may include war-related traumas, criminal victimizations (e.g., shooting, physical assault, sexual assault, robbery), serious accidents, the death of a loved one, a personal illness or injury or that of a loved one, or witnessing interpersonal violence (Koopman, Classen, & Spiegel, 1997).

The effects of trauma are as diverse as the traumatic experiences themselves. For some individuals, the effects of trauma can be devastating and lead to a variety of emotional, physical, and behavioral reactions with related problems. Trauma-related symptoms consist of recurrent and intrusive distressing recollections or dreams of the trauma, persistent avoidance of stimuli associated with the event, an increased startle response, and a perception of a foreshortened future. This grouping of symptoms is currently classified as post-traumatic stress symptoms (American Psychiatric Association (APA), 2000). Although reports of rates of individuals who meet criteria for Post-traumatic Stress Disorder (PTSD) vary, the *Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition-Text Revision (DSM-IV-TR)* (APA, 2000) estimated that the prevalence of PTSD is approximately 8% of the adult population in the U.S.

Among other individuals who have experienced an adverse life event, the trauma may serve as a catalyst to enhance their lives (Lifton, 1993). Indeed, for certain individuals, facing trauma reorients them toward their goals and values. Models of resilience have helped to explain why some individuals are able to thrive despite experiencing a traumatic event and what protective factors are associated with healthy psychological functioning in the wake of trauma (Freitas & Downey, 1998; Garmezy, Masten, & Tellegen, 1984; Rutter, 1987, 1990). The general aim of the study was to explore how particular factors may protect individuals and, in particular, adolescents, against psychological deficits associated with trauma exposure.

Need for the Present Study

Adolescents in the U.S. are at a high risk for exposure to traumatic events. According to several community-based studies, prevalence rates for adolescent trauma

exposure ranged from 21% to 82% (Breslau, Lucia, & Alvarado, 2006; Giaconia et al., 1995; Kilpatrick et al., 2003; Perkonigg, Kessler, Storz, & Wittchen, 2000; Storr, Ialongo, Anthony, & Breslau, 2007). Given the high rates of trauma exposure among adolescents, it is imperative to recognize that adolescents who experience adversity may be at risk of developing trauma-related symptoms. Prevalence rates for PTSD among the total adolescent samples in several community-based studies varied from 1% to 9% (Giaconia et al., 1995; Kilpatrick et al., 2003; Perkonigg et al., 2000; Storr et al., 2007).

In addition to post-traumatic stress symptoms, adolescents exposed to trauma may also exhibit a wide range of emotional and behavioral symptoms. Depression is a common reaction for adolescents exposed to trauma; some may experience survivor guilt, which is the guilt of having survived an event while others perished (Yule, 1999). Adolescents who have experienced a traumatic event may be described as more irritable, hyperactive, and angry. Such individuals may display externalizing behaviors, such as aggression, because they have become insensitive to violence or because it has been modeled to them (Capozzoli & McVey, 2000). Exposure to trauma among adolescents may also interfere with adaptive functioning in the academic environment by leading to social withdrawal and isolation and problems with concentration, making it more difficult to thrive in a classroom (Joseph, William, & Yule, 1997; Wolfe, 1999).

Protective Factors in Adolescent Exposure to Trauma

As illustrated by the discrepancy between the prevalence of trauma exposure and development of PTSD among adolescents, many youth do not suffer deleterious psychological outcomes associated with experiencing a traumatic event. Literature has explored why some individuals appear resilient in the face of adverse circumstances

(Luthar et al., 2000; Masten, 2001). To better understand the mechanisms of resilience, investigators have examined factors present in individuals' social ecologies that may serve to moderate the negative outcomes of trauma (Hammack, Richards, Luo, Edlynn, & Roy, 2004; Hoge, Austin, & Pollack, 2007; Jackson, Kim, & Delap, 2007). Perceived access to support has been shown to play a protective role for adolescents who have been exposed to trauma in several studies (Hammack et al., 2004; Hoge et al., 2007; Overstreet & Dempsey, 1999). Another protective factor that has been explored, although not as extensively, is safety of the school environment. Adolescents who report feeling safer at school have been rated by their teachers as having higher levels of adaptive functioning associated to exposure to violence (Ozer & Weinstein, 2004).

Statement of the Problem

Among the research evaluating the role of perceived access to support and school safety as protective factors for adolescents exposed to trauma, very few studies have incorporated a qualitative component to explore the underlying mechanisms of such protective factors. Given the complexities and dynamics involved in the constructs of perceived access to support and school safety, the process by which such protective factors affect one's experience with trauma may be more richly elucidated through the voices of the adolescents.

The majority of investigations examining the role of protective factors in adolescent exposure to trauma have focused on urban samples of adolescents (e.g., Gorman-Smith & Tolan, 1998; Kliwer & Kung, 1998; Ozer & Weinstein, 2004). While rates of trauma exposure have been reported to be higher among youth living in urban areas than suburban communities, living in a particular community does not entirely

insulate adolescents from trauma exposure or its potentially devastating effects (Breslau et al., 2006). Adolescents from rural and suburban communities appear to be a population that has been overlooked in much of the literature surrounding trauma exposure and its protective factors.

Because adolescents spend much of their time at school, it is important to explore the ways in which the school environment and its perceived level of safety may act as a buffer from the negative effects of trauma. School safety has largely been evaluated as a protective factor for adolescents who have been exposed to a specific type of trauma: community violence. Considering the multitude of types of trauma to which adolescents are exposed, it is important to investigate how the role of school safety may serve as a protective factor in general trauma exposure.

Unfortunately, school safety has typically been assessed by the use of one to five items in past studies exploring its role as a protective factor in adolescent trauma exposure (e.g., Ozer, 2005; Ozer & Weinstein, 2004). Such studies have advocated for future use of measures that evaluate school safety more comprehensively. Accordingly, research should consider examining how various factors of school safety (e.g., school connection, relationships with teachers and students, drug usage) may play protective roles in adolescent exposure to trauma.

Purpose of the Study

The current mixed methods study addressed the role of perceived access to support and school safety in adolescent exposure to trauma among a school-based sample in rural and suburban communities. To help understand this relationship, the research used an embedded mixed method design in which a qualitative data set provided a

supportive, secondary role for the quantitative data. The primary purpose of this study used psychological measures to evaluate how social support and school safety influence psychological functioning in relation to adolescents' exposure to trauma. A secondary purpose was to gather qualitative data through the use of interviews that explored adolescents' experiences with trauma to better understand the mechanisms by which perceived access to support and school safety may influence psychological functioning. See Figure 1 for a visual diagram of the methodology of the current study within the structure of the concurrent, embedded-correlational design.

Research Questions

- Q1 Do adolescents who report a higher level of trauma exposure have more deficits in psychological functioning (i.e., post-traumatic stress and depressive symptoms, externalizing problems, and adaptive functioning)?
- Q2 What is the relationship between trauma exposure and psychological functioning of adolescents who report varying levels of protective factors (e.g., perceived access to support, school safety)?
- Q3 What are the underlying mechanisms relating adolescents' access to support and school safety and their psychological functioning? How do they perceive access to support and school safety in their own ability to function after trauma?

Methods

Participant Sample

Participants were a primarily ethnically homogenous group of 78 seventh graders (36 females, 42 males) from two public schools from rural and suburban communities in the Midwest and Mountain West Regions. Eighty-five percent of participating adolescents identified their ethnicity as White/European American, 8% as Latino/Latina, 4% as Native American, and 4% as Asian American. Along with gender and ethnicity,

subjects were also asked to provide information about whether or not they received special education services or free/reduced lunches. Twelve percent of adolescents reported receiving special education services. Special education services listed by adolescents included support for math, reading, and speech/language. Of participating adolescents, 35% reported receiving free/reduced lunches. Of the six participants who agreed to be interviewed for the qualitative data collection, two were male and four were female, five identified their ethnicity as White/European American and one as Latino/Latina, one indicated receiving special education services in the area of math, and two reported receiving free/reduced lunches.

Instruments

Life Incidence of Traumatic Events-Student Form

The *Life Incidence of Traumatic Events-Student Form (LITE-S)* (Greenwald, 2004) was used to assess adolescents' lifetime trauma exposure. The *LITE-S* consists of 16 items and requires the adolescent to circle yes or no to indicate what adverse life events have happened to him/her and estimate the emotional impact at both the time of occurrence and the present by circling how much the event upset him or her then and now (none, some, or lots). Because the *LITE-S* was created to serve as a screener of trauma exposure, there is not a standardized scoring system. However, through consultation with the author, Dr. Greenwald, and reviewing past studies which employed the *LITE-S*, in the present study participant responses were scored by summing the number of endorsed events. As such, only the number of endorsed traumatic events was considered in the

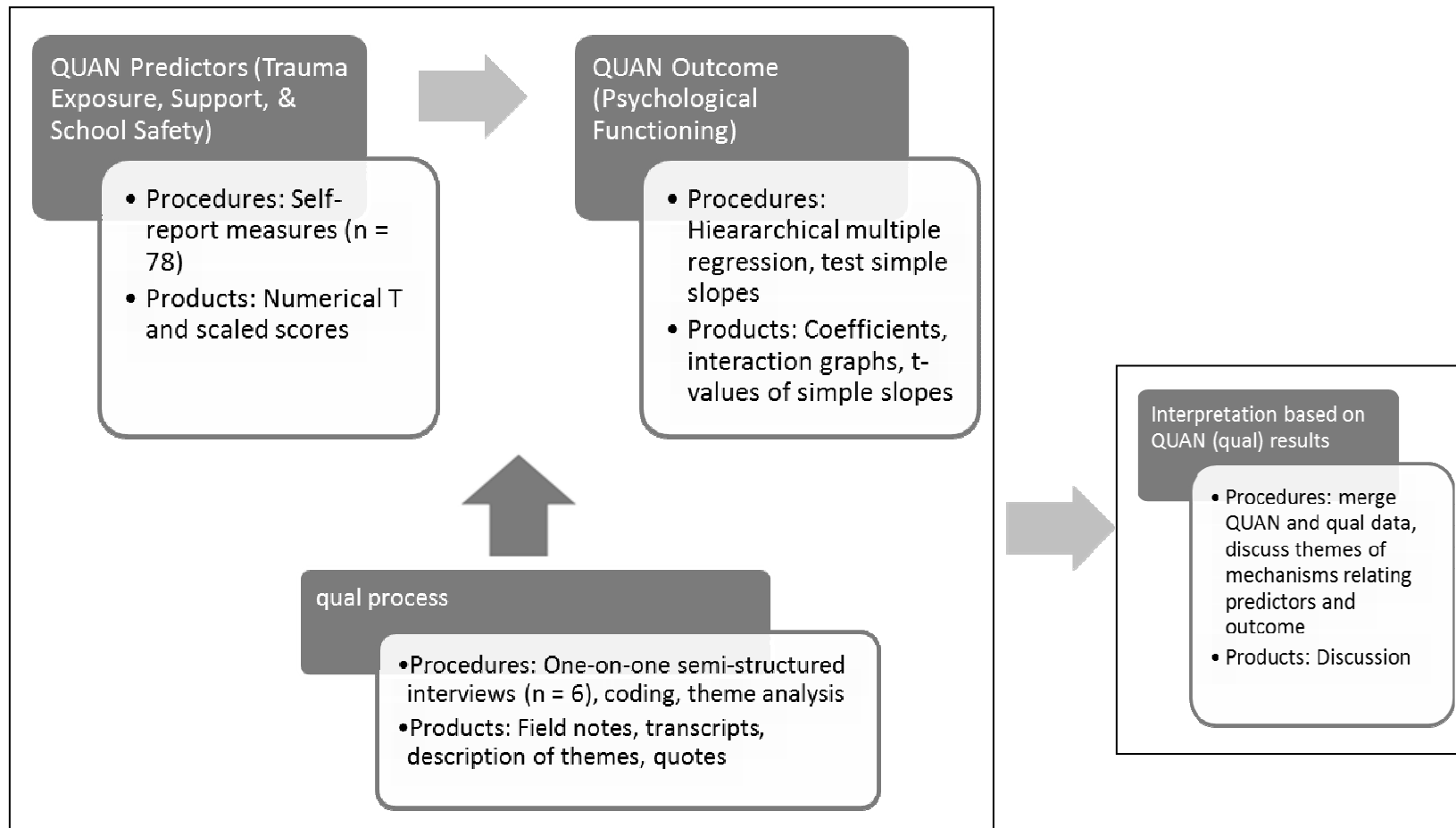


Figure 1. *Visual Diagram of the Procedures of the Concurrent, Embedded-Correlational Design*

analysis, and the degree to which the event upset the participant was not incorporated in the analysis.

*Perceived Access to Support
Subscale of the Sense of
Relatedness Scale of the
Resiliency Scales for Children
and Adolescents*

To examine role of social support as a protective factor for adolescents' trauma exposure, the Perceived Access to Support subscale of the Sense of Relatedness Scale (REL-Support) from Prince-Embury's (2007) *Resiliency Scales for Children and Adolescents* was used to assess adolescents' perceived access to support. The REL-Support Subscale consists of six items, such as "There are people who will help me if something bad happens." Adolescents were required to respond to a frequency-based, 5-point Likert scale: 0 (Never), 1 (Rarely), 2 (Sometimes), 3 (Often), 4 (Almost Always).

*Safe and Responsive Schools
Safe Schools Survey*

To explore the role of school safety as a protective factor for adolescents exposed to trauma, adolescents completed the secondary student version of the *Safe and Responsive Schools (SRS) Safe Schools Survey* (Skiba et al, 2004). Consisting of 45 items, the *SRS Safe Schools Survey* required the adolescents to record their responses using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Skiba et al. (2004) used a principal components analysis to establish four distinct scales that accounted for 51.67% of the shared variance: Climate/Connection, Incivility and Disruption, Personal Safety, and Delinquency/Major Safety. The Climate/Connection Scale includes 19 items describing the degree of connection students feel with the school and their perception of the responsiveness of the school atmosphere (e.g., "I am proud of

this school”). The Incivility and Disruption Scale contains 7 items about the civility of interpersonal relationships among students as observed by the frequency of name calling, conflicts, and arguments (e.g., “Groups of students cause problems or conflicts at school”). The Personal Safety Scale consists of 8 items focused on the feelings of personal safety in various settings (e.g., “I feel safe in the school hallways”). The Delinquency/Major Safety Scale includes 6 items representing students’ awareness of the presence of drugs, alcohol, knives, and smoking on school grounds (e.g., “I have seen students with drugs or alcohol at school”).

*Trauma Symptom Checklist for
Children-Alternate Version-
Post-traumatic Stress Scale*

The *Trauma Symptom Checklist for Children-Alternate Version-Post-traumatic Stress Scale (TSCC-A-PTS)* (Briere, 1996) was used to assess adolescents’ trauma-related symptoms. After a principal at one of the participating schools expressed concerns about items tapping sexual symptoms and preoccupation, it was decided that the alternate version of the *TSCC*, the *TSCC-A*, which makes no reference to sexual issues, would be used. The *TSCC-A-PTS* consists of ten items reflecting classic post-traumatic symptoms, including intrusive thoughts, sensations, and memories of painful past events; nightmares, fears of men or women; and cognitive avoidance of negative thoughts and memories. Participants were required to indicate how often he/she experiences each symptom by responding to a frequency-based, 4-point Likert scale: 0 (It never happens), 1 (It happens sometimes), 2 (It happens lots of times), or 3 (It happens almost all of the time).

Beck Depression Inventory for Youth

The Beck Depression Inventory for Youth (BDI-Y) was used to assess adolescents' depressive symptoms. The *BDI-Y* consists of 20 items that reflect the adolescents' negative thoughts about himself or herself, his or her life, and future; feelings of sadness; and physiological indications of depression. Adolescents were required to indicate how frequently each statement is true for them, including today.

The Behavior Assessment System for Children-Second Edition- Teacher Rating Scale

To gain a second perspective of participating adolescents' psychological functioning, teachers were administered selected items of *The Behavior Assessment System for Children-Second Edition-Teacher Rating Scale (BASC-2 TRS)* (Reynolds & Kamphaus, 2004). Teachers were asked to complete two composites of the *BASC-2 TRS*. The Externalizing Problems Composite consists of 33 items and reflects the adolescent's overall disruptive behavior symptoms and includes the Aggression (i.e., tendency to act in a verbally or physically threatening manner toward others, such as name calling and hitting), Conduct Problems (i.e., tendency to engage in antisocial or rule-breaking behavior, such as stealing and cheating in school), and Hyperactivity (i.e., tendency to be overly active and impulsive) Subscales. The Adaptive Skills Composite includes 39 items and assesses appropriate emotional expression and control, daily-living skills inside and outside the home, and communication skills, as well as prosocial, organizational, study, and other adaptive skills. The teachers were required to rate various behaviors on a four-point scale of frequency, ranging from *Never* to *Almost always*.

Procedures

Before data were collected, institutional approval was obtained from the University of Northern Colorado Institutional Review Board (IRB). Schools were recruited by contacting principals who were known by the researcher or the researcher's assistant. The researcher then described the study to the principals, who identified teachers who may be interested in participating. Each school was visited to discuss the study and review the administered measures with the principal and participating teachers. To maximize representation at each school, the sample included students in mandatory classes (i.e., math/science, English, or general advisory classes rather than elective, honors, or remedial classes). All adolescents in the participating classes were invited to participate in the study. A consent form describing the study in the students' native languages was distributed to students to take home for parental consent; in addition, students were provided an assent form which described the study. Only students who had obtained parental consent and provided assent participated in the study.

Quantitative Data Collection

As a group, participating adolescents completed the previously described psychological measures administered by the researcher or researcher's assistant during an allotted 45-minute period of time in class. The order in which measures were presented was consistent across participants, as it was unlikely that a fatigue effect was a factor after only 45 minutes of test administration. Identity of participants was protected by using numeric identifiers on psychological measures. While participating adolescents completed the psychological measures, teachers rated adolescents' externalizing behavior problems and adaptive functioning. All students in participating classes, regardless if they

participated in the study or not, were rewarded with a pizza party approximately two weeks after data collection, and participating teachers and principals received a \$20.00 gift card from Barnes and Noble as a measure of gratitude for participation in the study.

Qualitative Data Collection

Semi-structured interviews were conducted with adolescents who shared their perspectives on the process by which access to support and sense of school safety have influenced their psychological functioning associated with trauma exposure. At the end of the packet of psychological measures completed by adolescents participating in the quantitative data collection, participants were asked to indicate if they would be interested in sharing their experience of how support and school safety influenced their psychological functioning related to trauma exposure with the researcher in a later interview by checking a yes/no box. Interested adolescents, identified by their previously assigned numeric identifiers, were contacted at their school through their teacher who participated in the quantitative data collection, to confirm interest in the interview.

Six adolescents indicated being interested in participating in the interviews; these adolescents contributed to the 6 interviews conducted in the qualitative data collection of the study. Generally, the interview protocol was consistent among participants, and 15 general questions focused on the type of trauma experienced, perspectives of one's psychological functioning, including post-traumatic stress and depressive symptoms; one's perception about the level of access to support and sense of safety at school with regard to climate/connection, incivility/disruption, personal safety, and delinquency/major safety; and the ways by which support and sense of school safety relate to their psychological functioning associated with trauma exposure. Interviews

were conducted approximately one week after the quantitative data set was collected. Most of the interviews were about 30 minutes in duration and all were digitally recorded.

Quantitative Results

Descriptive Results

Because data were collected from two different schools, the possibility of school effects in the dependent variables was examined to test the independence assumption. Other demographic variables (e.g., gender, ethnicity, special education/general education placement, and free/reduced lunch status) for each school were also examined to determine how similar they are in representation. The independence assumption was met, as the value of the Durbin-Watson Test was less than 2 for all dependent variables, and demographic variables were considered to be fairly equally represented by each school. As such, data were analyzed across the sample of adolescents from both schools.

One-hundred percent of adolescent subjects reported experiencing a traumatic event in their lifetime, as measured by the *Life Incidence of Traumatic Events-Student Form (LITE-S)*. (see Table 1 for a complete listing of events and sample responses). Regarding psychological functioning, the overall mean T-scores were 45.92 for the *Trauma Symptom Checklist for Children Post-traumatic Stress Subscale (TSCC-A-PTS)*, 44.35 for the *Beck Depression Inventory-Youth (BDI-Y)*, 46.73 for the *Behavioral Assessment System for Children-Second Edition Teacher Rating Scale-Externalizing Composite (BASC-2 TRS Externalizing Composite)*, and 57.62 for the *BASC-2 TRS Adaptive Skills Composite*. The overall mean scaled score for the predicted resiliency factor of social support, as measured by the *Perceived Access to Support Subscale of the*

Sense of Relatedness Resiliency Scale for Children and Adolescents (REL- Support), was 9.69.

Table 1. *Percentage of Sample Exposed to Various Traumatic Events During Lifetime*

	Total	Male	Female
Been in car accident	12 (9)	14 (6)	4 (3)
Been hurt in accident other than car accident or sick in the hospital	42 (33)	50 (21)	33 (12)
Seen someone else get hurt	65 (51)	71 (30)	58 (21)
Someone in the family in the hospital (hurt or sick)	58 (45)	43 (18)	75 (27)
Someone in the family died	77 (60)	57 (24)	100 (36)
Friend very sick, hurt, or died	8 (6)	14 (6)	0 (0)
Been in a fire	0 (0)	0 (0)	0 (0)
Been in a tornado	8 (6)	7 (3)	8 (3)
Parents broke things or hurt each other	8 (6)	14 (6)	0 (0)
Parents separated or divorced	42 (33)	36 (15)	50 (18)
Been taken away from family	8 (6)	7 (3)	8 (3)
Been hit, whipped, beaten, or hurt by someone	23 (18)	36 (15)	3 (8)
Been tied up or locked in a small space	4 (3)	7 (3)	0 (0)
Been made to do sex things	1 (1)	0 (0)	1 (1)
Been threatened (someone said they would do something bad)	12 (9)	14 (6)	8 (3)
Been robbed (or house robbed)	8 (6)	14 (6)	0 (0)

Note: Percentages are followed by the number of participants in parentheses.

The overall mean scores of the scales of the *Safe Schools Survey-Secondary Student Form* were 4.14 for Connection/Climate, 2.96 for Incivility/Disruption, and 3.52 for Delinquency/Major Safety. See Table 2 for a display of correlations, means, and standard deviations of all variables.

Adolescents' Psychological Functioning by Demographics

Prior to testing the research questions, preliminary statistics were conducted to investigate whether any demographic variables were influencing outcomes and would need to be statistically controlled in subsequent analyses. These analyses revealed differences between adolescents' psychological functioning by particular demographic

variables. However, the following statistics need to be interpreted with caution, as there were unequal sample sizes of each level of some variables, particularly regarding special education/general education placement and ethnicity.

Adolescents' report of post-traumatic stress symptoms varied by gender and special education/general education placement. One-way ANOVAs were conducted and showed that males ($M = 49.79$) reported more post-traumatic stress symptoms than females ($M = 41.42$, $F = 11.19$, $p < .01$), while adolescents receiving special education services also reported more post-traumatic stress symptoms ($M = 54.67$) than those not receiving special education services ($M = 44.78$, $F = 6.03$, $p < .05$).

Significant differences in adolescents' endorsed depressive symptoms existed between gender, special education/general education placement, and free/reduced lunch status. Again, males ($M = 47.14$) endorsed more depressive symptoms than females ($M = 41.08$, $F = 4.01$, $p < .05$), and adolescents receiving special education services also endorsed more depressive symptoms ($M = 58.00$) than those not receiving special education services ($M = 42.57$, $F = 11.72$, $p < .01$). Adolescents who reported receiving free/reduced lunches endorsed more depressive symptoms ($M = 48.56$) than those who reported not receiving free/reduced lunches ($M = 42.12$, $F = 4.13$, $p < .05$).

Teachers' report of adolescents' externalizing behaviors varied by special education/general education placement and free/reduced lunch status. Adolescents receiving special education services ($M = 53.33$) were rated by their teacher as having more problems with externalizing behaviors than those not receiving special education services ($M = 45.87$, $F = 11.45$, $p < .01$). Teachers rated adolescents who reported receiving free/reduced lunches ($M = 50.67$) as having more problems with externalizing

Table 2. *Correlations, Means, and Standard Deviations of Variables*

	1	2	3	4	5	6	7	8	9
1. Trauma Exposure	--	-.42**	-.21	-.37**	-.40**	.86**	.79**	.61**	-.40**
2. Access to Support		--	.51**	.24*	.24*	-.63**	-.63**	-.40**	.47**
3. School Safety (Climate/Connection)			--	.34**	.42**	-.39**	-.33**	-.15	.02
4. School Safety (Incivility/Disruption)				--	.66**	-.46**	-.29**	-.23*	-.06
5. School Safety (Delinquency/Major Safety)					--	-.45**	-.29**	-.30**	.08
6. PTS Symptoms						--	.86**	.69**	-.47**
7. Depressive Symptoms							--	.74**	-.47**
8. Teacher-Rated Externalizing Behaviors								--	-.51**
9. Teacher-Rated Adaptive Functioning									--
Mean	9.96	9.69	4.14	2.96	3.52	45.92	44.35	46.73	57.62
Standard Deviation	10.12	3.76	.55	.78	.88	11.72	13.58	6.63	10.50

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

behaviors than those who reported not receiving free/reduced lunches ($M = 44.65$, $F = 17.69$, $p < .01$).

Teachers' report of adolescents' adaptive functioning differed by ethnicity, special education/general education placement, and free/reduced lunch status. Post hoc tests revealed that European American ($M = 58.5$) and Asian ($M = 71.0$) adolescents were rated significantly higher than Latino/Latina ($M = 42.5$) adolescents by their teachers regarding adaptive functioning ($p < .01$). Adolescents receiving special education services were rated by their teacher as having lower adaptive functioning ($M = 41.00$) than those not receiving special education services ($M = 59.78$, $F = 37.53$, $p < .01$). Teachers rated adolescents who reported receiving free/reduced lunches as having lower adaptive functioning ($M = 48.89$) than those who reported not receiving free/reduced lunches ($M = 62.24$, $F = 44.66$, $p < .01$).

Prediction of Adolescents' Psychological Functioning

Hierarchical multiple regression was used to predict adolescents' current level of psychological functioning. Before hierarchical multiple regression was conducted, however, data were analyzed to assure they met the assumptions of regression. Multicollinearity, the condition in which independent variables are highly correlated, was tested by examining correlations among the independent variables. To prevent redundancy of independent variables and a weak analysis, it is recommended to not include two independent variables that correlate with one another at .70 or greater (Aiken & West, 1991). Because independent variables School Safety (Personal Safety) and School Safety (Climate/Connection) were highly correlated ($r = .72$), School Safety (Personal Safety) was deleted as variable, as it correlated more highly with other

constructs of school safety (i.e., incivility/disruption and delinquency/major safety) than did School Safety (Climate/Connection) (Aiken & West, 1991).

To predict adolescents' current level of psychological functioning, hierarchical multiple regression was conducted, with demographic variables (e.g., gender, ethnicity, special education/general education placement, and free/reduced lunch status) included as control variables. More exposure to trauma was found to be significantly related to more deficits in each of the assessed areas of psychological functioning: post-traumatic stress symptoms ($B = .80, p < .01$), depressive symptoms ($B = .74, p < .01$), teacher-rated externalizing problems ($B = .52, p < .01$), and teacher-rated adaptive functioning ($B = -.25, p < .01$).

*Possible Moderators of the Relationship Between
Adolescent Exposure to Trauma and
Psychological Functioning*

Possible moderating variables of the relationship between trauma exposure and psychological functioning were investigated using hierarchical multiple regressions. Interaction terms were entered after control variables, trauma exposure, and moderating variables contributing to the interaction term (see Table 3). Based on results of preliminary analyses suggesting that demographic variables were influencing outcomes, three-way interactions were also conducted to determine if particular demographic variables, along with the following protective factors, influenced adolescents' psychological functioning related to trauma exposure. Ethnicity and special education/general education placement were not included in three-way interactions due to the unequal sample sizes of each variable, which would yield results that are difficult to interpret in a meaningful way. Thus, three-way interactions (Trauma Exposure x Possible

Table 3. Hierarchical Multiple Regressions Predicting Psychological Functioning

	PTS Symptoms			Depressive Symptoms			Teacher-Rated Externalizing Problems			Teacher-Rated Adaptive Functioning		
	Adj <i>R</i> ²	<i>R</i> ² change	<i>B</i>	Adj <i>R</i> ²	<i>R</i> ² change	<i>B</i>	Adj <i>R</i> ²	<i>R</i> ² change	<i>B</i>	Adj <i>R</i> ²	<i>R</i> ² change	<i>B</i>
Trauma Exposure	.79	.60**	.80**	.74	.51**	.74**	.52	.25**	.52**	.71	.06**	-.25**
Interactions												
Social Support	.84	.01**	-.26**	.80	.03**	-.21**	.52	.01	.24**	.71	.01	.13
Social Support x Trauma	.86	.04**	-.20**	.79	.02**	-.19**	.75	.20**	-.61**	.71	.00	.02
School Safety (Climate/Connection)	.80	.01*	-.27**	.74	.00	-.09	.53	.01	-.01	.72	.01	-.07
School Safety (Climate/Connection) x Trauma	.85	.04**	-.31**	.73	.00	-.05	.59	.06**	-.37**	.72	.01	.16
School Safety (Incivility/Disruption)	.80	.01*	-.14*	.73	.00	-.06	.52	.00	-.13	.73	.02*	-.10
School Safety (Incivility/Disruption) x Trauma	.80	.00	-.10	.75	.01*	-.21*	.61	.09**	-.55**	.77	.04**	.37**
School Safety (Delinq./Major Safety)	.80	.01	-.08	.74	.00	.06	.52	.00	-.08	.71	.01	-.12
School Safety (Delinq./Major Safety) x Trauma	.80	.00	-.12	.74	.01	.16	.52	.01	.19	.74	.02**	.30**

Note: Displayed are two-way interaction terms, which were rotated in after controlling for gender, ethnicity, special education placement, and free/reduced lunch status, and entering trauma exposure; B represents standardized beta coefficients. **p* < .05, ***p* < .001

Protective Factor x Gender; Trauma Exposure x Possible Protective Factor x Free/Reduced Lunch Status) were assessed for each area of psychological functioning. Results below will focus on the significant two-way interactions to provide containment within the scope of the study; however, significant three-way interactions will be described within each of the following potential protective factors.

*Adolescents' Perceived
Access to Support*

Higher trauma exposure was found to be associated with more post-traumatic stress symptoms under low ($t = 13.50, p < .01$), medium ($t = 11.24, p < .01$), and high ($t = 8.98, p < .01$) levels of perceived social support (see Figure 2). This interaction demonstrated that perceived access to support played a buffering role as a variable by yielding a decrease in the association between trauma exposure and post-traumatic stress symptoms. Among adolescents who indicated receiving free/reduced lunch, more access to support was associated with less post-traumatic symptoms as trauma exposure increased, while this association was not observed among adolescents who indicated not receiving free/reduced lunch.

A similar relationship was observed for depressive symptoms: higher trauma exposure was associated with more depressive symptoms under low ($t = 42.43, p < .01$), medium ($t = 7.68, p < .01$), and high ($t = 42.43, p < .01$) levels of social support (see Figure 3). Again, perceived access to support appeared to play a buffering role by showing a decrease in the relationship between trauma exposure and depressive symptoms. This relationship was only significant among males. Males with more access to support were associated with less depressive symptoms as trauma exposure increased than males with less access to support, whereas females' levels of access to support was

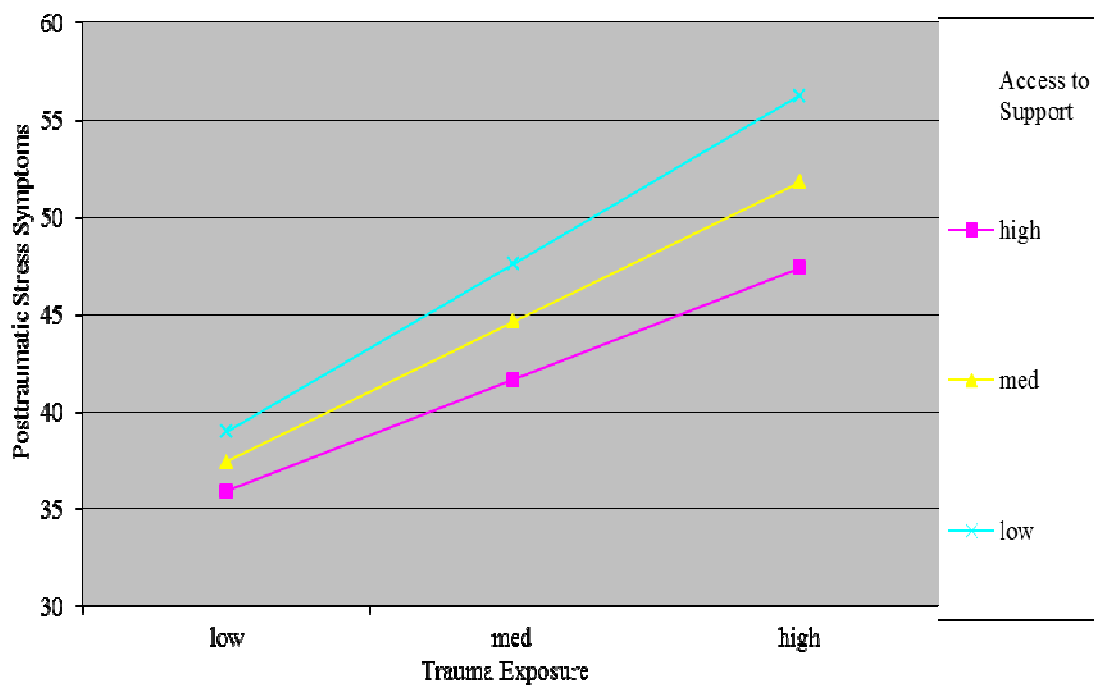


Figure 2. Trauma as Predictor of Post-traumatic Stress Symptoms by Access to Support

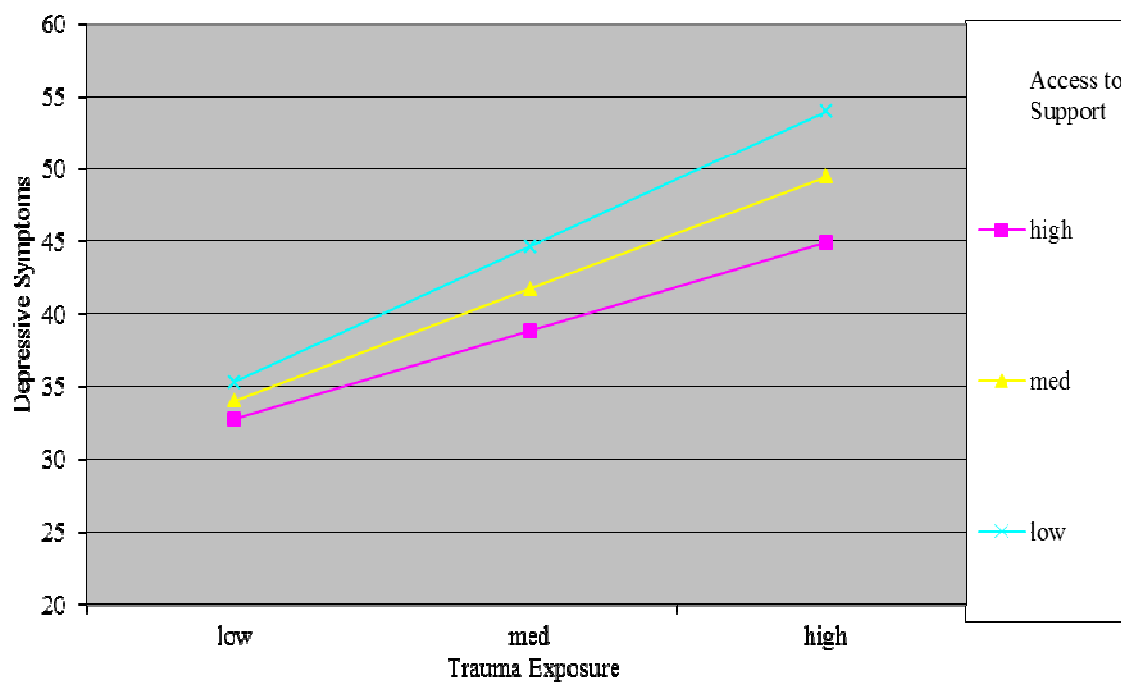


Figure 3. Trauma as Predictor of Depressive Symptoms by Access to Support

not associated with a difference in depressive symptoms. When free/reduced lunch status was entered as a variable, it was found that only adolescents who did not indicate receiving free/reduced lunch were associated with less depressive symptoms.

Adolescents who reported low ($t = 7.59, p < .01$) and medium ($t = 3.66, p < .01$) levels of perceived access to support were rated by their teachers as having more externalizing behavior problems as trauma exposure increased, whereas adolescents who reported a high level of perceived access to support did not experience a significant change in externalizing behavior problems, as rated by their teachers ($t = -1.66, p = .10$). With gender entered as a variable, males who reported more access to support were rated by their teachers as having less externalizing problems as trauma exposure increased than males with less access to support. This association was not observed for females. More access to support was also associated with less externalizing problems among adolescents who indicating receiving free/reduced lunch, whereas adolescents who did not indicate receiving free/reduced lunch were not associated with this difference.

*Adolescents' Sense of School Safety
with Regard to Climate/Connection*

Higher trauma exposure was observed to be related to more post-traumatic stress symptoms under low ($t = 19.51, p < .01$), medium ($t = 3.47, p < .01$), and high ($t = 2.49, p = .0151$) levels of school safety (Climate/Connection) (see Figure 4). Adolescents' sense of school safety with regard to its climate played a buffering role as a variable by yielding a decrease in the association between trauma exposure and post-traumatic stress symptoms. This association held true only among adolescents who indicated receiving free/reduced lunch.

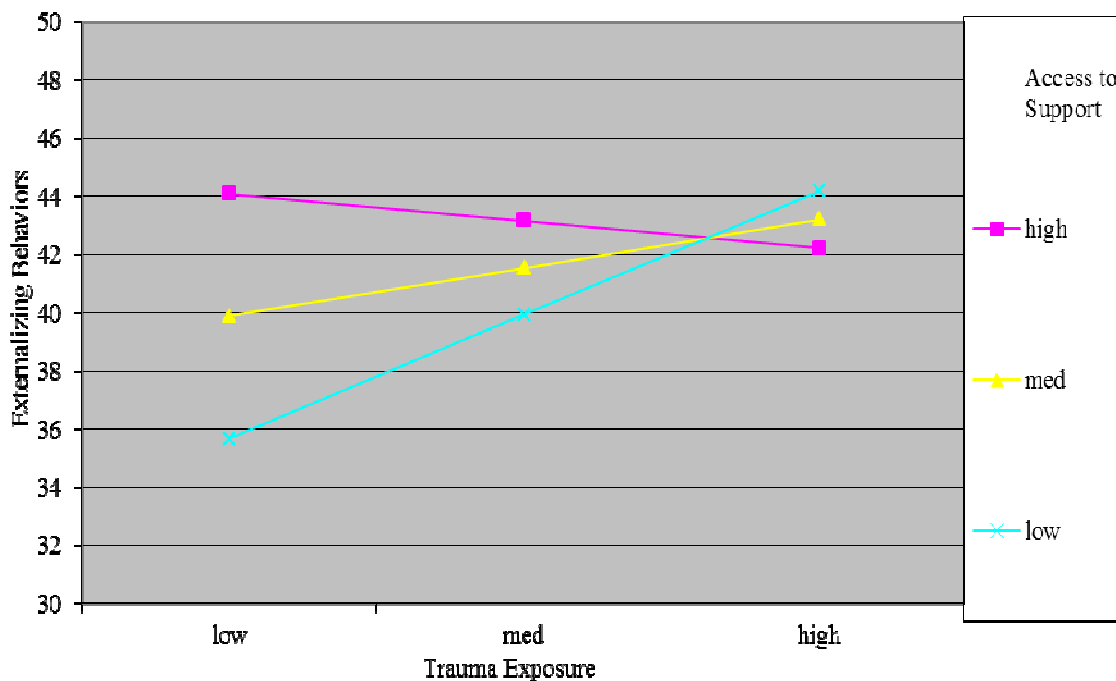


Figure 4. Trauma as Predictor of Externalizing Behaviors by Access to Support

Adolescents who reported a low ($t = 7.50, p < .01$) level of school safety with regard to Climate/Connection were rated by their teachers as having more externalizing behavior problems as trauma exposure increased, whereas adolescents who reported high ($t = -0.30, p = .77$) or medium ($t = 1.70, p = .09$) levels of sense of school safety with regard to Climate/Connection did not experience a significant change in externalizing behavior problems, as rated by their teachers. Again, only those indicating free/reduced lunch status benefited from this association.

Adolescents' Sense of School Safety with Regard to Incivility and Disruption

Adolescents who reported low ($t = 11.45, p < .01$) and medium ($t = 2.43, p = .017$) levels of sense of school safety with regard to Incivility and Disruption endorsed more depressive symptoms as trauma exposure increased, whereas adolescents who

reported a high level of sense of school safety with regard to Incivility and Disruption did not experience a significant increase in depressive symptoms ($t = 1.80, p = .077$). This association was also only significant for adolescents who indicated receiving free/reduced lunch.

A significant interaction of trauma exposure x school safety with regard to Incivility and Disruption was observed for teacher-rated externalizing behavior problems (see Figure 5). As levels of trauma exposure increased, adolescents who felt less safe at school with regard to Incivility and Disruption exhibited more teacher-rated externalizing behavior problems ($t = 7.27, p < .01$), whereas adolescents who felt more safe at school with regard to Incivility and Disruption exhibited less teacher-rated externalizing behavior problems ($t = -2.02, p < .05$).

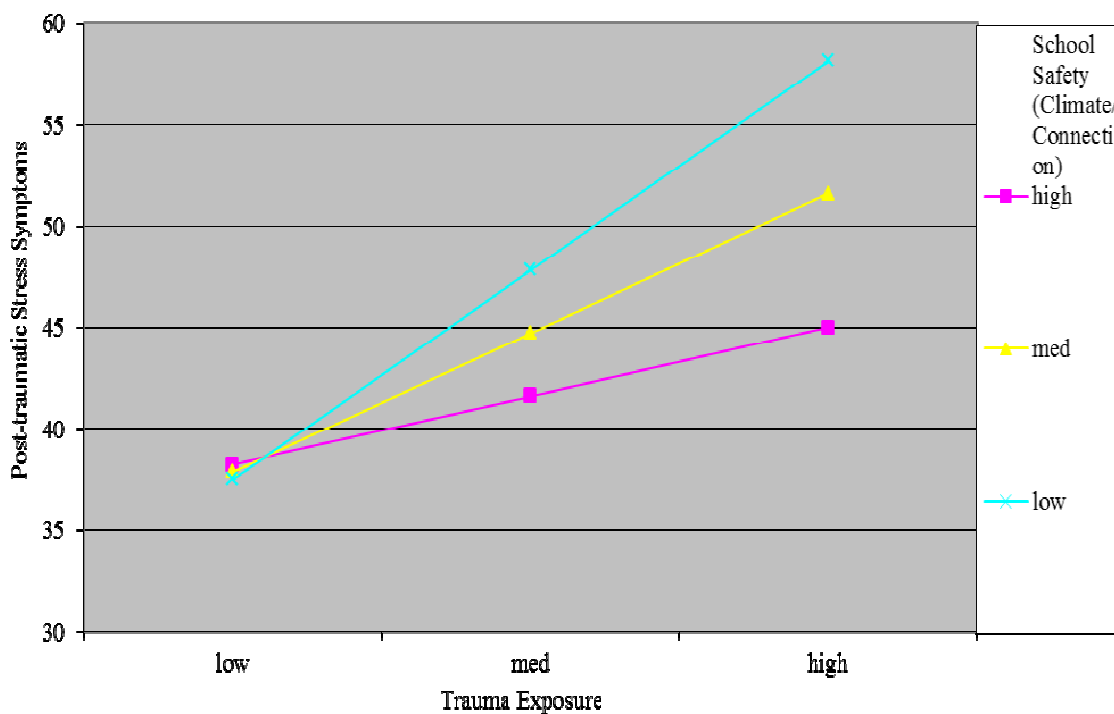


Figure 5. Trauma as Predictor of Post-traumatic Stress Symptoms by School Safety (Climate/Connection)

A similar pattern was found for teacher-rated adaptive functioning. As levels of trauma exposure increased, adolescents who felt less safe at school with regard to Incivility and Disruption were rated by their teachers as demonstrating lower adaptive functioning ($t = -6.73, p < .01$), while adolescents who felt more safe at school with regard to Incivility and Disruption were rated by their teachers as demonstrating higher adaptive functioning ($t = 1.96, p = .054$; see Figure 6). This protective effect was significant only among adolescents who indicated receiving free/reduced lunch.

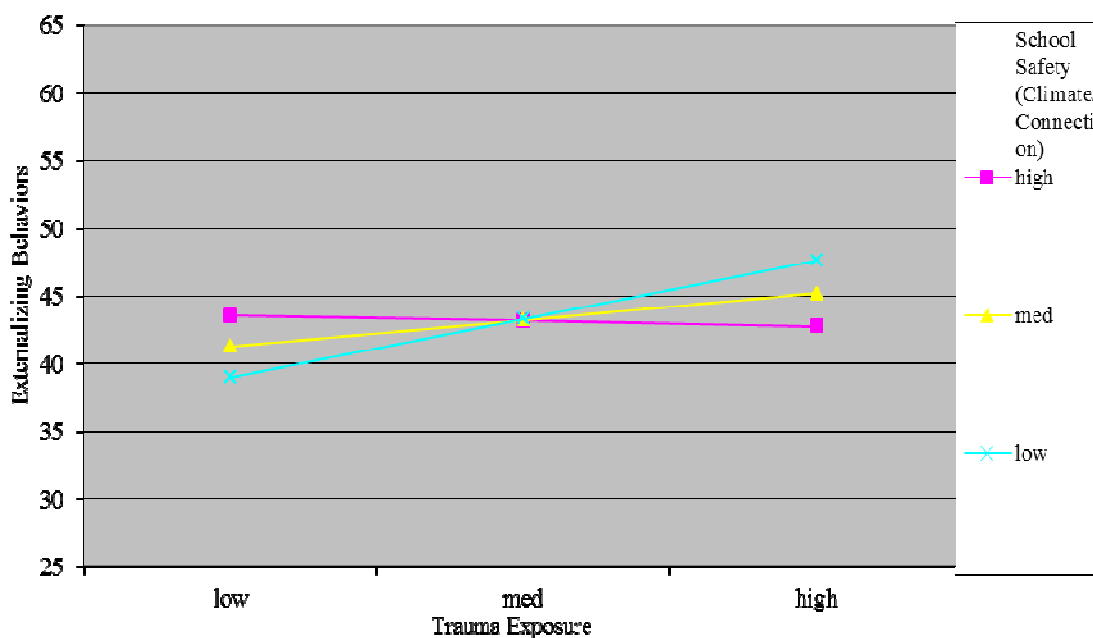


Figure 6. Trauma as Predictor of Externalizing Behaviors by School Safety (Climate/Connection)

Adolescents' Sense of School Safety with Regard to Delinquency/Major Safety

Higher trauma exposure was found to be associated with lower adaptive functioning under the condition of low level ($t = -5.05, p < .01$) of school safety with regard to Delinquency/Major Safety. Adolescents who reported a medium or high level

of sense of school safety with regard to Delinquency/Major Safety did not experience a significant change in adaptive functioning, as their respective simple slopes did not significantly differ from zero ($t = -1.01$, $p = .31$ for medium level, $t = 0.92$, $p = .36$ for high level). When gender was entered as a variable, there was a significant three-way interaction involving externalizing problems. Males who reported feeling safer at school with regard to Delinquency/Major Safety were reported to have less teacher-rated externalizing problems as trauma increased than those who reported feeling less safe. This association was not significant among females.

Qualitative Results

A secondary purpose of the study was to gather qualitative data through the use of interviews that explored adolescents' experiences with trauma to better understand the mechanisms by which perceived access to support and school safety may influence psychological functioning. Generated themes were organized according to each protective factor (i.e., perceived access to support, school safety with regard to climate/connection, school safety with regard to incivility and disruption, and school safety with regard to delinquency/major safety). Additional themes were identified as they emerged.

Perceived Access to Support

Students were asked about their belief that there are others to whom he or she can turn to when faced with an adverse life event. Adolescents seemed to vary in their responses based on the source of the trauma. For example, for these participants, the typical place for support, the home, was also the source of their trauma. In those instances, they did not believe they had anyone to turn to. Kate, a 13-year-old female who

reported witnessing physical and verbal abuse between her parents almost on a daily basis until their recent divorce, reflected adamantly, “Reaching out to my family is never productive because they all take sides and never pay any attention to how it’s affecting me!” In fact, she seemed to be disconnected from others and described herself as “a zombie around people” as she described her problems related to post-traumatic stress.

Unfortunately, some of the participants believed there was no one that they could approach to access support. When asked about her belief in being able to go to others for help, Beth, a 12-year-old female who experienced regular physical abuse when she was younger, replied, “I stopped going to others for help because it didn’t help—it kept right on happening.”

Conversely, others found that they had an extended network of individuals that they could go to for support. Joe, a 13-year-old male who reported that his father died approximately one year ago, expressed much support from his Aunt:

“She and I just talk about things. She’s always kinda been there for me. She’s been to all my baseball games. Kind of just like your Godmom, kind of. If anything ever happened to my Mom I’d go to her.”

In this instance, the source of the trauma did not involve betrayal of trust as did the other reports. It may be that youth who have experienced trauma that is not caused by another may be more willing to continue to seek out support.

Disconfirming evidence for the theme was found. Anna, a 13-year-old female who reported that she was sexually abused by her mother’s ex-husband, expressed support from her friends: “My friends were very supportive when I first told them about it—they told me I’d get through it.”

When describing the type of support that was most helpful, participants found it helpful when their supporters could “sense” when support was needed. Joe explained,

“Usually I’m not one that just goes and opens up. If my Aunt knows that I’m sad or something, she’ll be like, ‘Well, talk about it. Let’s talk about it.’ I might not want to talk about it right away but I can just call her whenever, and she’s ready to talk, even if she’s working. She’s always there.”

In a discussion about his current psychological functioning, Joe shared,

“Because of the support I have—the people I have in my life—I’m not how I used to be, smoking weed to self-medicate or whatever—that’s what my therapist calls it—which just made me feel more depressed.”

Again, though, support was not perceived to have much impact for some individuals who have experienced trauma. Despite Anna’s reported adequate level of perceived access to support, her long description of her own post-traumatic stress and depressive symptoms is heartbreaking; she ends by tearfully stating, “Nothing has really helped—not even my friends.”

School Safety (Climate/Connection)

Participants were asked to share their perceptions about how connected they feel to their school and how the school’s atmosphere has impacted their experience with trauma. A general theme that appeared among adolescents who reported feeling unconnected to their school was feeling isolated in one’s experience, leading to a lack of belonging. Kate expressed: “There’s no one at my school who can relate to what I went through—there’s no one. They really don’t understand because, like, they really don’t have to deal with it so they don’t even know how to help at all.”

In contrast, a salient theme generated among adolescents who felt connected to their school related to how the social structure of school induces a sense of connectedness, albeit perhaps artificially. Lee explained: “Just having a bunch of other

kids around you—sometimes it’s easier to just put on a happy face and be like the rest of them. The happy feeling doesn’t last but at least it’s something.”

Meg reiterated this theme by incorporating the concept of both structure and adaptation: “School’s a place where I’m set up to do something every day. If I have to do something that’s supposed to be fun and I’m not feeling it, I have to adapt to act like I’m having fun with everyone.”

Feeling connected to one’s school appeared to serve as a protective factor for adolescents in the sense that it allows a time period during which painful internal experiences may be reduced—a type of diversion.

School Safety (Incivility and Disruption)

Participants were asked about the quality of interpersonal relationships among students at their school and it may have benefited them in their experience of trauma.

Adolescents appeared to perceive the quality of interpersonal relationships at their school by how open, nonjudgmental, and transparent their peers are. Joe shared:

“That’s why I like it here, because everyone’s just—they’re themselves. They don’t try to be anyone else, they don’t try to put anyone else down, they just—they’re just friends with everyone. The fact that they weren’t judgmental really helped me get my depression under control after my Dad died—they weren’t out there calling me a “pothead” and stuff like that.”

Beth described how the lack of transparency of her peers revolving around her health issues associated with her past trauma impacted her:

“All of these rumors go around about why I’m so tired and sick all the time. Every day, down the hall, I’ll hear things whispered about me, like ‘she’s doing drugs’ and all this. I wish they would just say it to my face. It’s gotten to the point where, well, I just don’t feel alive anymore. I don’t see why humans search for happiness—I mean, I see why they do but I don’t feel strong enough to. But, maybe I just don’t want to deal with the rumors anymore.”

School Safety (Delinquency/Major Safety)

Adolescents were asked about their awareness of drugs and weapons at school and how their presence may affect their functioning. It appeared as though feeling safer at school served as a protective factor by shielding one from dangers outside of school. An illustration of this theme was provided by Meg:

“School’s been one of the only places where I don’t have flashbacks of it. I feel safe when I’m here cause I made it here safe and know I won’t get hurt when I’m here. Sometimes I don’t want to leave and go back out in the real world, where keeping yourself safe is not a sure thing.”

Not needing to be concerned about major safety issues at school seems to provide a respite for adolescents and perhaps even reduces negative emotions, an effect that may carry over to outside environments. Again, school appears to be a diversion for some adolescents—a place in which their worries may be forgotten, if only for a short while.

Joe discussed how the lack of school safety with regard to delinquency influenced his psychological functioning within the context of being among peers with whom he previously used drugs:

“They’ll sit there and they don’t really offer me anything but they’ll make me laugh, and I’ll get on their good sides again, and they’ll be like ‘Come on, let’s go smoke. It’ll be like old times.’ And I’m like, Crap. Are you only gonna be my friend if I do that? And a lot of them, they’ll still be my friend and all but I do have a couple people that hang around after school and are like, ‘Well, let’s see if we can get some money out of him.’ Or, ‘Let’s see if he can get us high’ or something. It makes me feel down that they weren’t really true friends, you know? It’s hard.”

Joe’s illustration provides disconfirming evidence for this theme. While school is generally a safe place to be, there are some peer aspects that may lure students to revert to old, ineffective habits.

Discussion

The results from the current study's sample of 7th grade adolescents from two schools, one rural and one suburban, reflected the high prevalence of trauma exposure during the lifetime of these adolescents. Although the sample was not particularly ethnically diverse, with 85% of participants identifying themselves as European Americans, the results demonstrated that trauma exposure and its devastating effects transcend ethnicity and specific communities, such as those characterized as "urban" or "inner-city". In fact, the level of reported trauma exposure in the current study was slightly higher than in previous studies with adolescents, which have reported lifetime trauma exposure rates of 66% to 91% using the measure employed in this study (Copeland, Keler, Angold, & Costello, 2007; Greenwald & Rubin, 1999). It is unclear why this group reported higher levels of trauma. The sources of trauma were varied and did not seem related to a unique community event (e.g., natural disaster) and, in fact, most appear to be related to child abuse.

In the current study, gender differences existed among particular aspects of psychological functioning. Male adolescents reported more post-traumatic stress and depressive symptoms. This finding contrasts with much of the past research that has either found that there were no gender differences or that females endorsed a higher prevalence of post-traumatic stress symptoms and depressive symptoms (e.g., Ahmad, Sofi, Sundelin-Wahlsten, & von Knorring, 2000; Broman-Fulks et al., 2006; Elbedour, Onwuegbuzie, Ghannam, Whitcome, & Hein, 2007). Past studies have predominantly found that females exposed to trauma endorse significantly more internalizing problems, such as depressive symptoms, whereas males tend to display more externalizing problems

(e.g., Shannon, Lonigan, Finch, & Taylor, 1994). It has been argued that females are more adept at emotional expression, which may be a protective factor in trauma exposure by decreasing the level of trauma symptoms experienced by adolescents (Lowery & Stokes, 2005). Perhaps females in the current study utilize emotional expression of their traumatic experiences more effectively than their male counterparts, causing particular domains of their psychological functioning (i.e., post-traumatic stress and depressive symptoms) to remain more intact. Unexpectedly, though, no significant gender differences existed related to adaptive functioning or externalizing problems.

Adolescents from lower socioeconomic backgrounds reported more depressive symptoms and were rated by their teachers as having more externalizing problems and lower adaptive functioning than their peers. This finding has been supported by prior studies examining various areas of psychological functioning among adolescents from low-income families (Barrera et al., 2002; Faust & Kaatchen, 2004). Such research has found that economic instability is associated with disruptions in parenting and maternal depression, each of which has been connected to the emergence of emotional and behavioral problems among youth.

Even after controlling for significant differences among gender, ethnicity, special education/general education placement, and free/reduced lunch status, more trauma exposure was related to more post-traumatic stress and depressive symptoms and externalizing problems and lower adaptive functioning. This finding parallels previous research investigating trauma exposure among adolescents (e.g., Horowitz, Weine, & Jekel, 1995; Schaal & Elbert, 2006; Singer, Anglin, Song, & Lunghofer, 1995).

*Protective Factors From Deficits in Psychological
Functioning Associated with Trauma*

Perceived Access to Support

While trauma exposure was related to more deficits in psychological functioning, less post-traumatic stress and depressive symptoms and teacher-rated externalizing problems were reported among adolescents who reported greater access to support. Perceived access to support appeared to serve a buffering role in adolescents' trauma exposure. Previous studies have also suggested that access to support may serve as a buffer from adverse life events (Prince-Embury, 2009; Werner & Smith, 1992). The results from these studies have suggested that internal mechanisms reflecting the cumulative experience of previous support may shield the adolescent from potential negative psychological impact of particular events.

Results of the current study revealed that males appeared to benefit more from perceived access to support as a protective factor against post-traumatic stress and depressive symptoms than females. It has been posited that females, in general, may be more adept at expressing their emotional experiences to sources of support than males, which may help to decrease their level of post-traumatic stress and depressive symptoms (Lowery & Stokes, 2005). This was illustrated qualitatively, as a male reported during the interview that they he is not "one that goes and opens up". Perhaps for males, being able to access support by expressing their feelings to individuals of their support network produces a greater impact on the level of post-traumatic stress and depressive symptoms they may experience with trauma exposure.

Perceived access to support also served a protective role in adolescents' externalizing problems. Adolescents who reported lower levels of perceived support were rated by their teachers as having more externalizing problems as trauma exposure increased. Attachment theory suggests that adolescents who present with a high level of externalizing problems in the context of an unstable, supportive environment may be attempting to connect with or seek attention from salient authority figures in their lives (e.g., caregivers and teachers) (Allen & Land, 1999). Adolescents exposed to trauma who perceive a low level of access to support may, in an attempt to gain the support that is lacking in other areas of their lives, signal this need by externalizing their emotions toward their teachers.

School Safety

Consistent with past research, school safety was demonstrated to play a protective role in the effects of negative life events experienced by adolescents (Loukas, Roalson, & Herrera, 2010; Whitlock, 2006) In the current study, several factors of school safety seemed to play a buffering role against various domains of psychological functioning as trauma exposure increased. A study that pioneered the exploration of school safety as a protective factor against psychological deficits associated to adverse life events, conducted by Ozer and Weinstein (2004), demonstrated that school safety played a protective role in adolescents' adaptive functioning but failed to show any effect on adolescents' endorsement of post-traumatic stress symptoms or depressive symptoms. However, this study used only one item by which to assess school safety.

The current study used an instrument measuring a comprehensive model of school safety, which resulted in findings that suggested that various factors of school safety

served as a buffer from deficits in domains of psychological functioning after trauma exposure, including post-traumatic stress and depressive symptoms and teacher-rated externalizing behaviors and adaptive functioning. In the current study, adolescents' sense of safety with regard to Climate/Connection played a buffering role by yielding a decrease in the association between trauma exposure and post-traumatic stress symptoms and teacher-rated externalizing problems. These results are supported by those of Skiba, Simmons, Peterson, and Forde (2006) who found that a school's climate/connection was the largest contributing factor in predicting overall feelings of school safety among students.

Past research has suggested that when adolescents feel safe and, in particular, connected to their schools, they are more buffered from negative influences and primed to make appropriate decisions about their welfare (Rodney, Johnson, & Srivastava, 2005). Feeling safe at school with regard to Climate/Connection for these adolescents may help to compensate for the lack of positive climate or connection they experience in other environments, helping to decrease post-traumatic stress symptoms and externalizing problems. In qualitative interviews, some adolescents appeared to perceive school as a safe place where they do not to be "on guard" about potential maltreatment from adults, something they experienced on a daily basis at home.

In the current study, the Incivility and Disruption Scale appeared to be the most effective protective factor for adolescents exposed to trauma. Significant two- or three-way interactions involving the Incivility and Disruption Scale were observed for each assessed domain of psychological functioning. The Incivility and Disruption Scale tapped into the civility of interpersonal relationships among students as expressed by the

frequency of name calling, arguments, and conflicts. Adolescents who perceived interpersonal relationships at school to be less civil endorsed more depressive symptoms as trauma exposure increased. Qualitative data suggested that the openness of peers and not feeling judged contributed to students' perceptions regarding the Incivility and Disruption aspect of school safety, which led to fewer depressive symptoms. The Incivility and Disruption Scale was also the only protective factor to demonstrate a protective-enhancing effect for areas of psychological functioning. Luthar et al. (2000) describes a protective-enhancing effect as one in which adjustment is better in the presence of increased risk, likely because the protective factor promotes positive engagement with stress.

The psychological domains in which school safety with regard to Incivility and Disruption demonstrated a protective-enhancing effect were externalizing problems and adaptive functioning. Those adolescents who reported feeling safer at school showed fewer externalizing symptoms and appeared to have a higher level of adaptive functioning despite reporting higher levels of trauma exposure. Ozer and Weinstein (2004) observed general school safety, albeit assessed by one item, playing a similar role for adolescents' adaptive functioning associated to violence exposure. This current finding illustrates how a protective factor (i.e., school safety with regard to Incivility and Disruption) may be related to higher functioning after experiencing an adverse life event. Past research investigating protective factors against trauma-related symptoms have also suggested that facing adversity may, for some individuals, result in positive outcomes (Bonanno, 2004; Masten & Obradovic, 2006; Rattrin Hestyanti, 2006). In the current study, civil interpersonal relationships among students appeared to promote positive

engagement, as evidenced by fewer teacher-rated externalizing problems and higher teacher-rated adaptive functioning.

The final factor of school safety that served as a protective factor in adolescents' psychological functioning associated with trauma exposure is Delinquency/Major Safety, which focuses on students' awareness of the presence of drugs, alcohol, knives, and smoking on school property. Skiba, Simmons, Peterson, and Forde (2006) found this factor to be the least contributor of students' overall sense of school safety. Similarly in the current study, school safety with regard to Delinquency/Major Safety demonstrated the least effectiveness as a protective factor in adolescents' psychological functioning associated with trauma, only playing a buffering role against deficits in teacher-rated adaptive functioning and externalizing behaviors.

*The Impact of Perceived Access to Support and School
Safety within Socioeconomic Status*

In the current study's examination of perceived access to support and school safety as protective factors for adolescents who have been exposed to trauma, it was found that adolescents from low-income families generally appeared to benefit more from each protective factor. Greater perceived access to support was associated with less post-traumatic stress symptoms with trauma exposure only among adolescents from low-income families. Prior research has suggested that families of lower socio-economic status are less likely to have strong social support networks that may buffer against stressors (Graham-Bermann, Coupet, Egler, Mattis, & Banyard, 1996; Maton, 1989). Support may have an exponential effect on decreasing post-traumatic stress symptoms when it does exist among adolescents from families with low incomes. Perceived access

to support was also only beneficial as a protective factor against externalizing problems for adolescents from low-income families.

Factors of school safety also provided a greater impact to adolescents from low-income families. Protective factors have been argued to be particularly necessary among economically disadvantaged youth in the development of positive outcomes following a traumatic event (Parsons, 1994). Furthermore, it has been found that organizational or institutional settings that promote a positive self-image increase the likelihood of successful functioning after trauma exposure (Rutter, 1990). Because adolescents from low-income families are more likely to experience interpersonal conflict within the family system, they may be more likely to benefit from civil interpersonal interactions in other environments (i.e., school), which may help foster a healthy self-image and contribute to enhanced adaptive functioning with trauma exposure. The current findings are in line with prior research which has observed that a sense of connection to one's school provided a greater impact on the psychological functioning among adolescents from low-income families (DuBois, Felner, Brand, Adan, & Evans, 1992; Felner, Aber, Primavera, & Cauce, 1985). As these authors also suggest, adolescents from low-income families may have less family support and may use the sense of connection to their school in a compensatory manner.

Limitations

As mentioned previously, the current sample was not particularly diverse, with 85% of participants identifying themselves as European American, and relatively small. As such, meaningful interpretations could not be made as to how the protective factors of perceived access to support and school safety may impact individuals from various ethnic

groups in differing ways. Considering that seeking out support and a sense of connection is often thought to be valued among some ethnic groups while looked down upon in others, one might hypothesize observing differences in how these protective factors influence psychological functioning associated with trauma exposure among a larger, ethnically diverse sample.

Although the *LITE-S* was employed in the current study as a trauma exposure measure due to its brief administration and wide-range assessment of traumatic events, it lacks a standardized method by which to assess trauma severity. Although Greenwald (2004) emphasizes its use as simply a screening instrument, it would be advantageous to develop a scoring method that would incorporate the respondent's level of distress caused by the traumatic event into an objective measure of trauma severity. The protective factors of perceived access to support and school safety may have shown to impact psychological functioning differently among varying levels of trauma severity rather than by the number of traumatic events experienced in one's lifetime.

Implications and Suggestions for Future Research

The results of the current study have several implications for interventions to promote healthy psychological functioning among adolescents who have experienced a traumatic event during their lives. Findings suggesting that perceived access to support served a protective role in psychological functioning emphasize the important function of individuals such as family members, peers, and teachers in dealing with a traumatic event. The support from peers and teachers may be particularly beneficial among adolescents from low-income families. Encouraging supportive relationships and conversations focused on problem solving among peers may strengthen resources,

especially surrounding issues that adolescents may not feel comfortable sharing with their parents.

The current findings suggest that factors of school safety may also play a protective role in the mental health among adolescents who have experienced a traumatic event. While there is limited understanding of the process by which factors of school safety contribute to healthy psychological functioning, qualitative results from the present study suggest that the school environment may function as a diversion for adolescents who have been exposed to trauma, allowing them a safe place in which they are temporarily removed from the outside environment, which may be associated with their trauma experience. As findings from prior research and the current study suggest, the idea of school serving as a respite may be more impactful among adolescents from low-income families by compensating for a potentially less supportive environment at home (DuBois et al., 1992). It would then behoove teachers, school psychologists, and school administrators among urban, suburban, and rural communities to be especially attuned to the perceptions of school safety among students who may be socio-economically disadvantaged and implement school-wide programs that promote characteristics of school safety.

Conclusion

This mixed methods study suggests that lifetime trauma exposure is associated with post-traumatic stress and depressive symptoms, teacher-rated externalizing problems, and lower teacher-rated adaptive functioning among a school-based sample of adolescents from rural and suburban communities. Quantitative results identified moderators of the relationship between trauma exposure and various domains of

psychological functioning and revealed that moderators may provide a greater impact among individuals of a particular demographic, such as low socioeconomic status. Information gleaned from qualitative interviews helped to elucidate the process by which perceived access to support and factors of school safety played a protective role in adolescents' psychological functioning associated with trauma exposure. Prospective research should examine the long-term effects of the implementation of school-wide safety promotion programs in urban, suburban, and rural communities on the psychological functioning of adolescents who have experienced trauma. It is recommended that such programs place emphasis on the sense of school connection and positive interpersonal relationships among students rather than violence associated with the presence of weapons or drugs.

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