

IMPACT OF INFORMATION LEVEL ON TEACHERS' ABILITY TO IDENTIFY AND  
ACCOMMODATE FOR PTSD

by Deborah Jean Mercier

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**ABSTRACT**

This study concerns the impact of providing teachers with increasing levels of information about a hypothetical student's PTSD symptoms. Specifically, the amount of information given teachers was examined as it impacted: 1. teachers' causal attributions, 2. their ability to identify specific emotional problems, and 3. their ability to choose accommodations recommended for students with PTSD. An online survey format was used to randomly assign 236 teachers to one of three levels of information about a hypothetical student namely, 1) description of behavioral and academic difficulties in the classroom (Behavioral Descriptors), 2) Behavioral Descriptors plus information about trauma exposure and diagnosis of PTSD (PTSD Diagnosis), and 3) Behavioral Descriptors, PTSD Diagnosis plus outcomes associated with PTSD (PTSD Outcomes). Increased levels of information resulted in a significant increase in accurate identification of the cause of student difficulties overall. Regarding ability to identify specific emotional diagnoses, teachers' ability to identify PTSD as the accurate emotional problem represented was also significantly more likely with increased levels of information. However, the likelihood of teachers to identify accommodations recommended for students with PTSD was not significantly impacted by increased levels of information. Results indicated that teachers make more accurate causal attributions about students with PTSD with increased information, but this does not result in increased ability to identify classroom accommodations that are recommended for students with PTSD.

## CHAPTER 1: INTRODUCTION

This chapter covers the definition and criteria for Posttraumatic Stress Disorder (PTSD) including a brief history of the application of the diagnosis with children. Cognitive deficits associated with a diagnosis of PTSD will be outlined indicating the need for consideration of interventions for children with PTSD in the schools. The chapter will conclude by describing the research questions, the hypotheses associated with each question, and definitions of key terms. The purpose of the study is to examine if providing teachers with increased information improves their ability to make accurate attributions about causes of student difficulties as well as to identify accommodations that are specific to PTSD.

Posttraumatic stress disorder is classified in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition – Text Revision (DSM-IV-TR) as an anxiety disorder. According to the DSM-IV-TR, PTSD is “characterized by the re-experiencing of an extremely traumatic event accompanied by symptoms of increased arousal and by avoidance of stimuli associated with the trauma” (APA, 2000; p. 429). PTSD was first identified in soldiers during and after experiencing the horrors of war. Earliest reports of stress disorders due to combat were recorded in manuscripts as old as *The Odyssey* by Homer (Fletcher, 2003). The disorder was initially identified as shell-shock around the World War I era in reference to mortar shells used in combat. Later, clinicians recognized symptoms similar to those seen in shell-shock in individuals who had experienced severe trauma such as natural disasters or life-threatening situations. PTSD was officially included in the American Psychological Association’s Diagnostic and Statistical Manual of Mental Disorders, 3<sup>rd</sup> Edition (DSM-III) in 1980.

Despite the fact that PTSD was generally considered to be an adult disorder, research and clinical work identified PTSD in children exposed to trauma (McFarlane, 1987; Pynoos et al.,

1987; Terr, 1979). Terr (1979) provided descriptions of the trauma responses of children in Chowchilla, California after a 1976 kidnapping, imprisonment, and burial underground. Terr's work demonstrated that the children experienced many symptoms of PTSD similar to adults including re-experiencing through dreams and avoidance of thoughts and reminders of the trauma. However, the children also demonstrated symptoms that were different from adults. The children were reported to engage in re-enactments through play, dreams of personal death, pessimism about the future, omen formation about events prior to the trauma, and decreased school performance. Terr's work was important in the growing conceptualization of PTSD as a dysfunction that could exist across age groups; however, it was primarily anecdotal and more systematic research was needed to increase acceptance and understanding of PTSD in children.

Following Terr's work, more systematic studies of PTSD responses in children were conducted including McFarlane's study (1987) on a large sample of children who experienced a bushfire in Australia with a comparison group that was unaffected. However, there were also limitations to this study such as inconsistent use of more than one measure of PTSD depending on the group and reliance solely on adult reporters. Another key study in establishing the incidence of PTSD with children was conducted by Pynoos et al. (1987) following a school playground shooting. Pynoos et al.'s study indicated that children who were closest in proximity to the shooting, such as on the playground versus in a classroom, exhibited more severe posttraumatic stress symptoms. Since Terr (1979), McFarlane (1987), and Pynoos et al.'s studies, that initially examined the possible occurrence of PTSD in children, numerous studies have supported the diagnosis of PTSD with children exposed to trauma as well as provided better understanding of the effects of PTSD and providing models of the development of PTSD in children (Beers & DeBellis, 2002; DeBellis & Thomas, 2003; DeBellis, Hooper, Spratt, &

Woolley, 2009; Fletcher, 2003; Kirsch, Wilhelm, & Goldbeck, 2011; Saigh, Yasik, Oberfield, Halamandaris, & Bremner 2006; Saltzman, Weems, & Carrion, 2006; Turley & Obrzut, 2012).

PTSD in children has been found to result from a wide range of trauma experiences including severe, single-events such as natural disasters or accidents (Garner-Evans & Oehler-Stinnett, 2006; Terr, 1979) as well as longer lasting trauma such as exposure to community or domestic violence and neglect (DeBellis et al., 2009; Saigh et al., 2006). Trauma exposure is also categorized as either victimization or non-victimization traumas. Victimization trauma includes maltreatment, witnessing family violence, witnessing or being exposed to assault, physical and/or sexual abuse, kidnapping, and community violence (Ford et al., 1999). Non-victimization trauma, called “accident/illness” trauma includes traumatic experiences such as weather events, vehicle accidents, and illness (Ford et al., 1999, p. 206).

Although epidemiological surveys of PTSD in children are lacking, according to the Encyclopedia of Victimology and Crime Prevention (Littleton, 2010), studies indicate the rates of children exposed to trauma, who demonstrate symptoms of PTSD, vary from 13% to 81% depending on the population sampled and the methodology of the study. Littleton (2010) estimated that 36% of children exposed to trauma are at risk of developing PTSD. Considering that more than one-third of children exposed to trauma are at risk for developing symptoms of PTSD, one must consider the high percentage of American children being exposed to trauma. Finkelhor, Ormrod and Turner (2005) found that within a sample of 2030 children in the United States, ages 2 to 17 years old, 53% had reportedly experienced some form of assault, more than 1 in 8 experienced child maltreatment such as neglect or abuse, 1 in 12 experienced sexual victimization, and 1 in 3 witnessed violence against another person. Perry (2001) reported that more than 5 million children in the United States are exposed to some form of severe trauma.

According to the United States Department of Veteran Affairs (2010), childhood rates of PTSD diagnosis are between 3 and 15% for girls and between 1 and 6% for boys. Such high rates of exposure to victimization alone, not to mention non-victimization trauma such as accidents or natural disasters, indicates that there is a high likelihood that teachers in our schools will have children with PTSD in their classroom. Due to the likelihood of cognitive and behavioral difficulties associated with a diagnosis of PTSD and the high prevalence of children exposed to trauma and experiencing PTSD, teachers in our schools are likely to have children with PTSD who struggle with learning and behavioral control.

With the potential for children to develop PTSD established, research has expanded to consider effects of PTSD and associated areas of dysfunction including neurophysiological differences, cognitive deficits, social/emotional functioning, and academic decline. Beers and DeBellis (2002) conducted a pilot study of cognitive functioning in children diagnosed with PTSD secondary to experiencing maltreatment as compared to healthy children with no history of maltreatment. Beers and DeBellis (2002) found that the PTSD group performed more poorly on four out of the six areas of cognitive functioning: attention/distractibility including visual attention, problem solving/executive functioning, learning and memory for delayed recall, and visual-spatial functioning in terms of poorer copying skills. Beers and DeBellis concluded that children with diagnoses of PTSD subsequent to maltreatment demonstrated significant deficits in attention and abstract reasoning/executive functions and were more susceptible to distraction and impulsive decision making.

DeBellis et al. (2009) added more research in the area of childhood PTSD and cognitive functioning in children who had experienced neglect. Specifically, DeBellis et al. reported similar cognitive deficits in children regardless of whether they demonstrated symptoms

sufficient for a diagnosis of PTSD or not. However, other studies have found significant deficits in cognitive functioning only in children who demonstrate symptoms sufficient for a diagnosis of PTSD. For instance, Saigh et al, 2006 found significant deficits in cognitive functioning only in children who met criteria for PTSD diagnosis among children with a history of exposure to non-familial abuse as compared to those who had experienced similar traumatic experiences but did not meet the criteria for PTSD and control participants who did not experience trauma.

Given the research findings regarding deficits in cognitive abilities including verbal memory, working memory, and planning, it is not surprising that research has also indicated deficits in academic achievement in children with diagnoses of PTSD. Behaviors associated with PTSD may also impact learning. Children with PTSD have been shown to demonstrate a wide variety of behavioral dysfunction including increased aggression, symptoms consistent with attention deficit hyperactivity disorder (ADHD) including difficulty sustaining attention, and avoidance of certain settings and activities (Cuffe, McCullough, & Pumariega, 1994; Perry, 2001; Pynoos et al., 1987; Runyon, Faust, & Orvaschel, 2002; Terr, 1979, 1983; Thomas, 1995). Further, classroom performance may be impacted as shown by lower grades (Broberg, Dryegrov & Lilled, 2005) and lower academic performance on standardized assessments (DeBellis et al., 2009).

When teachers are faced with difficult student behaviors such as those associated with PTSD, they must make decisions about how to manage the difficulties. Teachers' attributions about the source of students' difficulties may impact student success. Positive teacher-student relationships predict engagement in classroom activities and academic achievement, whereas teacher-student relationships characterized by conflict are more likely to predict grade retention, increased externalizing behaviors, and peer rejection (Hughes, 2011). Without knowledge of a

child's history or understanding of the behavioral problems associated with PTSD in children, teachers may misattribute the reason for students' behaviors. Attribution theory, as applied to education, indicates that teachers react differently to students based on their judgments of student ability and effort (Weiner & Kukla, 1970). Research in attribution theory has also found a link between teachers' causal attributions for misbehavior and types of intervention used in the classroom (Hodges-Kulinna, 2007). Understanding of teacher attributions about the behaviors of children with PTSD may provide insight into whether teachers make misattributions leading to less effective accommodations. Teachers' understanding of the impact of PTSD on children is hypothesized to be of importance in increasing effective decision making by teachers that impacts achievement for students with PTSD. However, research is needed to determine if providing increased levels of information to teachers increases the accuracy of their causal attributions about student' difficulties in the classroom. Additionally, research is needed to determine if increased information leads to more effective identification of classroom accommodations. The purpose of the proposed study is to examine the impact of increased information on causal attributions teachers make regarding the academic difficulties and behavior problems of a student with PTSD. The study also proposes to examine the impact of increased information on teachers' ability to identify trauma specific accommodations that are likely to increase the school success of children with a diagnosis of PTSD.

The questions and related hypotheses for the proposed study are as follows:

**Research Question 1a).** Does the amount of information teachers receive about a student with a PTSD diagnosis and/or the impact of PTSD on functioning increase teachers' ability to make accurate causal attributions about classroom difficulties?

**Hypothesis 1a:** Teachers would be more likely to attribute behaviors and academic difficulties associated with PTSD to the emotional problems than any other causal attribution option given increased information about the student's diagnosis of PTSD and/or information about the outcomes associated PTSD in children.

**Research Question 1b):** When teachers identify emotional problems as the primary cause of a student's classroom difficulties, does amount of information teachers receive (no information about diagnosis or its effects; PTSD diagnosis only; or diagnosis and information about the impact of PTSD on functioning) increase teacher's ability to make accurate attributions to PTSD over other emotional problems?

**Hypothesis 1b):** Increased information including diagnosis of PTSD and the potential impact of PTSD on student functioning would increase teachers' accurate attribution of PTSD as the cause of the emotional problem.

**Research Question 2):** Does providing teachers with information about a student's status as having PTSD and/or information about PTSD increase the proportion of classroom accommodations recommended for students with PTSD identified by teachers?

**Hypothesis 2:** Teachers would recommend accommodations with a greater proportion of PTSD-specific accommodations when provided with information about the student's diagnosis and/or information about the outcomes associated with PTSD in children.

**Definition of Terms:**

Various terms are utilized throughout this paper. Based on the literature, these key terms are defined below:

Accommodation – changes in materials and/or classroom interactions that teachers make to help students be more successful.

Attribution – the act of assigning meaning to events and/or actions.

Hyperarousal – a state of heightened psychological and/or physiological tension. May include symptoms such as irritability, outbursts of anger, difficulty concentrating, and/or jumpiness.

Hypervigilance - abnormally increased arousal, responsiveness to stimuli, and scanning of the environment for threats.

Locus of control – the extent to which individuals believe that they can control events that affect them.

Re-enactment play – acting out of past experiences as part of play.

Re-experiencing – intrusive images, thoughts, dreams, and/or feelings associated with a specific event.

Trauma – an event or experience that elicits intense fear, horror, or a feeling of helplessness.

## CHAPTER 2: LITERATURE REVIEW

This chapter provides a review of relevant literature, beginning with foundations of attribution theory and theories of causal attributions of behaviors. Next, the chapter reviews the role of attribution theory in teacher-student relationships and perceptions of classroom behaviors. The chapter will also review the application of analog methodology in research to provide insight into teacher attributions and information needs. The next section addresses the association between PTSD and deficits in functioning including behavior dysfunction, neuropsychological deficits, academic performance in children. This chapter then reviews studies of intervention outcomes for children with PTSD and implications for student performance.

### **Attribution Theory**

**Basic concepts of attribution theory.** Attribution theory is considered to have evolved out of the work early work of Heider, Kelley and Weiner as well as Rotter (Graham & Folkes, 1990). In his 1958 book, *Psychology of Interpersonal Relations*, Heider outlined what he called “common sense” psychology. One of the concepts included in Heider’s book was the idea that humans perceive the world and that they make judgments, involving cognitive processes called causal analysis, about events they experience and individuals with whom they interact (Heider, 1958). Heider considered the causal attributions of achievement in individuals and proposed that there are two key influences on perceptions of achievement namely “can” and “try.” Can refers to one’s perception of individuals’ ability to accomplish a task or achieve a goal while try refers to the effort put forth in achievement behaviors (Graham & Folkes, 1990).

Another key concept in attribution theory was researched by Rotter (1966). Rotter (1966) worked to identify what elements contributed to expectancy of success. Based on experiments by James and Rotter (1958), Rotter proposed that differences in the causal perceptions of

individuals are the result of their perceptions of the world, namely, the outcome is viewed as the results of a set of tasks that require skill versus the result of chance. Based on his work, Rotter (1966) developed the concepts of internal versus external locus of control. Rotter's theory of locus of control of reinforcements, proposed that individuals develop generalized expectancies for internal versus external control of reinforcements depending on their perceived experiences of reward as contingent upon their own skills or upon chance. Rotter reported strong support for his hypothesis that when individuals perceive outcomes as contingent upon their own qualities or skills, there is a greater likelihood that positive outcomes will result in increased engagement in the behavior while negative outcomes will result in decreased engagement in the behavior. On the other hand, Rotter (1966) found that when individuals attribute outcomes to chance, or other external controls, they are inconsistent in whether behaviors are maintained or extinguished.

**Attributional theory of achievement motivation.** These various contributors to causal attribution were combined into a comprehensive theory by Bernard Weiner in his attributional theory of achievement motivation and emotion (Weiner, 1985, 1986). Weiner theorized that causal attributions are the product of three primary elements; locus, stability, and controllability. Weiner (1985, 1986) made a clear distinction in locus, internal or external, as being separate from controllability stating causal perceptions involve, "Locus *and* control, not locus of control." Consequently, he proposed the name locus of causality which is separate and distinct from controllability. An example application of the theory presented by Weiner (1985) is of a little league player who performs poorly in a game and does not show for the next game. Given that the player had performed poorly before, the poor performance is likely attributed to lack of skill which can be seen as internal, stable, and uncontrollable. Weiner (1985, 1986) applied the three

corollaries of attribution to expectancy of success. The corollaries are: (a) Outcomes ascribed to stable causes increases certainty of similar outcomes in the future; (b) Outcomes ascribed to unstable causes may result in no change to expectancy of similar results or anticipation of different results in the future; (c) outcomes ascribed to stable causes lead to anticipation of similar future outcomes more than outcomes ascribed to unstable causes.

Weiner's (1985, 1986) writings expanded the theory of attribution to include emotional processes. Weiner proposed that cognitive processes involved in causal attribution lead to arousal which results in predictable emotional states. Primarily, emotional reactions to outcomes are either positive, such as happy for success, or negative, such as sad or frustrated for failure. These primary emotional reactions to outcomes were labeled outcome dependent-attribution independent (Weiner, 1985). Once causal attributions have been processed by the individual, more specific emotions, labeled attribution dependent, are generated. Weiner compiled research on various emotions and tied them to specific attribution qualities. For example, Weiner proposed that pride is elicited when individuals attribute positive outcomes to internal, stable qualities of him or herself. Anger results primarily as an accusation towards others whose actions are attributed to behaviors that are considered to be controllable by the perceived instigator. In contrast, pity was proposed to be elicited when the actions or performance of another are considered to be uncontrollable such as academic difficulties due to low intelligence. Weiner also proposed a relationship between guilt and shame such that guilt is experienced when the cause of the negative outcome is considered to be controllable such as a lack of effort, whereas shame is considered to be elicited when negative outcomes are attributed to uncontrollable qualities of the individual such as a lack of ability. Weiner also discussed hopelessness as an emotion tied to causal attributions that occurs when negative outcomes are

attributed to stable and uncontrollable causes such that the individual anticipates future outcomes to be as unsuccessful as past experiences.

**Attribution theory and education.** Weiner applied his attribution theory to achievement in educational settings as well (Weiner & Kukla, 1970; Weiner, 1972). Weiner and Kukla (1970) examined teacher behaviors in reward and punishment based on attributions of effort and ability by having students simulate delivery of reward or punishment to student when the ability and effort levels were provided. Results indicated that attributions of both effort and ability interacted with decision to reward or punish. Namely, students who were perceived to have low ability were punished less for failures under the low effort status and rewarded more than all others when high effort was assigned even when achievement was considered to be borderline. The greatest punishments for failures were administered to students who were considered to have high ability and low effort. Weiner and Kukla theorized that the inconsistencies in reward and punishment found for successes and failures were the result of cognitions about ability versus effort. Weiner and Kukla proposed that there is a cultural bias toward individuals who overcome handicaps, such as low ability, and succeed. The opposite bias holds that individuals who have greater ability but do not exert effort are less worthy of rewards than individuals with lower ability. The work of Weiner and Kukla established a connection between the attributions teachers make about students' ability and effort, teachers' cognitions about these attributions, and the resulting decisions they make.

**Attribution theory of attitudes.** Attribution theory has not only been applied to causal relationships and achievement motivation. Jones and Harris' (1967) study of correspondent inference theory looked at how individuals attributed "true" attitudes of others based on hearing or reading a speech by another individual expressing an opinion on a controversial topic. Jones

and Harris (1967) found bias towards attributing writers with beliefs congruent with the position taken in the speech despite knowledge that the writer had no choice about the position taken. The authors concluded that although study participants clearly took elements such as probability of holding a belief and situational limitations into account when attributing attitudes toward the writers, these factors were not as heavily weighted by participants as expected. The work of Jones and Harris was foundational in the work of Ross (1977) in which he coined the term “fundamental attribution error” (p. 183). Fundamental attribution error occurs when individuals attribute the cause of others’ behaviors to internal qualities, such as beliefs or personality, rather than external elements, such as environment. Langdrige and Butt (2004) noted that fundamental attribution error has been one of the most documented biases in the field of social perception with a wide array of applications. Fundamental attribution error may also exist in teacher perceptions of students. As noted by Weiner and Kulka (1970), teachers reward and/or punish students differently depending on attributions that they make about a student’s ability. Hence, understanding teachers’ patterns of attribution may serve as a starting point in determining ways to increase student success in the classroom.

Hodges-Kulinna (2007) found that teachers most often attributed student misbehavior to home and internal factors rather than teacher or school setting factors. Guskey (1982) reported similar findings regarding teacher attributions such that teachers tended to attribute lack of success to internal causes such as lack of effort, particularly for elementary age children. Additionally, Georgiou, Christou, Stavrinides, and Panaoura (2002) reported that attributions of student failure impacted the teachers’ emotional reaction and that causal attributions of student misbehavior resulted in differences in the intervention strategies chosen by teachers. For example, if teachers attribute a student’s failure to internal qualities such as a lack of ability, they

tended to react with pity and give interventions aimed at making work easier. Based on the research on teacher attributions, an assertion can be made that teachers who make inaccurate attributions as to the cause of a student's dysfunctional behaviors or learning difficulties are less likely to formulate appropriate and effective classroom accommodations. In order to increase the effectiveness of teachers, it is important to understand what level of information is necessary to best assist teachers in making appropriate determinations about the sources of students' struggles.

**Applications of Attribution Theory in Education Research.** Efforts to improve educational outcomes have included research into teachers' attributions as well as how to modify these attributions through providing increased information (Cunningham & Wodrich, 2006; Wodrich, 2005). Wodrich (2005) investigated teacher perceptions of student difficulties related to epilepsy and Type I diabetes mellitus (T1DM) using an analog study. Teachers were provided with information regarding a student's behaviors, school records data, and a videotaped interview of a conference between a classroom teacher and school psychologist describing the student's learning difficulties. Experimental conditions varied by the amount of health related information teachers were given in addition to the student profile. Teachers were asked to identify likely causes for the student's difficulties from a list of most common causes attributed by teachers for student academic and/or behavioral difficulties. Only 2.6% of teachers attributed student behaviors and needs to health factors when no further health information was disclosed. In comparison, 16.6% of teachers indicated health factors as contributing when provided with the student's health diagnosis (i.e., epilepsy), and 50% reported attribution of problems to health factors when provided with both a diagnosis and symptoms that may present in the classroom.

Wodrich concluded that, “disclosing health information may help teachers avoid incorrect, counterproductive explanations for classroom problems” (p. 288).

An additional investigation of teacher attributions and the impact on decisions, conducted by Cunningham and Wodrich (2006), provided further guidance in how to improve instructional practices by providing appropriate levels of information to teachers. Cunningham and Wodrich utilized analog methodology to determine what level of information was most effective in helping teachers determine disease specific accommodations for a student at the elementary level with diagnoses of Type I diabetes mellitus (T1DM). Teachers were provided with varying levels of information about the student’s health status. Some teachers received no information about T1DM. Some received basic information about the disease, and the last group received basic information plus potential difficulties associated with the disease that may impact classroom performance. Teachers were asked to list accommodations they would recommend for helping the hypothetical student increase school success. The outcome measure for this study was the proportion of accommodations listed that were considered to be disease specific at each level of information. Cunningham and Wodrich (2006) found no significant differences in accommodations provided by the groups that received disease information. However, there were significantly more disease-specific accommodations provided by the two disease information groups than by the no disease information group. Based on these findings, the authors concluded that providing increased information about the potential effects of the disease on student performance in addition to basic diagnosis status does not increase confidence that teachers will be able to provide more disease specific accommodations. In effect, providing teachers with basic information about a student’s health alone increased teachers’ ability to determine appropriate accommodations specific to the disease. Increased information regarding potential

classroom difficulties associated with the disease did not increase the proportion of disease specific accommodations teachers identified. Cunningham and Wodrich also cautioned that while providing information regarding a student's health status increased teachers' ability to propose appropriate, disease-specific accommodations, the proportion of appropriate accommodations was still only 50% indicating that providing information alone "remains a partial and imperfect solution" (p. 560).

When these two studies are considered together, they provide insight into teacher attribution of behavior problems and the need for increased information. As indicated by Georgiou et al. (2002), teachers' attributions of the source of behaviors impact their choice of accommodations. Therefore, as supported by the work of Cunningham and Wodrich (2006) providing information about conditions that may impact student behaviors can be helpful in increasing teachers' ability to choose and implement appropriate accommodations that are specific to the source of difficulty.

### **Posttraumatic Stress Disorder**

Based on the DSM-IV-TR criteria, PTSD criteria involve behavioral and emotional dysregulation following exposure to a traumatic event with the likelihood of serious injury or death to oneself or others individual that last for at least one month and include: (1) persistent re-experiencing of the event; (2) avoidance of stimuli that may be connected to the traumatic event as well as numbing or decreased emotional responsiveness; (3) increased arousal symptoms such as difficulty sleeping, emotional outbursts, difficulty with focus and attention, hyper-vigilance, and heightened startle response (DSM-IV-TR code 309.81). Children may be exposed to a wide range of traumatic experience that involve likelihood of serious injury to themselves or others including natural disasters (Garner Evans & Oehler-Stinnet, 2006), war and/or political violence

(Brown, McQuaid, Farina, Ali, & Winnick-Gelles, 2006; Husain, Allwood, & Bell, 2008; Silva, et al., 2003), community violence such as school and/or neighborhood shootings (Pynoos et al., 1987; Schwarz & Kowalski, 1991; Terr, 1983), domestic violence (Mertin & Mohr, 2002), maltreatment including physical and/or sexual abuse (DeBellis & Thomas, 2003; Runyon, Faust & Orvaschel, 2002), and severe neglect (DeBellis, Hooper, Spratt & Woolley, 2009).

### **Outcomes Associated with PTSD in Children**

PTSD has only been identified as a disorder experienced by children since the publication of the DSM-III with mention of differences between adult and children's reactions not included until the DSM-III-R in 1987 (Fletcher, 2003). Initial studies of PTSD in children examined the behavioral and emotional reactions of children to traumatic events (McFarlane, 1987; Pynoos et al., 1987; Terr, 1979, 1983). Further studies on PTSD in children indicated that there are also cognitive deficits associated with PTSD in children as well as learning difficulties in school (Beers & Debellis, 2002; Carrion, Garrett, Menon, Weems, & Reiss, 2008; DeBellis et al., 2009; DeBellis & Thomas, 2003; Meesters, Merchelback, Muris & Wessel, 2000; Moradi, Nashat-Doost, Taghavi, Yule, & Dalgleish, 1999; Saigh, Mroueh, and Bremner, 1997; Saltzman et al., 2006; Turley & Obrzut, 2012; Yasik, Saigh, Oberfield & Halamandris, 2007). The following sections will review research regarding each of these areas of functioning, namely behavioral and social/emotional, neuropsychological, and academic difficulties associated with diagnosis of PTSD in children.

**Behavioral and social/emotional.** After experiencing a life-threatening or severe trauma, children with PTSD demonstrate a number of behavioral and social emotional difficulties for which they are identified as having PTSD. Behaviors that are necessary for a

PTSD diagnosis are grouped by three main categories; re-experiencing, avoidance/numbing, and hyper-arousal.

*Re-experiencing symptoms in children.* Behaviors associated with re-experiencing in children include intrusive memories, posttraumatic/re-enactment play, daydreaming about the event, talking about the event, bad dreams, reliving the event, distress at reminders of the event, trauma specific fears, and increased somatic complaints (Fletcher, 2003). Fletcher (2003) indicated that 92% of children exposed to an acute, non-abusive trauma report some form of re-experiencing with re-enactment of the event and distress at reminders of the event being experienced by 54% and 51%, respectively. Among the children exposed to chronic or abusive trauma, 86% also demonstrate behaviors within the re-experiencing category. Other research studies have also documented the incidence of re-experiencing of traumatic events in children. Terr (1979; 1983) studied the behavioral and social/emotional outcomes for students who were victims of a school bus kidnapping and live burial in Chowchilla, CA in July 1976. Terr's (1979, 1983) work was limited to a small group of children who experienced a severe trauma and their families with no control group for comparison to determine if behaviors or family dysfunction was truly associated to trauma exposure and PTSD or more common events. Nevertheless, her work was foundational in understanding the impact of trauma on children. At follow-up, four years after her initial work, Terr (1983) reported differences between adults and children in that the children she studied did not experience full or partial amnesia, numbing, or intrusive flashbacks. However, the children were reported to engage in posttraumatic play through trauma related play such as playing kidnap games with friends and siblings. Terr (1983) differentiated posttraumatic play from re-enactment in that the play typically involved enjoyment or fun whereas re-enactment does not. Terr (1983) also documented daydreaming type behaviors in

children such that they were observed to talk about traumatic events in a calm but detached manner as well as documented cases of excessive daydreaming.

McFarlane (1987) also documented re-experiencing trauma in the form of dreams and re-enactment play in children with 18% of children who had been exposed to a bushfire experiencing dreams about the event at 26 months post-trauma. Pynoos et al. (1987) also reported a high incidence of children experiencing intrusive thoughts such as disturbing images and nightmares related to the trauma experienced in children who were exposed to a school shooting. Both Pynoos et al. (1987) and Terr (1983) reported that children with PTSD symptoms demonstrated fear related to re-experiencing that become more generalized. For example, Terr reported that children who were buried developed fears of dark or being alone rather than a specific fear of being buried.

Case studies have described children who were referred for treatment due to behavioral difficulties including hyperactivity, aggression, tantrums, and sleep disturbances without previous report of trauma experiences or diagnosis of PTSD (Cuffe et al., 1994; Thomas 1995). In the case presented by Thomas (1995), the subject of the case study, a young girl, experienced severe trauma due to domestic violence and sexual abuse. The young girl was reported to have a specific fear of blood and to re-enact the traumatic experience during play in which she would lock a doll in the doll house closet. Similarly, Cuffe et al. (1994), presented case studies describing children's behaviors included nightmares, intrusive images and thoughts, distress at reminders of abuse, and trauma-specific fears such as fear of bathing after experiencing repeated abuse at bath time.

Research studies looking at comorbidity of psychiatric disorders and PTSD have also identified behaviors that fall within the re-experiencing category (Lipschitz, Winegar, Hartnick,

Foote, and Southwick, 1999; Runyon et al., 2002). Lipschitz et al. (1999) studied comorbidity of PTSD and other psychopathologies in children and adolescents who were inpatients at a psychiatric hospital. PTSD symptoms and psychopathology were measured using the Diagnostic Interview for Children and Adolescents (DICA, Reich, Shayaka, & Taibleson, 1991) and the Traumatic Events Questionnaire – Adolescent version (TEQ-A, Lipschitz et al., 1999). Results indicated a statistically significant level of somatization and dissociation within the hospitalized adolescents with PTSD as compared to hospitalized adolescents without PTSD. They concluded that somatization and dissociation may be overlooked by clinicians in children with PTSD who are admitted to psychiatric hospitals for treatment. Runyon et al. (2002) conducted a study of maltreated children with PTSD to identify symptoms that would discriminate between children with PTSD only versus children with PTSD and comorbid depression. Symptoms of both PTSD and depression were assessed using the Children's Schedule of Affective Disorders and Schizophrenia – Epidemiological version (K-SADS-E, Orvaschel & Puig-Antich, 1987). Runyon et al. (2002) found that children with comorbid PTSD and depression had a significantly higher level of intrusive symptoms including flashbacks and/or re-enactment.

*Avoidance or numbness symptoms in children.* The second category of behaviors necessary for a diagnosis of PTSD involves avoidance and/or numbness and include behaviors such as efforts to forget the event(s), avoidance of reminders, inability to recall parts of the event, loss of interest in activities, detachment or withdrawal, and pessimism about the future (Fletcher, 2003). Fletcher (2003) reported that 30% of children who experience acute, non-abusive trauma and 54% of children who experience chronic or abusive trauma demonstrate symptoms within the avoidance/numbness category. However, symptoms of PTSD that are consistent with the second category of avoidance have been reported by some researchers to be

less common in children than in adults (Terr, 1979, 1983). In Terr's (1979, 1983) descriptions of behaviors found in children who survived a school bus kidnapping, "psychic numbing" was not observed" (p. 1550). However, Terr (1983) described in detail how the study participants attempted to hide their identity as children who were involved in the kidnapping. Terr (1983) also reported that the children would describe events of the kidnapping as if daydreaming with detached affect and looking off as if visualizing events. Terr (1983) also described how students avoided reminders of their trauma including unwillingness to meet with her at the four-year follow-up so as to not "stir up" old feelings (p. 1546). Additionally, Terr (1983) reported that 23 out of 25 students who were kidnapped indicated pessimism about the future. Students either reported not believing that they would live a full life or that they expected negative outcomes or events to happen in the future.

In contrast to the findings of Terr (1983) that the children maintained complete, detailed memories of their trauma experience, Runyon et al., (2002) reported that 43.3% of the PTSD-only participants and 13% of PTSD plus major depressive disorder (MDD) participants experienced psychogenic amnesia, or inability to recall portions of the trauma experience, based on interview responses. Runyon et al. also reported that 90.3% of PTSD only participants and 79.2% of PTSD and MDD participants expressed that they avoid thoughts or feelings related to their traumatic experiences. However, while Terr's (1983) sample indicated a high rate of pessimism about the future, only 22.6% of participants in the PTSD only group and 24.0% of participants in the PTSD plus MDD group reported a sense of foreshortened future. Differences found in the studies may be related to the different sources of trauma in that Terr's (1983) sample was one group who all experienced the same traumatic event whereas the sample Runyon et al.'s (2002) study included children with varying histories of maltreatment.

***Increased arousal symptoms in children.*** The third category of behaviors necessary for a DSM-IV-TR diagnosis of PTSD is increased arousal including behaviors such as difficulty sleeping, irritability, difficulty concentrating, hypervigilance, irritability and/or anger, and exaggerated startle response. Thomas (1995) and Cuffe et al., (1994) reported on case studies in which children experienced sleep disturbances including difficulty falling asleep and difficulty staying asleep. Further, all case study subjects from both studies reported irritability and/or outbursts of anger. In addition to the descriptive reports by Thomas (1995) and Cuffe et al., (1994), Runyon et al., (2002) provided research comparing symptoms of children with PTSD versus children with PTSD and concurrent major depressive disorder. Runyon et al. found that sleep difficulties was one of three symptoms of PTSD that discriminated between the two groups.

Difficulty concentrating is another potential outcome of increased arousal (Glod & Teicher, 1996). In addition to difficulty in concentration, research by Glod and Teicher (1996) found increased activity levels in children with diagnoses of PTSD using actigraphs. They concluded that abused children with PTSD demonstrated activity profiles that are similar to children with diagnoses of ADHD. Taken together the increased arousal symptoms of PTSD, including difficulty concentrating, irritability, hyper-arousal, and sleep disturbance, can be misinterpreted as ADHD in clinical settings (Cuffe et al., 1994; Famularo, Fenton, Kinscherff, & Augustyn, 1996; Ford, et al., 1999; Ford et al., 2000; Thomas, 1995).

Cuffe et al. (1994) presented four case studies that drew attention to the overlap in symptoms between PTSD and ADHD. The cases included one child with a diagnosis of ADHD who was identified prior to trauma exposure with a clear family history of ADHD while the other three cases had no pre-existing diagnoses. Another case study (Thomas, 1995), questioned the

diagnosis of ADHD for children with a history of trauma. The case involved a 3-year-old girl who was brought to a clinical setting due to hyperactivity and disruptive behaviors. Upon interview with the child's grandmother, the child was found to have a history of multiple traumas including neglect, physical abuse, and suspected sexual abuse. This case served to increase the awareness of the overlap in symptoms between PTSD and ADHD.

Following the initial case studies that drew attention to the likelihood of comorbidity and/or overlap in symptoms between ADHD and PTSD, a number of research studies were conducted to provide data and guidance to clinical practice. Through work with children identified as having experienced trauma, clinicians noted a high degree of multiple diagnoses, including ADHD, within the clinical population identified as having diagnoses of PTSD. Clinician and researcher, Bruce Perry (2001), reported that children with a diagnosis of PTSD from a history neglect and interpersonal abuse in the home are often also diagnosed with ADHD due to hypervigilance and behavioral impulsivity. Famularo et al. (1996) conducted research to better understand what types of mental health disorders were being frequently diagnosed as comorbid with PTSD using the DICA (Reich et al., 1991). Famularo et al. found that, "the presence of PTSD in children confers a substantial likelihood of other formal diagnoses" (1996, p. 958). Famularo et al. followed strict diagnostic criteria in an attempt to identify truly comorbid conditions and exclude multiple diagnoses due only to an overlap in symptoms. The study found significant evidence of comorbid PTSD and ADHD in clinically referred children. Additionally, the study indicated significant comorbidity for PTSD and anxiety disorders and suicidal ideation with some tendency for increased presence of depressive mood disorders such as major depression and/or dysthymia. However, no significant correlations were found for other behavioral disorders namely oppositional-defiant disorder (ODD) and conduct disorder.

In light of the findings of Famularo et al. (1996) that indicated PTSD was significantly correlated with a variety of psychological disorders, Ford et al. (1999) investigated the relations between ODD, ADHD, adjustment disorder, and trauma/PTSD due to the high percentage of children presenting at clinical settings with these disorders. Ford et al. stated that 33% of children who had experienced abuse demonstrated symptoms consistent with a diagnosis of ODD. Results of the study indicated an increased likelihood of a relation between exposure to victimization trauma for children and being identified with ADHD, ODD or both, but not for adjustment disorder based on univariate data analysis (Ford et al., 1999). However, a correlation between ADHD, ODD, or comorbid diagnosis of these and non-victimization trauma was not found. When analysis controlled for the impact of family psychopathology, the relation between ADHD and victimization trauma was no longer significant. Overall, the Ford et al. (1999) study indicated some increased likelihood of a history of victimization trauma in children with diagnoses of ODD and comorbid ADHD and ODD.

The relation between PTSD and ODD is important in that the DSM-IV-TR symptoms of ODD includes behaviors such as frequent loss of temper, arguing with adults, defiance or refusal to comply with rules, frequent expression of anger or resentment and quickly or easily annoyed. Children with PTSD demonstrate increased arousal in the form of increased irritability and/or anger (Cuffe et al., 1994; Ford et al., 1999; Thomas, 1994). The findings of a relation between diagnosis of ODD and PTSD was also supported by the studies of Thomas (1995) and Cuffe et al., (1994). The case studies reported also described children as exhibiting irritability and aggression including temper tantrums, outbursts of rage, and defiance that are consistent with behavioral symptoms of ODD.

Ford et al. (2000) published a report with further analysis on the data reported in the 1999 study. Ford et al. (2000) differentiated victimization trauma into two distinct groups of physical maltreatment and sexual maltreatment. The authors investigated three different hypotheses. First, they hypothesized that children with a diagnosis of ADHD or a diagnosis of ODD would have a higher likelihood of experiencing victimization trauma than children with other psychiatric diagnoses. Second, they hypothesized that receiving a diagnosis of ADHD or ODD would be more likely in children with elevated levels of PTSD symptoms. Conversely, the third hypothesis was that a history of maltreatment would be associated with greater levels of PTSD symptoms after controlling for socio-demographic variables and child psychopathology. A higher correlation between ADHD or ODD and PTSD than PTSD and other psychopathologies was found with the correlation for ODD and trauma being higher than the correlation between ADHD and trauma. Results of analysis, for single diagnosis cases, indicated that the participants with a diagnosis of ODD were most likely to experience victimization trauma with between 43% and 73% experiencing physical maltreatment and between 18% and 31% experiencing sexual maltreatment. Participants with ADHD diagnosis were the second most likely to experience victimization trauma. The authors concluded that while PTSD symptoms may be a result of trauma, the severity may also be due to behaviors disorders such as ODD and ADHD. Based on this study, 91% of children with comorbid ADHD and ODD had some form of trauma history with 78% experiencing victimization trauma. Ford et al. (2000) noted that due to the relations found between disruptive behavior disorders including ODD and ADHD, children with disruptive behaviors that impact functioning in home and at school should be screened for traumatic maltreatment in order to better identify areas of need as well as most effective treatments.

While research conducted by Ford et al., (1999) and reports by others such as Thomas (1994) and Cuffe et al. (1994) indicates the possibility of overlap in symptoms of PTSD and ADHD, Becker-Blease and Freyd, (2008) report a potentially key difference in symptoms between ADHD and PTSD. Becker-Blease and Freyd (2008) examined a research sample of 29 parents and their children that were between the ages of 8 and 11 years old. Only children who were rated as having significant levels of ADHD symptoms were included. Groups identified were based on types of symptoms, namely hyperactivity, impulsivity and inattention. Within these groups, children were also identified as either abused or non-abused. Within the ADHD population, abused children were rated as having higher mean levels of inattention and impulsivity than non-abused children, but not hyperactivity.

**Neuropsychological.** In addition to behavioral and social/emotional dysfunctions associated with PTSD, research has identified several areas of neuropsychological deficits including intelligence, memory and learning, and executive functioning (Beers & DeBellis, 2002; DeBellis, et al. 2009; DeBellis, Hooper, Woolley, and Shenk, 2010; Meesters et al., 2000; Moradi, Neshat-Doost et al., 1999; Perry, 2001; Saigh et al., 2006; Saltzman et al., 2006; Yasik et al., 2007). This section will review research findings related to neuropsychological functioning of children and adolescents beginning with intellectual functioning. The section will also review impairments in memory and learning followed by deficits in the executive functions such as attention and inhibition.

**Intelligence.** The connection between PTSD and intellectual functioning deficits was described by Perry (2001) as a split between verbal and performance abilities such that the children demonstrated significantly higher non-verbal reasoning than verbal reasoning. According the Perry (2001) children who live with ongoing neglect and/or abuse “spent so much

time in a low-level state of fear...that they consistently were focusing on non-verbal but not verbal cues” (p. 30). Saigh et al., (2006) investigated the differences in intellectual functioning between children with trauma exposure and PTSD to children with trauma exposure but no PTSD and a control group of no trauma exposure using the Wechsler Intelligence Scale for Children-Third Edition (WISC-III) (Wechsler, 1991). Saigh et al. (2006) excluded children with a history of neglect and/or physical or sexual abuse by a parent or guardian. Additionally, children with a history of other mental health disorders,  $IQ < 70$ , medication that may interfere with cognitive testing, and limited English proficiency were also excluded. Results of this study indicated that the PTSD positive group demonstrated significantly lower performance on the measure of verbal intelligence only with no significant differences found between the trauma without PTSD group and controls on any of the other WISC-III composites. Consistent with Perry (2001), Saigh et al. (2006) concluded lower verbal intelligence is associated with diagnosis of PTSD in children, but not with exposure to trauma. However, it is important to note that the traumas experienced by these children were exclusively non-familial maltreatment.

DeBellis et al. (2009) also studied the relations between childhood neglect and PTSD. DeBellis et al. utilized a number of assessment tools to provide information about the functioning of children with a history of neglect with and without diagnoses of PTSD. Assessments of the children’s functioning included the 14 core assessments plus Block Construction of the Developmental Neuropsychological Assessment (NEPSY, Korkman, Kemp, & Kirk, 2001), the Peabody Picture Vocabulary Test-III (PPVT-3, Dunn, Dunn, & Williams, 1997) for neuropsychological functioning, the Block Design and Vocabulary subtests of the WISC-III (Wechsler, 1991) or the Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R, Wechsler, 1989) for IQ, and the Woodcock-Johnson Tests of Academic

Achievement (WJ-III, Woodcock, McGrew, & Mather, 2001) for academic achievement.

DeBellis et al. found a statistically significant difference between overall IQ performance in non-trauma exposed children versus neglected children with and without diagnosis of PTSD. Based on research on the psychobiological impact of neglect (DeBellis, 2003), the authors of the current study, DeBellis et al. (2009) postulated that lower IQ performance is a consequence of neglect rather than a confounding variable.

Saltzman et al. (2006) examined the relations between PTSD, IQ, and symptomology of PTSD by cluster. Participants in the study included only children who had experienced victimization trauma including physical abuse, sexual abuse and/or witnessing violence. All participants were reported to be in safe, stable home environments at the time of the study. This study found a significant relation between the number of trauma experiences and both the full scale IQ (FSIQ) and verbal IQ (VIQ) of the Wechsler Abbreviated Scales of Intelligence (WASI, Psychological Corporation, 1999). The research indicated an inverse relation between PTSD symptoms, particularly re-experiencing, and verbal intelligence, although pre-trauma verbal intelligence functioning was not known. Thus, it was possible that lower verbal intelligence could be a risk factor for PTSD re-experiencing symptoms rather than an outcome associated with experiencing trauma or subsequently developing PTSD symptoms.

***Memory and learning.*** In addition to findings of lower verbal intelligence in children with diagnoses of PTSD, research has also indicated a variety of memory and learning dysfunctions (DeBellis et al., 2010; Moradi, Neshat-Doost et al., 1999; Samuelson, Krueger, Burnett, & Wilson, 2010; Yasik et al., 2007). Moradi, Neshat-Doost et al. (1999) found that children with PTSD demonstrated significantly more overall memory problems (77.8%) as measured by the Rivermead Behavioural Memory Test (RBMT; Wilson, Cockburn, & Baddeley,

1986) compared to the 22 non-traumatized controls. The authors concluded that the reason for memory deficits in children is uncertain; however, they proposed that intrusive thoughts, avoidance, and hyper-arousal symptoms may interfere with memory in children with PTSD.

Yasik et al. (2007) provided further support for the findings that children with PTSD demonstrate memory deficits. They conducted research with a sample of children and adolescents admitted to the Bellevue Hospital's Pediatric Emergency that included 29 trauma exposed and PTSD positive children, 62 trauma-exposed PTSD negative, and 40 non-trauma exposed participants. Children with a history of trauma and PTSD demonstrated significantly lower performance on General Memory, Verbal Memory, and Learning indices of the Wide Range Assessment of Memory and Learning (WRAML: Sheslow & Adams, 1990). Again, the findings are limited by a small sample size for the trauma plus PTSD group and sample taken from a hospitalized population may not be representative of the overall population of children with PTSD.

Samuelson et al. (2010) examined differences between an ethnically diverse sample (73% African American) of children with PTSD ( $n = 27$ ) or without PTSD ( $n = 35$ ) who had all been exposed to interpersonal violence. The children with PTSD demonstrated significant verbal memory deficits when compared to children without PTSD even though children in both group had similar exposure to interpersonal violence. The aforementioned study by DeBellis et al. (2009) found that children with a history of neglect, both with and without PTSD diagnosis, demonstrated significantly lower memory on NEPSY (Korkman et al., 2001) subtests of Memory for Faces – Immediate, Memory for Names, and Narrative Memory subtests of the NEPSY than those who had not experienced neglect. Children in the neglect plus PTSD group only demonstrated lower performance than children in the neglect but no PTSD group on the Delayed

Memory for Faces task. Based on the similar findings between outcomes for children with neglect and PTSD and outcomes for children with a history of neglect but no PTSD, neglect may be viewed as unique from other forms of abuse in its potential to impact cognitive ability regardless of whether the child demonstrates symptoms sufficient to meet diagnostic criteria of PTSD.

DeBellis, et al. (2010) provided further insight into the relations between history of maltreatment, symptoms of PTSD, and memory in children. DeBellis et al. examined the relations between demographics, maltreatment, and neuro-structural factors using fMRI and neurocognitive functioning among children who experienced general maltreatment or sexual abuse. Hierarchical multiple regression results indicated that SES significantly contributed to the prediction of the number of posttraumatic stress symptoms (PTSS) at the first step, accounting for 11% of the variability. At step 2 of the hierarchical model, maltreatment accounted for 53% of the variance in PTSS, with both general maltreatment and sexual maltreatment being significant contributors. The final step of the hierarchical multiple regression model added both neuro-structural and neurocognitive variables. Results indicated that these factors significantly contributed an additional 4% of the variance in the PTSS. In particular, visual memory functioning added its own unique variation to the model and verbal memory was also a marginally significant contributor. DeBellis et al.'s results indicated that poor visual memory is significantly associated with greater symptoms of PTSD. Visual memory is considered to be important in helping individuals focus and maintain a mental representation of an object or an event (DeBellis et al., 2010).

Although many of the previously reported studies examined the impact of PTSD and trauma resulting from maltreatment including neglect and exposure to interpersonal violence,

Elbert et al. (2009) studied the impact of PTSD on memory and learning in a sample of war-exposed adolescents in Sri Lanka. Elbert et al. found that given the nature of combat, 92% of the study sample had experienced severe trauma exposure including witnessing combat, bombings, shellings, and/or the death of a loved one. Twenty-nine percent of the children met criteria for PTSD diagnosis based on self-report and 27% met criteria for PTSD based on caregiver report. Results indicated deficits in memory function for recall of the Rey-Osterrieth Complex figure in children who met criteria for PTSD. Children with PTSD recalled significantly fewer object locations on the test for memory of places of objects (MP-test) than children who did not meet criteria for PTSD. The authors also reported a linear trend such that the performance was lowest in children who had experienced the highest number of traumatic events. The authors concluded that these results support the findings from Beers and DeBellis (2002) that reported lower memory functioning in children with higher numbers and multiple types of traumatic experiences.

***Executive Functioning.*** Research has also found deficits in some executive functions, namely attention and inhibition (Beers & DeBellis, 2002; DeBellis et al. 2009; Moradi, Taghavi et al., 1999, Samuelson et al., 2010). Moradi, Taghavi et al. conducted a study with children who met the DSM-IV criteria for primary PTSD between the ages of 9 and 17 using a modified version of the Stroop colour-naming task. Results indicated that the children in the PTSD group ( $n = 23$ ) demonstrated longer overall response latency than children with no known or diagnosed history of psychiatric problems, and a latency for words based on word groups only for the trauma related words versus the neutral words. The authors interpreted the findings as evidence of an attentional bias towards trauma-related information that may underlie symptoms of hypervigilance seen in individuals with PTSD.

With regard to deficits in attention, Beers and DeBellis (2002) found that children in the PTSD group ( $n = 14$ ) performed significantly poorer on the Stroop Color and Word Test and committed significantly more errors of omission on the Digit Vigilance Test compared to children with no history of maltreatment or psychiatric illness ( $n = 15$ ). Using the NEPSY tower and NEPSY Visual Attention subtests, DeBellis et al. (2009) found significantly lower performance for both neglect groups, PTSD and no PTSD, as compared to controls on both measures. However, in contrast to Beers and DeBellis (2002), Samuelson et al. (2010) reported no significant differences found between the children with PTSD and trauma exposed children without PTSD on the measures of attention and working memory. Although the findings of this study differ from the findings of Beers and DeBellis (2002), participants in Samuelson et al.'s study were predominantly African American. Further, it is important to note that the Beers and DeBellis study did not include a group for children with history of trauma/maltreatment but not PTSD. The authors noted that the performance of both groups in this study was within the Below Average range, which is consistent with other studies (DeBellis et al., 2009). Taken together, most of these studies provide evidence that children with diagnoses of PTSD demonstrate significant deficits in attention as compared to children without history of trauma exposure Moradi Taghavi et al. (1999), Beers and DeBellis (2002), Samuelson et al. (2010) and DeBellis et al., (2009).

Both Beers and DeBellis (2002) and Samuelson et al. (2010) also studied executive functioning in children with diagnoses of PTSD using the Wisconsin Card Sorting Test (WCST; Heaton, 1981). The WCST is often considered a test of inhibition of a previous response as well as a task involving abstract thinking in that individuals must reason patterns that lead to correct responses. Similar to the measures of attention, Beers and DeBellis found significantly lower

performance on the WCST, whereas Samuelson et al. found no significant differences. Again, the key differences in these studies in the nature of the groups may explain the differences.

**Academic.** Few studies have specifically examined the relations between experiencing PTSD and academic outcomes in children. However, all four studies that examined the associations between academic development and PTSD found deficits or delays in performance for children with a diagnosis of PTSD (Broberg et al., 2005; DeBellis et al., 2009; Elbert et al., 2009; Saigh et al., 1997). The studies that examined academic outcomes can be separated into two categories, namely, those that used student and/or teacher report including grades and those that used standardized measures of academic achievement.

*Student or teacher report of academic levels.* Broberg et al. (2005) examined the perceptions of adolescents who experienced a discotheque fire about social supports provided by the community, incidence of PTSD among survivors, and self-reported academic outcomes. The authors hypothesized that immigrants would have greater levels of trauma experiences prior to the fire resulting in greater incidence of PTSD in the immigrant population. Results indicated higher levels of posttraumatic stress in both boys and girls not born in Sweden than in the either group who were native to Sweden with percentages of 19% in Swedish born girls, 26% in immigrant girls, 17% in Swedish born boys, and 31% in immigrant boys. Academic outcomes were only measured by student self-report. Twenty-three percent of the students reported feeling that the fire had a strong impact on school performance. Specifically, only 13% of the students reported that school work was more important after the fire, whereas 59% reported that schoolwork seemed more difficult and that exam performance and grades had gone down after experiencing the fire. This study provided qualitative information about the perceptions of students; however, it did not provide data that can be quantified or compared with the

performance on non-traumatized students. Therefore, while the perceptions of students can provide helpful insight into how these students perceived school after experiencing trauma, it cannot be generalized to a large population of children with PTSD or used to understand how better to support students with PTSD diagnoses in a school setting.

Elbert et al. (2009) also examined student academic performance using non-standardized measures. As previously reported, Elbert et al. studied the incidence of PTSD among war exposed youth in Sri Lanka. They assessed student performance on measure of memory and academics as indicated by grades and teacher ratings of academic skill levels. No differences were found for physical education or skills involving students working with their hands to build or create items. The authors reported significant deficits in verbal ability regardless of primary language, but no differences for motor or mathematics abilities. Magnitude, or degree of trauma, did not affect academic outcomes for students. The findings of this study continue to be limited in generalizability as they are based on potentially subjective teacher ratings and classroom grades.

*Standardized measures of academic levels.* Two studies provide information about the relations between PTSD diagnosis in children and/or adolescents and academic functioning using standardized assessment measures. Saigh et al. (1997) conducted a study of 95 randomly selected Lebanese students who attended private school where English was the primary language of instruction. Of the original sample, 50 were excluded from the study due to a lack of reported trauma experience even though they experienced war exposure, 14 met criteria for PTSD, 16 reported trauma experiences but did not meet criteria for PTSD, and 15 served as the control group as they reported no exposure to war or trauma. Results indicated significantly lower scores on the Metropolitan Achievement Test, 6<sup>th</sup> Edition for the PTSD positive group as

compared to both the PTSD negative and control groups. PTSD positive subjects demonstrated significantly lower performance in the areas of Vocabulary, Reading Comprehension, Mathematics, Spelling, Language and Science as compared to the other two groups. The PTSD negative and no trauma control groups demonstrated so significant differences in academic performance. Findings of this study are limited in that no pre-trauma academic ability levels were available as well as by the small sample sizes. The difference in findings between these findings by Saigh et al, (1997) and the work of Elbert et al. (2009) are potentially the result of the differences in measures. The study by Elbert et al. utilized grades and teacher report rather than standardized assessments.

DeBellis et al. (2009) also assessed academic achievement of children with and without a diagnosis of PTSD using the Woodcock-Johnson Tests of Academic Achievement - Reading and Mathematics composites. Results indicated that both neglect groups performed significantly poorer on the reading measures than the control group. However, only those with PTSD performed worse than those who neither experienced neglect or PTSD in math. No significant differences were found between the two neglect groups on either reading or mathematics. Supporting previous findings (Elbert et al., 2009; Saigh at al., 1997), DeBellis et al. suggested that neglect, or trauma exposure, relates to language skills even when the symptoms of stress do not reach the level necessary for a diagnosis of PTSD. However, symptoms rising to the level of PTSD following the experience of neglect may contribute to compromised math skills.

Overall, outcomes of PTSD in children have been shown to impact functioning in multiple areas including behaviors, neuropsychological functioning and academic achievement. Each child with PTSD is unique and may demonstrate unique combinations of symptoms. Additionally, symptoms may vary depending on the developmental level of the child (Chard,

Gilman, Holleb and Teeters, 2012; Perry 2001). Younger children are more likely to express reactions to trauma non-verbally through actions such as repetitive play, temper tantrums, and/or irritability (Chard et al., 2012; Pynoos, et al., 1987; & Terr, 1979). School-age children have developed language and cognitive skills that increase effectiveness of verbal expression. School age children are more likely to express more specific fears related to their experiences. School age children are also more likely to engage in trauma specific play or re-enactment play. They may still experience difficulty expressing distress verbally and are considered to be more likely to demonstrate somatization, withdrawal, avoidance of PTSD triggers, and aggression toward others (Chard et al., 2012; Cuffe et al., 1994; & Thomas, 1995). Adolescents are more likely to demonstrate PTSD symptoms similar to adult responses including aggressive behaviors and/or sudden emotional outbursts, opposition to adult authority, social withdrawal, and foreshortened future (Chard, 2012; Terr, 1983). Additionally, neuropsychological deficits identified as associated with diagnosis of PTSD are likely to impact learning within the school setting (Beers & DeBellis, 2002; DeBellis et al., 2009; Ford et al., 1999; Ford et al., 2000; Moradi Neshat-Doost et al., 1999; Saltzman et al., 2006; Samuelson et al., 2010; Yasik et al., 2007). Given the behavioral and neuropsychological deficits associated with PTSD, academic deficits are likely. Indeed, research has found an association between academic performance and PTSD diagnosis in students (DeBellis et al., 2009; Saigh et al., 1997). Increasing teachers' awareness of PTSD in students and the likely outcomes has the potential to increase appropriate accommodations in the school setting leading to improved academic and social/emotional outcomes for children with PTSD.

### **School-based Accommodations and Interventions**

Based on the high prevalence of childhood exposure to violence, it is highly likely that classroom teachers in the United States will encounter children who meet diagnostic criteria for PTSD, or even have a diagnosis, in any school year (Finkelhor, Ormrod, & Turner 2005; Littleton, 2010; Perry, 2001). However, very few resources that guide teachers with providing appropriate strategies for daily classroom accommodations when working with children with PTSD have been found. Rolfesnes and Idsoe (2011) identified a growing body of research studying the implementation of clinically-based interventions within the school setting. Evidence-based clinical interventions and school treatment models for childhood PTSD found in current research may be useful to provide guidance in determining what specific accommodations and/or modifications would address the unique needs of children with PTSD.

Rolfesnes and Idsoe (2011) conducted a review and meta-analysis of school-based intervention programs aimed at decreasing symptoms of PTSD in children. Although the authors identified 99 studies on trauma interventions in the schools, only 19 were considered to be specific to PTSD and met the criteria for a randomized control trial with adequate data available for analysis. Studies that targeted cases of complex trauma, which involve multiple forms of abuse and/or continuous exposure to abuse and neglect, were excluded due to the more complex and prolonged interventions considered necessary in cases of complex trauma. Rolfesnes and Idsoe proposed that schools are an optimal setting for providing intervention services to children experiencing PTSD because schools allows for screening and access to all children within a familiar and supportive setting. The authors reported that 16 out of the 19 studies employed cognitive behavioral therapy (CBT) methods. The three remaining studies employed play/art therapy, eye movement desensitization and reprocessing, and mind-body techniques. Results of

the review indicated that the majority of studies reported significant decreases in PTSD symptoms, with strong support for the use of CBT methods. Specifically, 11 out of the 16 studies that utilized CBT methods reported medium to large effect sizes. Rolfness and Idsoe identified three studies that they considered to be exemplary in terms of randomized research design, large sample sizes, use of manualized procedures, and follow-up at least three months post intervention. These studies will be reviewed individually below. Additionally, even though they were not considered exemplary studies, five of the studies identified by Rolfness and Idsoe utilized teachers to implement the interventions rather than other service providers such as school counselors or outside clinicians. These teacher implementation studies will also be reviewed as they are the most applicable to the topic of the current study regard to possible classroom accommodations.

Chemtob, Nakashima, and Hamada (2002) studied PTSD symptoms in children on Kauai, two years after Hurricane Iniki, by screening for PTSD symptoms in the schools. Once children were identified as having high levels of trauma symptoms based on the DSM-IV criteria for PTSD, trained school counselors provided school-based interventions. Participants, randomly assigned to either individual treatment or group treatment, received four intervention sessions. The intervention used manuals covering the goals of restoring a sense of safety, grieving losses and renewing attachments, adaptively expressing disaster-related anger, and achieving closure. Activities involved play, expressive art, and discussion. Results of ANOVA analyses indicated that there was a significant decrease in PTSD symptoms from pretest to posttest that was maintained at the 3-month-follow-up. Although this study reported a reduction of PTSD symptoms among students, counselors provided the interventions outside of the classroom. Therefore, the question remains whether such strategies could be integrated into a classroom

setting or if a comparable intervention could involve teachers to help students generalize skills learned in the intervention.

Rolfesnes and Idsoe (2011) also reported that a study by Stein et al. (2003) met their criteria as a strong study design. Stein et al.'s study examined effectiveness of psychological interventions for children with diagnoses of PTSD resulting from exposure to violence including witnessing violent acts. Mental health clinicians conducted screenings in two middle schools in East Los Angeles. One hundred twenty-six of the 769 students screened met eligibility criteria, provided parental consent, and were willing to participate in this study. Students were randomly assigned to either the initial treatment group or a waitlist group for control purposes. Interventions utilized the Cognitive-Behavioral Intervention for Trauma in Schools (CBITS) program that uses manuals for standardized session content. Results after the first intervention group showed significant decreases in PTSD symptoms and depression based on parent and teacher ratings for the intervention group as compared to the no-intervention group. Upon completion of the intervention with the waitlist group, post-intervention scores were not significantly different between the two groups. The authors concluded that use of the CBITS in a school setting can serve to decrease symptoms of PTSD and depression when implemented by mental health professionals. Although Stein et al. (2003) conducted a well-controlled study in a school setting, teachers did not implement the interventions. Therefore, the study does not provide direct guidance to teachers. Nonetheless, review of the activities and strategies used may provide insight into ways that teachers can accommodate for children with PTSD in the classroom.

The CBITS system has been used by several of the studies reported by Rolfesnes and Idsoe (2011). The authors described 10 CBITS sessions in detail as follows:

1. Introductions, discussion of confidentiality, establishing of group procedures and norms, explanation of treatment through stories and a discussion of why students may want to participate.
2. Teaching students about common reactions to trauma and stress followed by relaxation training to ease anxiety.
3. Introduction to the connection between thoughts and feelings, rating of fears with thermometer activity, building connections between feelings and thoughts, and training to combat negative thought patterns.
4. Continued work on fighting negative thoughts
5. Introduction to exposure using avoidance and coping, building a fear hierarchy, and identifying alternative cope strategies.
6. Use of imagination/drawings/writings to begin exposure to memories of trauma
7. Continued exposure to trauma memories through imagination/drawings/writings
8. Social problem solving introduction
9. Hot seat technique to practice social problem solving techniques
10. Relapse prevention technique presentation and graduation.

The majority of activities included in the CBITS require training as well as safe settings for students to process their traumatic experiences to implement making the intervention difficult for the majority of classroom teachers to utilize. However, teachers who are aware of student trauma experiences or diagnoses of PTSD and informed about basic treatment concepts may be able to implement accommodations within the classroom. Informed teachers may be able to help and/or guide student in accepting their current, potentially uncommon responses as natural responses to traumatic experiences. Teachers who have understanding of a student's trauma

experience and resulting responses may also be able to help students increase self-awareness and self-monitoring to change negative thoughts (Nickerson, 2009). Additionally, in classes where regular, homebase class meetings are utilized, teachers may also be able to engage all students in discussions and activities designed to develop social problem solving skills and sharing of feelings (Nickerson, 2009).

Rolfsnes and Idsoe (2011) identified a third randomized control trial research study that they concluded had a strong research design. Layne et al. (2008) conducted research with a war-exposed population of adolescents in central Bosnia who attended secondary school in central Bosnia during the 2000-2001 school year. Eligibility criteria included exposure to significant trauma before, during or after the war, significant distress including severe PTSD symptoms, and significant impairment in functioning including difficulties in relationships and/or school performance. Layne et al. utilized the manualized Trauma and Grief Component Therapy for adolescents (TGCT) in a two-tiered model of intervention. Tier 1 consisted of classroom-based skills training and psycho-education that was provided to all students. Tier 2 consisted of the Tier 1 skills training in the classroom plus and a 17 session group therapy component. Results of this intervention showed significant decreased symptoms of PTSD for both the Tier 1 and Tier 2 groups. When considered on an individual basis, the authors found a 58% decrease in PTSD symptoms immediately post-treatment and 81% decrease in reported symptoms at follow-up four months post-treatment. Layne et al. (2008) reported that the rates of symptom reduction found in this school-based study were similar to those found in research on clinical, psychotherapeutic settings. The authors concluded that the decrease in PTSD symptoms in the group who only received classroom instruction group treatment supports the application of group trauma treatments within the schools in areas impacted by war or major disaster. Due to limitations such

as two different forms of interventions used with different groups and a limited number of outcome assessment tools, the authors recommended that the results be interpreted conservatively. Layne et al. advocated for school/community collaboration to bring mental health professions into school settings for implementation of universal intervention application.

Overall, the outcomes of research implementing interventions for PTSD and/or trauma symptoms as well as depressive symptoms in the schools have been positive (Rolfnes & Idsoe, 2011). However, availability of mental health professionals to conduct these interventions are limited and removing students from classrooms for treatment with unfamiliar professionals may be stigmatizing and less effective (Berger, Pat-Horenczyk, & Gelkopf, 2007). Therefore, a number of studies have utilized teachers to implement interventions within the school setting (Berger & Gelkopf, 2009; Berger et al., 2007; Gelkopf & Berger, 2009; Gordon, Staples, Blyta, Bytyqi, & Wilson, 2008; Jaycox et al., 2009; Karam et al., 2008). Four out of the six studies identified by Rolfnes and Idsoe (2011) involved children exposed to war and/or ongoing exposure to terrorism. Only one study utilized a population of students with exposure to a natural disaster. Similarly, only one study was conducted with students who had extensive exposure to violence within the community. The interventions used in these studies included CBT-based activities along with alternative methods including art therapy, body consciousness strategies, and stress reduction strategies (Berger et al., 2007; Karam et al., 2008), a variation of the previously described CBITS program (Jaycox et al., 2009), mind-body techniques (Gordon et al., 2008), and a stress reduction intervention system called Enhancing Resiliency Among Students Experiencing stress, or ERASE-Stress (Berger & Gelkopf, 2009; Gelkopf & Berger, 2009).

With only one exception, the six studies of teacher implemented intervention programs reported decreases in PTSD and traumatic stress symptoms at post-intervention and follow-up. Karam et al. (2008) examined the efficacy of a combined CBT and stress inoculation training model of intervention. All students in six schools from the South and South-West Bekaa region of Lebanon received the intervention. Sessions were conducted by teachers who had been trained in a one-day, intensive training using manuals for consistent session content. Participants and control group students were assessed for major depressive disorder, separation anxiety disorder, and PTSD. Demographic and trauma exposure ratings indicate no significant differences between the PTSD and control groups. Karam et al. found no significant differences between control and intervention group outcomes. However, this study was limited in a number of ways including lack of randomization of group participation, no consideration of teacher backgrounds or personal experiences, and absence of parental input. Given the lack of differences between group outcomes, the authors concluded that further research was needed before universal school-based interventions for PTSD should be recommended.

The five other studies that used teachers to implement different interventions in school settings reported positive outcomes with significant decreases in PTSD symptoms. Two studies utilized CBT-based interventions, one with students in Israel with trauma due to terrorism exposure (Berger et al., 2007) and one in Los Angeles public schools with students exposed to community violence (Jaycox et al., 2009). Both studies reported that positive decreases in PTSD symptoms within the intervention groups were maintained at follow-up assessment. Both studies concluded that school-based interventions showed promise as a means for decreasing traumatic stress in children and adolescents after exposure to violence.

Berger et al. (2007) conducted research using universal intervention, meaning that the intervention was used with all students enrolled in the classes regardless of level of PTSD symptoms. The study used strategies including educating students about typical responses to trauma, relaxation training, gradual mastery of anxiety at reminders of trauma, and social problem solving skills. In addition, Berger et al. included art therapy, body-orienting strategies, and narrative approaches. Assessment of intervention outcomes was only conducted with students whose parents signed informed consent since not all parents gave consent for participation in assessment. Teachers implemented the interventions in 5 out of 10 classes with the 5 remaining classes being a wait-list condition. Sessions were conducted weekly as part of class instruction. Berger et al. (2007) considered the positive outcomes to intervention to be support for the inclusion of school-based, universal intervention in areas impacted by war as part overall public mental health policy.

In contrast to the previous study where all students participated in intervention activities, Jaycox et al. (2009) employed a multi-step screening process involving consent for screening followed by an individual interview for students who demonstrated significant symptoms of PTSD. Informed consent for intervention participation was obtained after the individual interview if students continued to meet criteria, namely exposure to severe violence and currently demonstrating symptoms sufficient for PTSD diagnosis. Interventions were conducted at two different. In one school, teachers who completed training conducted the interventions during their planning periods. At the second school, one teacher and one school counselor conducted the intervention sessions. All groups within the study met on a weekly basis and received intervention content from a manual for consistency. Jaycox et al. (2009) employed a modified version of the CBTIS previously described in the study by Stein et al. (2003) with the

components of visualization of trauma removed. The 10-session program utilized strategies for educating students about typical responses to trauma, relaxation training, gradual mastery of anxiety at reminders of trauma, and social problem solving skills. Jaycox et al. (2009) reported decreases in PTSD symptoms, which they interpreted to indicate that interventions for PTSD can be successfully implemented by teachers and/or school staff.

The studies by Berger et al. (2007) and Jaycox et al. (2009) both employed teachers to provide interventions for symptoms of PTSD within the school setting, both required teachers to undergo training in order to implement group intervention sessions that was separate from typical classroom content. Neither study provides clear guidance for what untrained classroom teachers could or should be doing on a daily basis within the classroom setting. Consideration of the content of the interventions; however, provides insight into what types of accommodations/modifications may be helpful for children with PTSD in the regular classroom setting. Both studies employed CBT-based techniques previously reported including teaching students about typical trauma responses, normalizing student responses through building recognition of individual responses, relaxation training, mastery of anxiety responses and social problem solving skills. With awareness and knowledge about PTSD symptoms, classroom teachers may potentially be able to assist students through acceptance of their responses to trauma triggers. Teachers who are aware of trauma and appropriate classroom accommodations have opportunities to help normalize student responses to trauma when experiencing distress in the classroom. School settings may also allow for the incorporation of art during the school day to increase a student's opportunities for self-expression particularly in elementary or specialist class settings such as art or music class. Teachers are potentially able to utilize elements of basic relaxation strategies such as encouraging deep breathing when they see that a student is

experiencing increased stress within the classroom setting. Teachers are also able to engage in teaching social problem solving skills within the classroom through group activities and/or individual interactions with specific students (Nickerson, 2009).

One study, in which teachers were utilized to provide intervention for PTSD symptoms within the school settings, used mind-body techniques. Gordon et al., (2008), studied the outcomes of a 12 session mind-body intervention with high-school students who met criteria for diagnosis of PTSD following exposure to war in Kosovo. Once students who meet DSM-IV criteria were identified, groups were determined by random assignment to either immediate intervention or wait-list. Teachers were trained by the Center for Mind-Body Medicine in a 10-day intensive training. The intervention involved deep breathing, progressive muscle relaxation, and positive imagery as well as activities using art and music therapy as well as dramatic play. Results of this study showed significantly decreased PTSD scores at post-assessment with large effect sizes. Additionally, decreases in PTSD symptoms were maintained at a 3-month follow-up assessment. Closer examination showed that behaviors/symptoms within the re-experiencing and avoidance/numbing categories significantly decreased in the treatment group as compared to the wait-list group. Although arousal symptoms decreased, the difference was statistically significant between the groups. The authors hypothesized that effectiveness was in part due to the opportunity for social support and opportunity for self-expression offered by teachers and the group setting. As with all these studies, teachers required training to participate and effectively implement the intervention making it difficult to consider application by the average teacher without training less likely. However, this study does support the idea that students with PTSD may benefit from a supportive, accepting classroom environment that allows for opportunities to express feelings in a safe environment.

The last two research studies found in which teachers implemented interventions for PTSD symptoms in a school setting both involved the ERASE-Stress program and were reported by the same authors. Both studies utilized universal interventions meaning that the interventions were provided to all students regardless of whether they participated in assessment measures. The first study using ERASE-Stress was reported by Gelkopf and Berger (2009) after application in a religious school setting in southern Israel. For the second study reported by Berger and Gelkopf (2009), the ERASE-Stress intervention model was modified for use in Sri Lanka with adolescents who experienced the tsunami on December 26, 2004. Teachers in Israel were trained to implement the interventions through three-hour training session over seven days. In Sri Lanka, teachers were trained for eight hours per session for three sessions. Both studies randomly assigned student participants to either an immediate intervention group or a wait-list group by assigning classroom teachers to each condition. Both studies reported a significant decrease in PTSD symptom severity at three months post intervention. These studies were limited by both lack of longer time between interventions and follow-up such that it is unknown if positive effects were maintained over time. Additionally, the populations in these studies are were? limited with specific racial/cultural make-up, namely religious school students in Israel and a primarily Buddhist community in Sri Lanka. The authors noted that in Sri Lanka, the ERASE-Stress program was altered to include more spiritual and religious components to be more sensitive to local community practices.

As with previously discussed studies, the application of a specific group intervention by teachers with unique training, does not directly inform the question of what appropriate accommodations may be helpful within the general education setting in the United States public school system to improve outcomes for students with PTSD. Specific elements of the

intervention may, however, prove helpful. Gelkopf and Berger (2009) provide general descriptions of session content. Activities listed include:

1. Identifying student's strengths and resources to build coping skills, increasing awareness of somatic responses to stress, and building sensory-motor techniques to decrease stress.
2. Increasing awareness of personal emotions and making connections between emotional and physical responses.
3. Making connections between somatic sensations, thoughts, and feelings, normalizing fear responses, and expressing anger in positive ways.
4. Expressing feelings such as grief and loss in a safe, supportive environment.
5. Building concepts of social support, asking for help, and increasing empathy.
6. Increasing self-awareness of strengths and weaknesses and the impact of stress on self-esteem.
7. Recognizing and changing negative thoughts.
8. Recognizing dreams and increasing planning skills to attain goals.

Although this intervention is not specifically labeled as a CBT based therapy, there are a number of similar strategies such as increasing awareness of self, identifying personal emotions, and building connections between thoughts and feelings. Acceptance of self and normalizing of responses to trauma are also consistent in both the ERASE-Stress and CBT based models of interventions. As indicated by previous studies, teachers may increase student success for individuals experiencing PTSD by implementing accommodations designed to create a safe and accepting environment, recognizing students' stress reactions as normal responses, allowing for increased opportunities for personal expression in a safe environment.

Guidelines for daily classroom accommodations for children with PTSD suggest use of strategies taken from previously described interventions plus other key instructional accommodations based on understanding of the outcomes of PTSD (Nickerson, 2009).

According to Chard et al. (2012), the primary role of teachers in working with children with PTSD is to create a safe, structured, and supportive environment so that student may again focus on learning after experiencing trauma. However, accommodations may also be necessary for instructional support and behavior management in addition to social/emotional supports. Niesyn (2009) outlined basic instructional and behavior management strategies that have been found effective in working with children with emotional and/or behavioral difficulties, but not specifically PTSD. Instructional strategies recommended included providing increased praise from teachers, allowing individual presentation of independent work, and offering shortened assignments to reduce frustration. Additionally, Niesyn recommended increasing the opportunities for children with emotional and behavioral problems to give correct responses by frontloading information needed to answer questions correctly such as providing key words necessary for correct answers within the question. Independent work for students with emotional and/or behavioral disabilities should be carefully chosen so that students are able to answer independent work with 90% accuracy. Other instructional strategies recommended by Niesyn included creating peer tutoring activities so that students may work together and support the skills of children with emotional-behavioral difficulties. Niesyn also recommended allowing students a choice of activities to increase time students spend engaged in academic work.

Designing assignments around topics of interest to students may also help increase willingness to engage in academic tasks with students with emotional and behavioral challenges. For instructional support, Niesyn recommended the use of direct instruction methods which involve a

set format for presenting instruction; namely gaining student attention, reviewing past learning, presenting new lesson, guided practice on new skills, and then independent practice.

Niesyn (2009) also recommended strategies for behavior management when working with children with emotional and/or behavioral disabilities. Recommendations begin with typical classroom management strategy of establishing clear rules and expectations for student behavior that are posted in print and reviewed on a regular basis. Another key behavior management strategy recommended by Niesyn is for teachers to give directives that are more likely to be followed prior to giving less desirable directives. In addition to these strategies, Niesyn recommended that students be taught self-management strategies including self-monitoring and self-instruction. Self-monitoring involves helping students become aware of their behaviors and emotional responses including evaluation of the outcomes of choices and identification of alternate behaviors. Self-instruction strategies involve teacher modeling meta-cognitive processes to dealing distressing feelings and/or situations within the school setting.

Nickerson (2009) provided recommendations specific to working with children with PTSD including teaching and behavior management strategies that are consistent with the recommendations of Niesyn (2009). Nickerson recommended that teachers provide instruction in multi-modal ways in order to provide written or visual information in addition to verbal instruction. Due to demonstrated deficits in verbal memory in children with PTSD, Nickerson also recommended use of learning tools such as graphic organizers, concept webs, and/or colored outlines to help students begin projects and organize ideas. Similar to Niesyn's recommendation to increase peer tutoring opportunities, Nickerson recommended use of clear expectations and cooperative learning strategies so that students have more opportunities to build social skills as well as have success in completing projects by working in groups.

Nickerson (2009) included recommendations for emotional supports from teachers that are specific to children with PTSD. Strategies recommended for classroom teachers working with children with diagnoses of PTSD include encouraging students to express feelings through appropriate methods such as drawing, talking, and writing. In order for students to share their feelings, they must feel safe and comfortable. Nickerson stated that teachers can increase students' sense of safety and comfort by allowing for movement while talking rather than requiring eye contact or face to face conversation, remaining calm and present during interactions, and not over-reacting when students share information. According to Nickerson, students may also be assisted in gaining a sense of control through teaching them safety rules such as differences between appropriate and inappropriate touch, limits of information sharing, and ways to report unsafe or inappropriate situations. The last area of recommendation for classroom teachers provided by Nickerson is in helping students cope with their personal trauma triggers. Teachers should be aware of specific triggers for any student with PTSD in order to help make accommodations such as providing warnings before loud events such as drills to a student who experiences distress at loud noises. Nickerson advised that teachers and all school staff members need to be attune to signs of distress in children as well as a need for understanding of unusual responses from children with PTSD.

### **Summary and Conclusions**

In summary, evidence has been presented that demonstrates that children with a diagnosis of PTSD demonstrate behavioral problems, neuropsychological deficits, and academic difficulties as compared to peers without PTSD. Teachers in public schools in the United States are likely to have children with PTSD in their classroom. Research on attribution theory indicates that teachers make decisions about what classroom accommodations for students based

on attributed causes or sources of the problem behaviors. Appropriate, trauma specific classroom accommodations are considered to be important in increasing school success for children with PTSD. Additionally, recent research in treatment interventions for PTSD in children has indicated that the school is a potentially effective setting for intervention, particularly in areas where trauma exposure is widespread such as violent neighborhoods or war zones. To date, no studies have been found that examine the attributions of teachers regarding the behaviors of children with PTSD or how much information is necessary to assist teachers in choosing appropriate, trauma specific accommodations. The purpose of this study is to examine the impact of varying levels of information on teachers' causal attributions about the behaviors of children with diagnosis of PTSD. This study also proposes to examine if increased information increases teachers' ability to identify the greatest proportion of trauma specific accommodations for children with PTSD in the general education classroom.

## CHAPTER 3: METHODS

### Participants

Participants in this study were teachers who were currently teaching within the public school system. Participants were recruited from educators working within two school districts in the Southwestern region of the United States. Specifically, the educators were recruited from the Arizona public school system and not in private or charter school settings. The first school district's student demographics indicate a majority of students, 94.81%, from minority racial/cultural backgrounds with 87.96% self-reporting Hispanic descent. Additionally, 84.51% of the students enrolled in the district are considered to be from low socio-economic status as indicated by enrollment in free and reduced lunch programs. The second district's demographics indicated that the majority of students, 58.2%, are from Caucasian backgrounds and 36.3% Hispanic or Latino backgrounds. The study targeted both elementary and middle school levels in order to increase the pool of participants as well as to increase the likelihood of generalizability to a greater range of school settings. Inclusion criteria included working as a classroom teacher, instructional interventionist, or special education teacher with a full year assignment within the public school district, which requires holding a current teaching certification. Exclusionary criteria included status as a substitute or student teacher or an individual who was not currently holding a professional teaching contract within the target district. For a Chi-square analysis of research question 1, power was computed using G\*Power, version 3.1 with a 0.4 effect size,  $\alpha = 0.05$ , and power set at 0.80. An estimated sample size of 186 participants was required for chi-square analyses with three conditions by 10 categories. This estimation was based on a medium effect size, 80% power, and three conditions by 10 attributions. For research question 2, with three groups, medium effect size of .25, and 80% power, the study requires a sample size of 159

teachers. Seven hundred and seventy-one teachers were contacted to recruit for participation in the study via school district email. Two hundred and thirty-six elementary and middle school teachers indicated consent to participate for a 30.6% initial response rate. The response rate varied somewhat by district such that a 32.6% of teachers from District 1 responded and only 20.4% of teachers from District 2 responded.

Of the 236 individuals who opened the survey and indicated consent to participate, 161 responses contained sufficient information to be included in analysis of at least one research question (20.9% response rate), whereas 74 individuals chose to not complete the survey. Of the 161 participants in Question 1a, 138 were directed to Question 1b due to responding “Yes”, when asked if they chose Emotional Problems as one of their top three causes. Of those 138, only 88 had indicated Emotional Problems as the primary cause of student difficulties. For Question 2, 143 participants provided accommodations for an 18.5% response rate. One hundred and thirty-nine individuals completed the demographic survey with the exception of one person who declined to provide an age.

Table 1  
*Participant Demographic Descriptive Statistics*

	<b>N</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Range</b>	<b>St. Dev</b>
Age	138	40.5	38.5	34.0	22-64	11.98
Years of Teaching Experience	139	11.6	9.0	3.0	0 -37	9.51
Years in Current Position	139	4.6	3.0	0.5	0.5 - 25	4.79

Participant demographics indicated that a majority of respondents were female who report ethnic background as Caucasian. Ages ranged from 22 years to 64 years of age ( $M = 40.5$ ,  $SD = 11.98$ ). Characteristics of the participant teachers, including educational levels, special education training, and years of teaching experience, were considered to potentially contribute to

their ability to make accurate attributions and identify accommodations that are specifically indicated for students with PTSD. Teacher training for special education was considered to potentially impact responses. Of the 139 individuals who reported demographic information, 18.7% ( $n = 26$ ) reported currently holding positions as a special education teacher (see Table 2). Details of years of teaching experience are shown in Table 1 while categorical characteristics for current position and education level are shown in Table 2.

Table 2  
*Participant Demographics – Frequencies*

		N	%
Sex	Female	117	84.2%
	Male	20	14.4%
	Other	2	1.4%
Ethnicity	Caucasian	98	70.5%
	Hispanic	30	12.8%
	Asian	2	0.8%
	Arabic	1	0.4%
	Multi-racial	2	0.8%
	Unspecified	6	2.5%
Education Level	Bachelor's	61	43.9%
	Master's	70	50.4%
	Ed. Specialist	7	5.0%
	Doctorate	1	0.7%
Current Position	Gen. Elementary	68	48.9%
	Gen. Middle	36	25.9%
	Sp.Ed. Elementary	16	11.5%
	Sp.Ed. Middle	10	7.2%
	Specialist	9	6.5%

The study collected data on respondents' experiences teaching students known to have a diagnosis of PTSD, having a family member with a diagnosis of PTSD, or having personal experience with PTSD as such experiences may have potentially impacted the respondents' attributions and accommodation recommendations (see Table 3). The majority of respondents reported no experience with PTSD in terms of teaching students known to have a diagnosis of PTSD, having family members with diagnosis of PTSD, or personal experience of PTSD.

Table 3  
Participant Experience with PTSD

	Yes		No	
	N	%	No	%
Experiencing - Students with PTSD	45	32.4%	94	67.6%
Experience with Family PTSD	40	28.8%	99	71.2%
Personal Experience of PTSD	7	5.0%	132	95.0%

## Measures

**Attribution survey.** Each participant was given a list of possible causes of the child's difficulties indicated by educators (Appendix D). The list was derived from application of attribution theory to groups identified through teacher focus groups in a previous analog study of teacher attributions (Wodrich, 2005) and based on attribution theory in the literature (Weiner & Kukla, 1970). Wodrich (2005) identified potential causal attributions made by teachers from years of experience working with teachers and knowledge of common childhood conditions that impact school performance. After review and revisions made by an informal focus group of teachers, the list of most common causal attributions included: laziness or lack of motivation, lack of intelligence, health factors, lack of basic academic skills, hearing or vision problems, classmates dislike, teacher dislike, lack of effort on hard tasks, lack of parental support, specific

learning disability, emotional problems including attention deficit hyperactivity disorder (ADHD), anxiety, or depression, health problems and lack of sleep. Of these groups, teachers and classmates' dislike were both endorsed by only one individual each. Given the lack of teacher endorsement of these categories, they will be combined in the current study. Another change to the list used by Wodrich (2005) is the separation of ADHD from the emotional problems category. ADHD is categorized as a behavioral disorder by the DSM-IV-TR, which is different from emotional problems such as mood or anxiety disorders. Additionally, groups with similar characteristics were combined. Laziness and lack of motivation was combined with lack of effort and vision and hearing problems was combined with the health problems. In the latter, the wording was changed to medical problems for this study. The causal attributions listed for teachers to indicate the top three likely causes of the hypothetical student's difficulties will be as follows: laziness / lack of motivation or effort, disliked by teacher and/or classmates, lack of parental support for school, specific learning disability, emotional problems, attention deficit hyperactivity disorder (ADHD), lack of sleep, medical problems (including vision and/or hearing problems), lack of intelligence, lack of basic academic skills.

Inclusion of options for the causal attributions to be included is also supported by attribution theory characteristics. Based on attribution theory (Weiner, 1985) causal attributions can be categorized by three characteristics – stable or unstable, internal or external, and controllable or uncontrollable. The characteristics of the causal attributions proposed for this study are listed in Table 4. Of the potential causes for student difficulties identified by teachers, 5 out of the 10 can be considered stable, internal and uncontrollable attributes of the student namely medical problems, ADHD, emotional problems, lack of intelligence and specific learning disability. The remaining 5 can be considered unstable in that they may change from one event

to another. However, of the 5 remaining potential causes, the characteristic of external or internal and controllability vary. Specifically, laziness or lack of motivation and lack of basic academic skills are considered internal while lack of sleep, lack of parental support, and dislike by teacher and/or peers can be classified as external to the student. Controllability also varied among the 5 unstable causes with only laziness or lack of motivation or effort and lack of sleep are considered to be controllable by the student. Lack of parental support, lack of basic skills, and dislike by teachers and/or classmates are considered to be uncontrollable by the student. Not all possible combinations of the three categories are represented in this short list. However, the list was kept without attempting to meet all combinations due to the fact that the list was established by previous research into teacher attributions.

Table 4  
*Characteristics of Causal Attributions*

<b>Potential Attribution</b>	<b>Stability</b>	<b>Locus</b>	<b>Control</b>
Lack of Sleep	Unstable	External	Controllable
Laziness / Lack of Motivation or Effort	Unstable	Internal	Controllable
Lack of Basic Academic Skills	Unstable	Internal	Uncontrollable
Lack of Parental Support for school	Unstable	External	Uncontrollable
Disliked by teacher and/or peers	Unstable	External	Uncontrollable
Medical Problems including HI/VI*	Stable	Internal	Uncontrollable
Emotional Problems	Stable	Internal	Uncontrollable
Specific Learning Disability	Stable	Internal	Uncontrollable
Lack of Intelligence	Stable	Internal	Uncontrollable
Attention Deficit Hyperactivity Disorder	Stable	Internal	Uncontrollable

Note. HI stands for Hearing Impairment and VI stands for Visual Impairment

**Emotional problems survey.** An additional question was asked for those who ranked emotional problems as one of the top three reasons for the issues manifested in the classroom (see Appendix E). A short list of general emotional problems was provided to these teachers including anxiety, bipolar disorder, depression, and PTSD. General categories of emotional

problems were identified from DSM-IV-TR categories of major categories of emotional difficulties with the addition of PTSD since it is the topic of investigation. Participants were asked to choose the one form of emotional problem that is most likely the source of the student's difficulties as described in the case study. For purposes, of this study, only those who attributed emotional problem as the primary reason for the child's difficulties were examined.

**Accommodations survey.** The accommodations survey provided space for teachers to list accommodations they would recommend making in the general education classroom setting to address behavioral difficulties and increase academic success for the child described previously. This item was an open space for teachers to respond to the following: "Please list accommodations that you believe should be implemented within the general education classroom that would address the source of the student's difficulties in order to increase her school success."

**Demographic survey.** The Demographic survey requested information including ethnicity/race, gender, age, years of teaching experience, types of teaching experiences including levels and subjects taught and experience working in special education, experiences working with children with PTSD diagnoses, personal associations with individuals with mental health diagnoses, and personal experience diagnosis of PTSD (see Appendix F).

## **Procedures**

Approval was requested from the University of Arizona, Institutional Review Board, requesting permission to recruit teachers for participation in the study was obtained from local school districts. Risks associated with participation in this study were considered to be minimal. The study was designed using analog methodology so that no real child data or information was

used. Due to online survey software, no names were able to be connected to survey responses. Only teachers who choose to give their names for inclusion in the incentive drawing were recorded. Names were printed on slips of paper for the drawing which was completed by an associate of the principal investigator and witnessed by an outside party. After the drawing was completed the slips were discarded. The computer file containing the list of names was deleted. Survey responses were anonymous in order to protect the confidentiality of participants. Questions regarding relationship to others with PTSD, and personal history of trauma exposure and/or PTSD may have resulted in discomfort for participants. Participants were given the choice to not complete the requested forms and discontinue participation in the study without disclosure to the principal investigator or research associates coding data. As stated previously, all participants were provided with information about local mental health services should they feel the need to seek assistance (see Appendix G).

**Pilot Study.** Prior to sending the survey out to all participants, an initial group of 12 individuals were chosen to pilot the study. Emails were sent to the initial 12 individuals who all worked at a variety of schools within the first district that provided approval for study participation. The purpose of the pilot study was to determine if the survey ran correctly as well as to determine if the enough individuals were likely to choose Emotional Problems so that there would be enough participants to complete the Emotional Attribution question. However, only two of pilot individuals chose to complete the survey over a two-week period. Of those individuals, one chose Emotional Problems. Despite the limited number of pilot responses, it was determined that the survey functioned correctly and was acceptable to be sent out to all potential participants. The Emotional Attribution survey was provided to individuals who indicated that Emotional Problems were within their top three choices of attributions in a

separate question due to limits of software logic for directing only some respondents to the secondary question. Figure 1 provides visual representation of the flow of participants through the survey including counts for discontinued participants at each stage of the survey.

**Recruitment.** Educators were contacted via district email and asked to complete a survey containing six separate survey pages. In District 1, participants were contacted directly since the principal investigator had access to district email as an employee of the district. In District 2, teachers were contacted via email forwarded by the Assistant Superintendent who approved research participation. The survey was delivered via email to potential participants using Survey Monkey software. The initial email provided instructions for entering a drawing intended to be incentive for participation, but did not require survey completion for participation (per the University of Arizona IRB HSPP regulations).

**Survey details.** Upon opening the survey link, the first page the survey contained a disclaimer with an overview of the study format, including the purpose of the study as being to determine information necessary to provide appropriate accommodations within the general education classroom, and safeguards for confidentiality. The second page consisted of case studies that varied depending on the independent variable condition. The varying levels of information were randomly assigned to responders by the online survey program. For all participants, the page contained a hypothetical description of an 11-year-old child who had been experiencing academic and behavioral difficulties associated with PTSD including difficulty attending to instruction, irritability and outbursts of anger that are disruptive to class activities, difficulty with processing verbal information such as directions, lack of planning skills, and working memory problems such as difficulty holding information in memory while engaged in academic tasks. The case study student was identified as female because demographics on

children with PTSD indicate that girls are more likely to demonstrate PTSD than boys (Littleton, 2010). The age of the child was determined to be 11 in order to maximize the school settings for survey participation based on the likelihood that an 11 year old student may be found in either elementary or middle school levels. Condition 1 served as the control condition and participants who received a Condition 1 survey were provided with only the hypothetical description of the child (Appendix A). Condition 2 participants received the hypothetical description of the child plus documentation that the student has been diagnosed with PTSD due to hypothetical exposure to domestic violence (Appendix B). Condition 3 participants received the hypothetical description of the child, the information about diagnosis and history provided in Condition 2, and general information regarding outcomes associated with PTSD in children including behavioral, neuropsychological, and academic difficulties (Appendix C). The student information contained in the case study was reviewed by six professionals that work with children in either school settings or in private practice. Four of the six professionals were school psychologists while the remaining two were psychologists who work with children with diagnoses of PTSD. All endorsed the case study as demonstrating behaviors and academic difficulties associated with PTSD.

The third page of the survey contained the Attribution Survey measure that provided each participant a list of possible causes of the child's difficulties (Appendix D). Educators were instructed to rank order the possible attributions from 1 to 10 with 1 being the most likely source of the student's difficulties and 10 being the least likely source of difficulty. At the bottom of the page, teachers were asked three questions that indicated if they chose Specific Learning Disabilities, ADHD, and Emotional Problems within their top three choices. This allowed for only those who chose Emotional Problems within their top three choices to be given a second

attribution question. Participants who did not indicate that they chose Emotional Problems as one of their top three choices were redirected by the program to skip the next question.

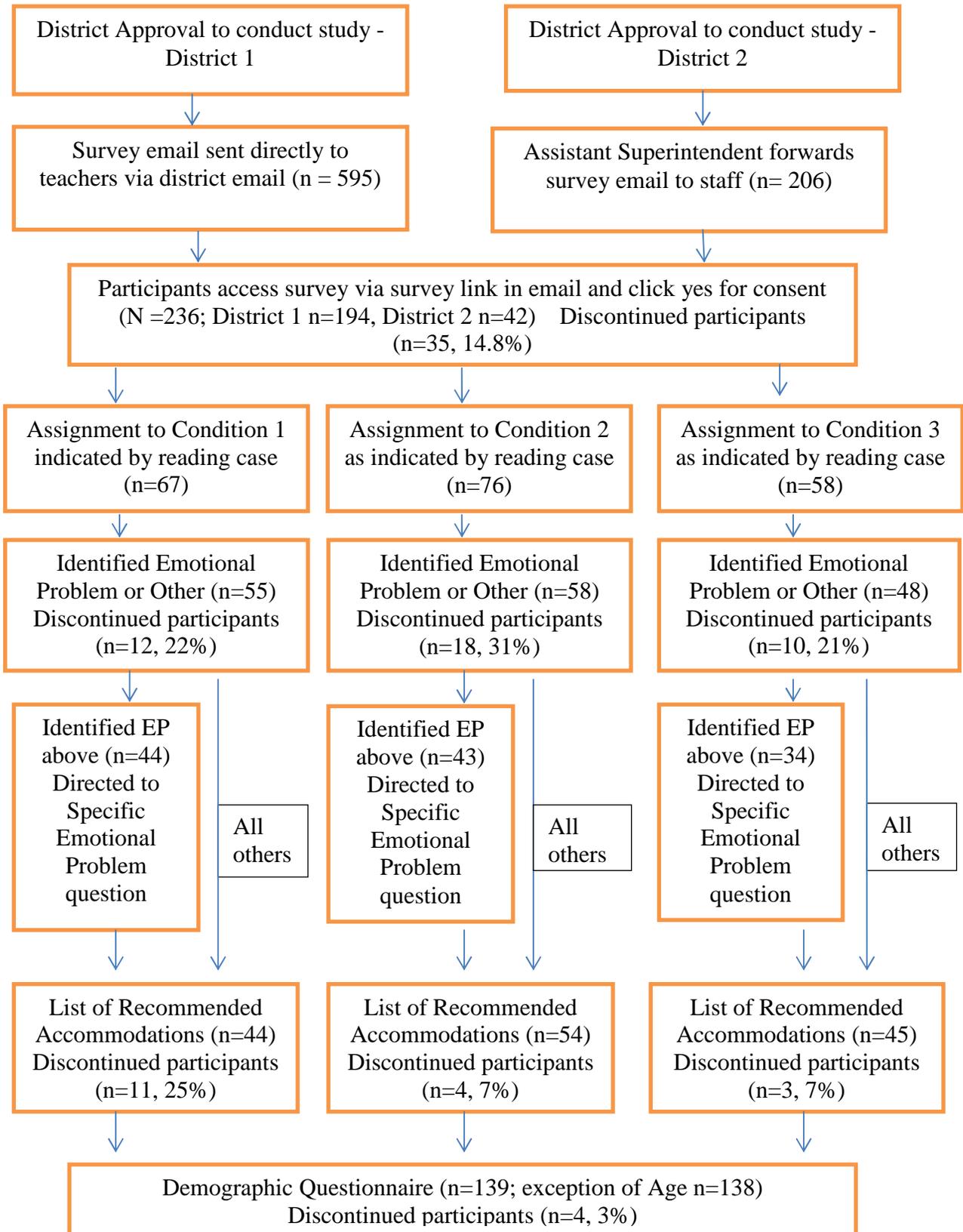
The fourth page contained further attribution options dependent upon the participants' response to the Attribution Survey. For teachers who chose Emotional Problems as one of their top three choices as to the cause of the student's difficulties, a second list of attribution choices separated out potential sources of emotional problems. The choices included depression, anxiety, bipolar disorder, and PTSD. Teachers were asked to choose their top choice for type of emotional problem they believe is the cause of the student's difficulties.

The fifth page was an open space on which educators were requested to list accommodations they would make in the general education classroom setting to address behavioral difficulties and increase academic success for the child described previously.

The sixth page contained questions regarding demographic and experience information including ethnicity/race, gender, age, years of teaching experience, types of teaching experiences including levels and subjects taught and experience working in special education, experiences working with children with PTSD diagnoses, personal associations with individuals with mental health diagnoses, and personal experience diagnosis of PTSD (Appendix F).

A final page thanked participants for their participation and provided links to local mental health service agencies as well as resources about PTSD in children (see Appendix G). Links to mental health agencies served to provide direction for assistance should educators have history of trauma or PTSD and experience discomfort by participating in the study. Links to resource also served to provide teachers with further information about PTSD in children.

Figure 1. Flow of Participants from Recruitment Through Completion with Participant Counts



## Data Analysis

The following analyses were used to address the following research questions and hypotheses that were presented in Chapter 1.

**Research Question 1:** The first question of this study was to determine if the amount of information teachers receive about a student with a PTSD diagnosis and/or the impact of PTSD on functioning increase their ability to make accurate causal attributions about classroom difficulties.

**Hypothesis 1a:** Teachers are more likely to attribute behaviors and academic difficulties associated with PTSD to the emotional problems than any other causal attribution option given increased information about the student's diagnosis of PTSD and/or information about the outcomes associated PTSD in children.

**Data Analysis 1a:** Teachers' first choice of causal attribution was evaluated using a Chi-square test for independence to determine if there is a significant relationship between level of information and the likelihood that teachers will attribute classroom difficulties to emotional problems over other options. This statistic allowed for determining whether more teachers in Conditions 2 or 3 select an emotional problem than would be expected by chance. A Cramer's V statistic was used to determine the degree of association between information provided and accurate causal attribution. Pairwise analyses using Chi-Square were completed to determine if a significant difference existed between specific Conditions. A Bonferroni correction was used to adjust the critical value,  $p$ , when additional analyses were completed.

**Research Question 1b:** When teachers identify emotional problems as a potential cause of a student's classroom difficulties as the primary cause of difficulties, does amount of information teachers receive (no information about diagnosis or its effects; PTSD diagnosis only;

or diagnosis and information about the impact of PTSD on functioning) increase teachers' ability to make accurate attributions to PTSD over other emotional problems?

**Hypothesis 1b:** Increased information including diagnosis of PTSD and the potential impact of PTSD on student functioning will increase teachers' accurate attribution of PTSD as the cause of the emotional problem.

**Data Analysis 1b:** A Chi-square test for independence was used to analyze the relationship between levels of information that teachers are given about a student with PTSD and attribution of specific types of emotional problems. The analysis investigated if there was relationship between level of information provided and teachers' ability to accurately attribute behaviors to a specific mental health disorder, in this case PTSD. Post hoc, pairwise analyses using Chi-Square were completed to determine if significant differences existed between specific Conditions. A Bonferroni correction was used to adjust the critical value,  $p$ , when additional analyses were completed.

**Research Question 2:** Does providing teachers with information about a students' diagnosis of PTSD and/or information about PTSD increase the proportion of classroom accommodations recommended for students with PTSD identified by teachers?

**Hypothesis 2:** Teachers will recommend accommodations with a greater proportion of PTSD-specific accommodations when provided with information about the student's diagnosis and/or information about the impact of PTSD on children.

**Data Analysis 2:** Two independent coders, using guidelines for what accommodations are specifically recommended for use with students with diagnoses of PTSD based on previously reviewed literature, coded the teacher accommodations (See Appendix H). In order to decrease the impact limited research on classroom accommodations for PTSD, input was sought from

mental health professionals who work with children with PTSD via email. Two out of three professionals responded indicating general agreement with the list of accommodations used for coding (See Appendix H). One recommended the inclusion of a group of adults in the school for whom the student could go talk with when in distress. The second recommended the inclusion of creating opportunities for positive peer interaction. Having students paired, seated, or working with positive peer role models was added to the list of accommodations recommended for students with PTSD.

On the initial coding, coders were asked to identify the total number of accommodations provided by each participant, the number of accommodations given that met criteria as specifically recommended for student with PTSD, and the numbers of accommodations given that were not specifically recommended for students with PTSD. Each accommodation was coded as either recommended for students with PTSD or not. Due to the open-ended nature of the responses, the total number of accommodations given by respondents varied greatly between the two coders on initial coding. Therefore, the primary investigator reviewed responses and made a final decision of how many accommodations were listed in each response. Following determination of the number of accommodations, each coder was asked to review each response in which there was a change in number of accommodations from their original coding. Coders then reviewed responses on which they were not initially in agreement and provided descriptions to the primary investigator of their individual reasoning. Each coder provided a final number of accommodations listed that were considered to be recommended for use with students with PTSD. The primary investigator did not serve as a primary coder in order to decrease chance of bias. For responses where the coders did not have agreement following the second review, the primary investigator determined the final number of accommodations by choosing the number

from one of the primary coder's responses that was believed to be the most consistent with the research regarding what accommodations are recommended for student with PTSD.

Inter-rater reliability was calculated using the Cohen's Kappa statistic. Once all accommodations were coded and reconciled by the primary investigator, proportions of PTSD recommended accommodations to all accommodations listed were calculated for each participant. Preliminary analysis of the distribution of scores for proportion of accommodations recommended that were specifically recommended for students with PTSD indicated that the data did not meet necessary assumptions for use with parametric statistical analyses such as Analysis of Variance (ANOVA). Additionally, the data contained significant results with a value of zero. Log transformation of the data is not recommended when scores of zero exist within the data. Therefore, analysis was conducted using the Kruskal-Wallis Test with an  $\alpha$  of 0.05 and a *p-value* less than 0.05, for significance.

## CHAPTER 4: RESULTS

### Preliminary Analysis

In the initial analysis of the data, the researcher found no significant differences between the research condition groups for demographic make-up (See Tables 5 and 6). Specifically, analyses were conducted for between group differences in age and years of teaching. In the between groups analysis, the study found no significant differences for age of participants or years of teaching experience. Additionally, no

Table 5

*Between Group Comparisons for Demographic Characteristics - Continuous Characteristics*

<b>Demographic Characteristics</b>	<b>Condition 1</b>	<b>Condition 2</b>	<b>Condition 3</b>	<b>F</b>	<b>P-value</b>
Age (N)	42	51	45	0.039	0.962
Mean (Standard deviation)	40.26 (12.47)	40.33 (11.31)	40.91 (12.49)		
Years working in teaching	43	51	45	1.600	0.206
Mean (Standard deviation)	13.36 (11.05)	9.88 (7.91)	11.87 (9.47)		
Years in current position	43	51	45	1.740	0.179
Mean (Standard deviation)	5.38 (5.83)	3.65 (3.43)	4.98 (4.79)		

significant between group differences were found for demographic characteristics including gender, level of education, working in special education, or experiences with PTSD. Preliminary examination was also conducted for possible relationships between accurate attributions of Emotional Problems and demographic elements including years of teaching experience, level of education, age, training in special education, and experience with PTSD in teaching, family experience with PTSD, or personal experience with PTSD. No significant relationship was found between these demographic characteristics and the dependent variable of accurate

attribution of Emotional Problems (See Table 8). Additional analyses also found no significant relations between demographic characteristics and proportion of accommodations recommended that were considered to be specific to PTSD and total accommodations recommended (see Table 8).

Table 6

*Between Group Comparisons for Demographic Characteristics - Categorical Characteristics*

<b>Demographic Characteristics</b>	<b>Condition 1</b>	<b>Condition 2</b>	<b>Condition 3</b>	<b><math>\chi^2</math> (df)</b>	<b>P-value</b>
Gender				1.62 (2)	0.805
Males	5	7	8		
Females	37	43	37		
Education Level				6.97 (6)	0.324
Bachelor's degree	15	26	20		
Master's degree	26	23	21		
Educational Specialist degree	1	2	4		
Doctorate degree	1	0	0		
Type of teaching position				12.43(12)	0.412
Elementary - General Ed	20	30	18		
Middle School - General Ed	12	11	13		
Elementary - Spec. Ed Res.	5	1	4		
Middle School - Spec. Ed Res.	0	4	5		
Elementary Self-Contained	2	2	2		
Middle School Self-Contained	3	3	3		
Special Education Experience				0.740 (2)	0.691
General Education	31	38	30		
Special Education	12	13	15		

**Research Question 1a**

The first research question investigated whether providing teachers with more information about a student's diagnosis of PTSD and/or information regarding outcomes associated with PTSD in children increased their ability to make accurate causal attributions regarding the student's behavioral and academic difficulties.

Table 7

*Between Group Comparisons for Experiences with PTSD*

<b>Demographic Characteristics</b>	<b>Condition 1</b>	<b>Condition 2</b>	<b>Condition 3</b>	<b><math>\chi^2</math> (df)</b>	<b>P-value</b>
Experience with PTSD					
Teaching students with PTSD				4.490 (2)	0.106
Yes - had student with PTSD	12	13	20		
No - no students with PTSD	31	38	25		
Family member with PTSD				3.114 (2)	0.211
Yes - family with PTSD	9	14	17		
No - no family with PTSD	34	37	28		
Personal experience of PTSD				0.396 (2)	0.82
Yes	2	2	3		
No	41	49	42		

The hypothesis was that *teachers would be more likely to attribute behaviors and academic difficulties associated with PTSD to emotional problems when given increased information about the student's diagnosis of PTSD and/or information about the outcomes associated PTSD in children.* A Chi-square test of independence between amount of information provided and choice of Emotional Problems as the most likely primary cause of difficulty resulted in rejecting the null hypothesis,  $\chi^2$  (2,  $n = 162$ ) = 40.61,  $p < .001$ ,  $V = .50$ . Based on this analysis, there is a

significant relationship between amount of information provided and teacher's ability to make accurate causal attributions regarding children with behaviors and academics associated with diagnosis of PTSD. Analysis of degree of association using the Cramer's V statistic indicated a large effect of information on accurate attribution (Cramer's V = .50).

Table 8

*Correlations between Demographic Characteristics and Dependent Variables*

	<i>N</i>	Attribution of Emotional Problems (n=166)		% of PTSD		<i>M</i>	<i>SD</i>
		<i>r</i>	<i>p</i>	Accommodations (n=144)			
				<i>r</i>	<i>P</i>		
Age	138	0.114	0.183	-0.055	0.524	40.500	11.978
Gender	139	0.143	0.093	0.081	0.344	1.870	0.378
Ethnicity	139	-0.007	0.932	-0.076	0.373	4.600	2.726
Education level	139	0.031	0.717	0.082	0.338	1.630	0.650
Years of teaching	139	0.153	0.073	-0.102	0.231	11.602	9.513
Current position	139	0.052	0.547	0.054	0.531	2.190	1.710
Special education	139	0.158	0.064	-0.099	0.247	1.290	0.454
Experience with PTSD							
Teaching	139	-0.007	0.931	0.048	0.578	1.320	0.470
Family	139	-0.087	0.310	-0.079	0.356	1.290	0.454
Personal	139	-0.112	0.189	-0.019	0.828	1.050	0.219
<i>M</i>		1.450		0.169			
<i>SD</i>		0.499		0.169			

Percentages of individuals within each condition for attribution choices show a large change from Condition 1 to Condition 2, but not from Condition 2 to Condition 3 (see Table 9).

Table 9

*Percentage of Attributions of Emotional Problems versus Other Causes Within Conditions*

Condition	Identified Emotional Problems		Identified Other Cause	
	N	%	N	%
Condition 1	11	20.0%	44	80.0%
Condition 2	43	74.1%	15	25.9%
Condition 3	34	70.8%	14	29.2%

Post hoc analysis was conducted to examine the likelihood of more accurate attributions of Emotional Problems being made based on each level of increased information, namely between conditions 1 and 2, between conditions 1 and 3, and between conditions 2 to 3. This allowed for examination of the association between increased accuracy of causal attributions and increased information provided. In order to control for the increased likelihood of a Type 1 error due to multiple post-hoc analyses, a Bonferroni correction was calculated for  $k = 3$ , resulting in an adjusted *p-value* of 0.017 necessary for statistical significance. Pairwise comparisons between the conditions using the Chi-square test of independence indicated a significant association between increase accuracy and increase information between Condition 1 and both Conditions 2 and 3, but not between Conditions 2 and 3 (See Table 10). Thus, being informed that the fictitious child had PTSD contributed to attributions of the child's difficulties to emotional problems, but describing the difficulties associated with PTSD did not lead to more teachers endorsing emotional problems as the cause of the child's difficulties.

Table 10

*Pairwise Comparison Between Conditions for Attribution of Emotional Problems versus Other Causes*

	<i>N</i>	$\chi^2$	<i>p</i>	Cramer's V
Conditions 1 and 2	113	33.16	<0.001	0.54
Conditions 1 and 3	103	26.92	<0.001	0.51
Conditions 2 and 3	106	0.14	0.700	0.04

### **Research Question 1b**

The study further investigated whether teachers who made correct general attribution of emotional problems could also determine a specific emotional problem when given increased information about the student and about PTSD. The hypothesis for this question was that *among teachers who identify the student's difficulties as primarily caused by emotional problems, those*

who received increased information would be more likely to make accurate attributions of the student's difficulties to PTSD. A Chi-square test of independence was conducted for all three conditions by the dichotomous choice of PTSD or any other emotional problem choice for only those participants who answered "yes", when asked if they chose Emotional Problems within their top 3 choices and had ranked Emotional Problems as the number one cause of student difficulties ( $n = 88$ ). The Chi-square test for independence indicated a significant association between level of information provided and teacher's ability to accurately identify PTSD as the existing emotional problem,  $\chi^2 (n = 88) = 15.31, p < .001, V = 0.42$ . However, analysis indicated that one cell, or expected count, was found to violate the assumption of expected count to be 5 or more in all cells. One cell contained an expected count of 2, which represents 16.7% of the cells. According to the 20% rule of non-occurrence (Howell, 2010), it is acceptable to utilize and interpret Chi-square results when less than 20% of the cells have five or fewer observed frequencies. Less than 20% of the cells in the current 2x3 table had 5 or less expected frequencies; therefore, the results of the Chi-square analysis are considered acceptable for this data. The number of participants who identified PTSD over other emotional problems within each condition as well as the percentage of the total within condition counts is reported in Table 11.

Table 11  
*Percentages of PTSD Attributions within Conditions*

	Identified PTSD		Identified Other	
	N	%	N	%
Condition 1	5	45.5%	6	54.5%
Condition 2	34	79.1%	9	20.9%
Condition 3	33	97.1%	1	2.9%

Post hoc analysis was conducted to examine the association between increased information between each possible pair using Chi-square tests of independence. In order to control for the increased likelihood of a Type 1 error due to multiple post-hoc analyses, a Bonferroni correction was calculated for  $k = 3$  resulting in an adjusted  $p$ -value of 0.017 necessary for statistical significance. Pairwise comparisons indicated that the association between increased information and increased accuracy of PTSD as the specific emotional problem was only significant based on the adjusted  $p$ -value of 0.017 between Conditions 1 and 3. The associations between increased information and increased accuracy of emotional problem attribution for Conditions 1 to 2 and Conditions 2 to 3 were near the level necessary for statistical significance. Both of these pairwise comparisons reached the level of medium effect size based on the Cramer's V values (See Table 12).

Table 12

*Pairwise Comparison Between Conditions for Attribution of PTSD versus Other Emotional Problems*

	$N$	$\chi^2$	p	Cramer's V
Conditions 1 and 2	54	4.93	0.026	0.30
Conditions 1 and 3	45	16.85	<0.001	0.61
Conditions 2 and 3	77	5.44	0.020	0.27

### **Research Question 2**

The second research question examined whether increased levels of information about the student's diagnosis of PTSD and/or information about possible student outcomes related to PTSD resulted in teachers being able to recommend a greater proportion of accommodations that are specifically recommended for student with PTSD. The hypothesis was that when provided *with increased levels of information about the student's diagnosis and/or information about the impact of PTSD on children, teachers would recommend a greater proportion of PTSD-specific*

*accommodations*. Participants' responses to this survey question were open-ended and coded by two independent coders. After coding was completed by and reconciled as reported in the procedures, inter-rater reliability was analyzed using Kappa Measure of Agreement. The Kappa Agreement value between coders was 0.87 with a significance of  $p < .001$ . Once the accommodations were coded as either specifically recommended for students with PTSD, or not specific, the proportion of PTSD-specific accommodations to total accommodations was calculated for each participant.

Preliminary analysis of the dependent variable for proportion of PTSD recommended accommodations to total accommodations showed that the results do not meet the assumption of normal distribution. The distribution is significantly positively skewed ( $M = 0.17$ ,  $SD = 0.17$ ,  $median = 0.145$ .) Therefore, analysis of the relations between increased information and teachers' ability to identify PTSD-specific accommodations was conducted using the Kruskal-Wallis One Way Analysis of Variance. The Kruskal-Wallis test revealed no significant difference in proportion of PTSD recommended accommodations recommended by teachers across the three different groups for level of information,  $H(2, n=143) = 0.729$ ,  $p=0.695$ .

### **Additional Analyses**

Even though the proportion of accommodations that are specifically identified by research was chosen as the dependent variable for question 2, the question may also be addressed by examining the actual number of accommodations identified by teachers. Preliminary analysis of the supplemental dependent variable of number of accommodations identified that were specifically recommended for students with PTSD using histogram and measures of central tendency indicated that the distribution is also positively skewed. Number of accommodations identified by each participant ranged from 0 to 6 ( $M = 1.04$ ,  $SD = 1.11$ ,  $median = 1$ ). The

distribution of PTSD accommodations does not meet the assumption of normally distributed necessary for parametric analysis; therefore the association between number of PTSD accommodations identified and levels of information was analyzed using the Kruskal-Wallis One Way Analysis of Variance. The Kruskal-Wallis test indicated no significant association between level of information and number of accommodations recommended for PTSD identified by participants,  $H(2, n=143) = 0.459, p=0.795$ .

In order to further analyze the relations between level of information and teachers' ability to identified accommodations recommended for students with PTSD, the dependent variable of accommodations identified was collapsed into a dichotomous variable categorized as identified PTSD accommodations and No PTSD accommodations identified. Given the categorical nature of the variable, the relation between level of information and accommodations recommended for students with PTSD was analyzed using a Chi-Square Test of Independence. The results of the Chi-square test of independence indicated no significant relationship between level of information and teachers' ability to choose accommodations that are recommended for student with PTSD,  $\chi^2(n=143) = 1.341; p=0.51; V = 0.097$ . Qualitative information regarding the accommodations teachers recommended was gathered in order to provide information about which of the accommodations recommended for students with PTSD in literature were also endorsed by teachers. The number of times each accommodation was recommended as well as the percentage of each category of accommodation is reported in Table 13.

One other supplemental analysis was conducted to address a question not posed by the study prior to data collection. Namely, was there a relationship between teachers' ability to make accurate attribution of emotional problems and ability to identify a greater proportion of accommodations that are recommended for students with PTSD? The relation between accurate

attributions of emotional problems and proportion of accommodations recommended for students with PTSD listed by teachers was investigated using Kruskal-Wallis test.

Table 13

*Accommodations Recommended for student with PTSD Listed by Teachers*

	<b># of Participant Recommendations</b>	<b>%</b>
<b><i>Social Emotional Accommodations</i></b>	<b>60</b>	<b>36.88%</b>
Speak in a calm voice	2	
Teach strategies for self-calming	3	
Be aware of triggers/stressors and provide warning when possible if events are expected to be stressful	10	
Teach stress management/coping skills	7	
Help increase student awareness of emotional responses	9	
Be willing to model safe and appropriate expression of emotions	3	
Create an environment that is safe, structured and supportive	18	
Provide multiple modes for emotional expression such as writing, drawing, art etc	6	
Teach/Review safety guidelines for personal space, inappropriate forms of touch, and ways to express feeling unsafe	2	
<b><i>Academic accommodations</i></b>	<b>78</b>	<b>55.32%</b>
Use direct instruction model	2	
Choose independent assignments to insure 90% accuracy rate	2	
Increased level of praise for desired work habits and effort	24	
Allow for private responses to teacher rather than the in front of the classroom	3	
Reduce assignments when needed to decrease frustration level	22	
Provide scaffolding for oral responses to increase success when requesting oral responses	5	
Provide opportunities for choices in academic tasks when possible	2	
Use high interest topics / thematic units	0	
Multi-modal instruction – visual, auditory, hands-on, art based, ect.	18	
<b><i>Behavioral accommodations</i></b>	<b>11</b>	<b>7.80%</b>
Decrease use of directives when possible	0	
Allow for preferred academic activities to be completed before less preferred academic activities to increase motivation	0	
Allow for movement when talking – do not require eye contact	3	
Have clear and consistent rules and expectations	8	

No significant relation between accurate identification of Emotional Problems and the proportion of accommodations recommended for students with PTSD was found,  $H(2, n=142) = 1.22$ ,  $p=0.268$ . The results indicated that accurate attribution of emotional problems does not necessarily relate to identification of a greater proportion of accommodations recommended for students with PTSD.

## CHAPTER 5: DISCUSSION

The purpose of this study was to examine if more information helps teachers recognize the impact of PTSD on their student's behaviors and academics. The study also examined the impact of increased information on teachers' ability to identify trauma-specific accommodations that are likely to increase the school success of children with a diagnosis of PTSD. Research into teacher attributions indicated that teachers' choices of interventions were impacted by the causal attributions they make (Georgiou et al., 2002). Given that causal attributions are likely impacted by the amount of information teachers' have, the questions for this study looked at the impact of increased information about a student's diagnosis of PTSD and the outcomes associated with PTSD on both teacher attributions as to the cause of the student's difficulties as well as their ability to identify accommodations, or classroom interventions, that are specific to the student's condition. Previous research by Cunningham and Wodrich (2006) and Wodrich (2005) have investigated the impact information on teacher attributions separately from the impact of information on ability to identify specific accommodations for students with medical diagnoses including diabetes and epilepsy. No research has considered the impact of information on teacher attributions or ability to determine specific accommodations for students with diagnoses of PTSD. Therefore, this study was conducted to examine the impact of varying levels of information on teacher attributions and accommodation identification and, thereby, increase the understanding of teacher needs and effective practices for school psychologists. Results of the study indicated that increased information provided to teachers significantly increased their ability to make accurate causal attributions about emotional problems and PTSD; however, increased information did not impact teacher's ability to identify accommodations that are recommended for students with PTSD.

### **Causal Attributions by Teachers**

The first question addressed by this research was would increased information provided to teachers lead to increased accuracy of causal attributions. The results indicated support for the hypothesis that providing teacher with more information regarding the student's history and diagnosis significantly increased teacher's ability to identify the source of the problem as emotional problems. The effect size for the overall attribution analysis was large indicating that providing teachers with increased information about a student's experiences and diagnosis of PTSD had a large impact on their ability to make more accurate causal attributions. Further, examination of the pairwise comparisons indicated that the significant difference was between the control condition and both the other levels of information. Specifically, teachers' correct attributions of emotional problems increased from only 20% in the control condition to over 70% in both condition 2 and 3. Teachers were far more likely to attribute the student's difficulties to emotional problems when they were given increased information regardless of the how much information they received. In other words, information in and of itself was significant in increasing teachers accurate causal attributions. However, the addition of information regarding outcomes associated with PTSD did not result in any further significant increase in accuracy of teacher attributions. The fact that the effect sizes were large also supports this theory that information about a student having a diagnosis is impactful for teachers. Results suggest that providing teachers with basic information about a student's background and/or diagnoses is sufficient to increase their ability to make accurate attributions. The specific information about outcomes associated with PTSD was not beneficial in improving accuracy of attribution as an emotional problem. These findings are consistent with the results found by Cunningham and Wodrich (2006) in which teachers' identification of specific accommodations for hypothetical

students with medical diagnoses of diabetes was significantly increased when they were given information that the diagnosis existed, but did not show significantly more accurate attributions when specific disease related information was included. Providing teachers' with increased information about PTSD in addition to information about the student did not result in increased accuracy of attributions for either medical or mental health diagnoses. The implication of this may be that providing teachers' with basic information about student diagnoses, both medical and mental health diagnoses, is sufficient to improve teacher attributions. Practical implications of this for working in the school may be that school psychologists and/or school leaders need to be aware of the benefit of keeping teachers informed without needing to provide a great deal of extra diagnosis specific information.

### **Attribution to Specific Emotional Problems**

The second level of investigation into causal attribution attributions was included to examine whether teachers who make accurate general attributions, in this case to Emotional Problems, are also able to make more accurate attributions to PTSD based on the information they were given. The hypothesis that increased levels of information would significantly impact teachers' abilities to make accurate attribution about the nature of the emotional problem (i.e., that the emotional problem was PTSD) was supported, with a large effect size. Further analyses of the pairwise comparisons indicated that teachers' ability to make accurate attribution of PTSD was increased by information, but the difference was between the first condition where no information of the diagnosis was given and the third condition when more information about the outcomes associated with PTSD was provided. However, although not significant, there was still a medium effect of levels of information regarding the likelihood that teachers would make more accurate attributions increased between condition 1 and condition 2 where just the

diagnosis was provided. Specifically, without information about the student's experiences and diagnosis only 45% of the teachers who attributed the student's difficulties to an emotional problem attributed the problems to PTSD over other potential emotional problems. The percentage increased from 45% in the control condition to 79% in condition 2 in which teachers were told the student had a diagnosis of PTSD. Thus, even though in condition 2, the teachers were aware that the student had traumatic experiences and a diagnosis of PTSD, 21% of them still did not endorse PTSD to be the primary emotional problem. In contrast, when provided with the additional information about behavioral, cognitive, and academic outcomes associated with PTSD, 97% of the teachers who identified emotional problems initially also accurately identified PTSD as the specific cause of the student's difficulties. Only 1 individual participant who received the highest level of information and attributed the student's problems to general emotional problems initially failed to accurately identify PTSD as the specific emotional problem. This may indicate that increased levels of information about the nature of PTSD outcomes, although not beneficial for general attribution, do improve teachers' abilities to identify the specific cause of student difficulties. Given the differences between behaviors associated with varying mental health conditions, such as differences between depressive symptoms like lack of enjoyment versus hyper-vigilance associated with PTSD (APA, 2000), it would follow that teachers having accurate knowledge about student' diagnosis may increase teacher's effectiveness in working with these students in the classroom. Research into the comorbidity of PTSD and other mental health and behavioral problems advocates for the need for careful differential diagnosis for more appropriate treatment planning (Famularo et al., 1996; Ford et al., 1999); however, further research would be needed to determine if having differential

knowledge of a student's emotional difficulties increases teachers' ability to make more effective educational programming decisions.

Support for working to increase teachers' accuracy of attributions is found in the attribution theory in education. When teachers are able to make more accurate attributions of PTSD, or an emotional problem, they may be less likely to view a student harshly and/or use punishment for difficulties (Weiner & Kukla, 1970). Knowing that a student is experiencing a problem that is internal and uncontrollable may lead teachers to view the student as one who is working to overcome a handicap rather than one who is just not trying or motivated as discussed by Weiner and Kukla (1970). When teachers' views of the student are changed by more accurate information, according to the work of Weiner and Kukla, teachers may be more willing to reward the student, in forms such as praise and acceptance, despite their difficulties. Literature regarding classroom accommodations for student with PTSD recommends the increased use of praise and acceptance which may be more likely to be given by teachers who have a better understanding of a student's experiencing PTSD (Niesyn, 2009).

### **Teachers' Recommended Accommodations**

The second question in this study examined the impact of levels of information on teachers' ability to list accommodations that are specifically recommended for improving academic outcomes for children with PTSD. Results of the analysis failed to support the hypothesis that increased information would be associated with increased proportions of accommodations recommended for students with PTSD listed by teachers. Teachers in the study did not demonstrate any significant difference in ability to identify accommodations recommended for students with PTSD due to differing levels of information provided. In order to determine if an undetected difference between the groups existed, data were analyzed using

two additional forms of the dependent variable. First, the number of PTSD accommodations identified by each participant was examined to determine if level of information impacted the simple number of accommodations recommended. Similar to the analysis of proportions, analysis of the number of accommodations recommended for students with PTSD listed by teachers failed to confirm the hypothesis that increased information provided to teachers would result in increased ability to identify recommended accommodations. Analysis of results was also conducted at a categorical level of accommodation identification as either zero, no accommodations identified were specifically recommended for students with PTSD, or one or more accommodations recommended for PTSD listed. Changing the dependent variable into categorical data was completed in order to decrease the impact of coding by eliminating the need for specific numbers or proportions. However, the hypothesis that increased levels of information would result in higher likelihood of accommodations recommended for students with PTSD being listed also was not supported by this analysis. Based on the results of all three analyses, this research indicated that level of information did not impact teachers' ability to identify accommodations recommended for students with PTSD by current literature. One possible interpretation of these findings is that increased information about a student does not impact teachers' ability to identify recommended accommodations for students with PTSD because teachers are not aware of, or trained in, what accommodations are specifically recommended when working with students with PTSD. Conversely, one must also consider that information and research regarding what accommodations are specifically recommended for student with PTSD is limited and not currently available to teachers. In either case, action is needed in order to both provide training and increased information to teachers in regard to strategies for working with students with emotional problems such as PTSD. Additional

research into exactly what classroom accommodations are most effective for students with PTSD is also needed. This was also supported by the additional analysis into the relationship between ability to make the accurate attribution of emotional problems and ability to list accommodations recommended for students with PTSD. Specifically, there was no significant relationship between the teachers' abilities to make an accurate attribution and their ability to identify accommodations recommended for students with PTSD. This is inconsistent with the research by Georgiou et al. (2002), which reported that teachers' accurate attributions would lead to more successful interventions for students. One possible explanation is related to the paucity of research into what accommodations are effective as well a lack of teacher training in working with students with PTSD. Most of the work in interventions for PTSD in the school has focused on using the school setting to provide therapy to students (Rolfnes & Idsoe, 2011). In particular, cognitive-behavioral therapy methods have been shown to be effective in decreasing symptoms of PTSD in students including working to help children accept their responses as normal in the context of their experiences and to help them express themselves (Gelkopf & Berger, 2009). This may translate into educational practices for teachers in the classroom as indicated by Niesyn (2009) including encouraging students to express their emotions in a variety of ways, increasing student and staff awareness of the emotional responses of a student with PTSD, and being willing to discuss and model healthy responses as part of the classroom environment.

Review of what accommodations recommended for students with PTSD teachers did recommend showed that teachers recommended the largest number of accommodations within the academic category, particularly for decreased assignments. In fact, reducing assignments was the most often identified accommodation. Teachers appeared to identify accommodations

that are within the training that they have received. For example, 59 responses indicated the need for a behavior plan which is a more behavioral approach than social/emotional approach. However, based on the studies that indicate the effectiveness of CBT (Rolfesnes and Idsoe, 2011), reliance on behavior modification alone is not likely to be effecting without addressing the nature of the PTSD as an anxiety disorder rather than behavioral. This would indicate a need for awareness and training in social/emotional strategies as well as behavioral and academic interventions in order to increase the academic success of student with PTSD.

### **Limitations**

One key limitation to this research study is that there is a paucity of research that investigates what accommodations are specifically the most effective for student with PTSD. No research study that addresses this question was found at all. Most of the research on education and children with PTSD is focused on therapeutic interventions rather than classroom accommodations to increase academic success. Review of research provided only two samples of work that provided insight into working with children with PTSD in the classroom. There are theories and hypotheses but there is no empirical research. Therefore, the study compared teacher identified accommodations to only a limited, potentially incomplete model of what accommodations are most effective in working with students with PTSD. Research into the classroom accommodations that are most effective in increasing success for student with PTSD is needed.

Another limitation was that responses to the question of accommodations recommended were unstructured and open-ended allowing teachers to simply write what they chose to say. Therefore, scoring of the responses was difficult by the need to determine exactly how many accommodations were stated as most were not numbered and statements were open to

interpretation by coders. Subjectivity of coding open-ended responses is another potential limitation to the outcomes of the second research question. Both coders were provided with the same list of examples and non-examples (see Appendix H) and inter-rater reliability was within acceptable limits with the Kappa level of 0.87. However, response coding was still subject to interpretation as to the meaning of items. At times, participant responses presented particular difficulty for coding when elements that may be considered recommended for students with PTSD were included as part of an accommodation that would not be recommended for students with PTSD. For example, coders needed to individually determine the difference between a behavior plan that utilized positive rewards and increasing positive feedback to the student. Discussion between the primary investigator and each coder facilitated more consistent coding between the two coders. However, subjectivity in coding open-ended responses remains a weakness of this particular question structure.

One other limitation in the structure of this research may be the absence of a condition in which teachers were given information about the student's experience of trauma without naming the specific diagnosis. This level would have potentially provided a more complete sequence of information levels that are typical in education. Often, teachers may receive information about experiences a child has had from the student, from parents, or from caregivers without having complete information about diagnosis. Literature includes mixed findings about whether children who experience trauma, but do not have diagnoses of PTSD demonstrate similar levels of cognitive difficulties (DeBellis et al., 2009; Saigh et al., 2006). This study chose to not include a fourth level of information in order to look specifically at PTSD without the question of potential differences between children who experience trauma without PTSD and those with diagnoses.

Limitations to this research overall include the nature of analog methodology. As reported by Wodrich (2005), use of a fictitious case study for which a teacher responds immediately is not equivalent to the experience that teachers would have working with a student in a classroom. In the classroom setting, teachers are able to directly observe students over a period of time before identifying accommodations. In the school setting, teachers would have access to opinions of other staff members for collaborative planning as well. Another limitation is the use of teachers from only one small area of the country. Participant teachers were from only two school districts within one city and both serve similar populations of low socio-economic, highly mobile families. Therefore, results are not generalizable to large populations or varying school settings.

### **Implications and Future Research Directions**

Despite the limitations, this research serves in increasing understanding of teachers' needs for information to increase accuracy of causal attributions when working with students with PTSD. Implications for the practice of school psychology indicate that teachers' benefit from being provided with even basic information regarding a student's experiences and diagnosis when attempting to understand the cause of student difficulties. Teachers may benefit by being able to more accurately attribute problems to specific mental health conditions such as PTSD when provided with information about the outcomes associated with the illness. This research also serves to extend the knowledge as to uses and limitations of analog methods in school settings.

The lack of significant results for teachers' ability to identify accommodations recommended for students with PTSD suggests that information alone is not enough in changing teachers' accommodations. The limitations of this study indicate a need for empirical research in

the area of classroom practices that are effective in increasing academic success for students with PTSD. Future research should begin with investigating what classroom accommodations are truly effective in improving academic outcomes for students with PTSD. This would provide a foundation for more research in to what information is most beneficial in increasing classroom success for student with PTSD. Questions also remain about differences between outcomes for students who experience trauma, but do not reach the level of symptoms necessary for diagnosis of PTSD including are the outcomes truly different between these two groups. Additional research would also be needed to determine if accommodations for students with PTSD may also be effective for children exposed to trauma without diagnoses of PTSD. Effective methods for addressing social/emotional needs of students within the general education classroom is also an area that would be beneficial for research and/or program design in order to help teachers be better informed and prepared for the challenges they face.

## **Appendix A**

Please carefully read the following case study about a fictional student. All survey questions will be based on the information you are given about this student. Due to the survey format, you will not be able to return to this page for review.

### **Case Study – Condition 1**

Marie is an 11-year-old girl in the fifth grade. Her teacher reports the following about her academic performance:

“Marie is having a lot of trouble in class. Her performance on the district benchmark assessments was within the Falls Far Below the Standards in reading and writing and in the Approaches the Standards range in mathematics. In reading, Marie is able to read the materials out loud, but has a difficult time answering questions about reading assignments. In class, she doesn’t seem to be able to pay attention and is often found daydreaming. When I explain directions to the class, Marie often forgets what she is supposed to do or only completes the first step of an assignment.”

Her teacher also reported the following about Marie’s behavior:

“Marie has a hard time staying in her seat during class. Even when she stays in her seat, Marie is often looking around the room rather than focusing on her assignments. She also has a hard time getting along with other students due to her angry outbursts and aggressiveness. At times, Marie is quiet and keeps to herself. But, sometimes she is irritable and will hit other students without being provoked. Marie does not like to be touched by others and will react by yelling or hitting if someone bumps her or touches her when she did not see them coming. I’m worried because the other students complain that Marie is mean to them. She seems to be unable to control her

anger. When I give redirection for Marie to sit down, or do her work, she is defiant and refuses to do what she is told.”

## **Appendix B**

Please carefully read the following case study about a fictional student. All survey questions will be based on the information you are given about this student. Due to the survey format, you will not be able to return to this page for review.

### **Case Study – Condition 2**

Marie is an 11-year-old girl in the fifth grade. Her teacher reports the following about her academic performance:

“Marie is having a lot of trouble in class. Her performance on the district benchmark assessments was within the Falls Far Below the Standards in reading and writing and in the Approaches the Standards range in mathematics. In reading, Marie is able to read the materials out loud, but has a difficult time answering questions about reading assignments. In class, she doesn’t seem to be able to pay attention and is often found daydreaming. When I explain directions to the class, Marie often forgets what she is supposed to do or only completes the first step of an assignment.”

Her teacher also reported the following about Marie’s behavior:

“Marie has a hard time staying in her seat during class. Even when she stays in her seat, Marie is often looking around the room rather than focusing on her assignments. She also has a hard time getting along with other students due to her angry outbursts and aggressiveness. At times, Marie is quiet and keeps to herself. But, sometimes she is irritable and will hit other students without being provoked. Marie does not like to be touched by others and will react by yelling or hitting if someone bumps her or touches her when she did not see them coming. I’m worried because

the other students complain that Marie is mean to them. She seems to be unable to control her anger. When I give redirection for Marie to sit down, or do her work, she is defiant and refuses to do what she is told.”

Marie currently lives with her biological mother. Her father is no longer living with them after he was arrested for domestic violence. Marie witnessed her father physically assaulting her mother. One evening, her parents were fighting when her father attempted to kill both Marie and her mother. Marie developed nightmares and behavioral difficulties at school following the attack. She has been receiving counseling outside of school and has a diagnosis of posttraumatic stress disorder (PTSD).

### **Appendix C**

Please carefully read the following case study about a fictional student. All survey questions will be based on the information you are given about this student. Due to the survey format, you will not be able to return to this page for review.

#### **Case Study – Condition 3**

Marie is an 11-year-old girl in the fifth grade. Her teacher reports the following about her academic performance:

“Marie is having a lot of trouble in class. Her performance on the district benchmark assessments was within the Falls Far Below the Standards in reading and writing and in the Approaches the Standards range in mathematics. In reading, Marie is able to read the materials out loud, but has a difficult time answering questions about reading assignments. In class, she doesn’t seem to be able to pay attention and is often found daydreaming. When I explain directions to the class, Marie often forgets what she is supposed to do or only completes the first step of an assignment.”

Her teacher also reported the following about Marie’s behavior:

“Marie has a hard time staying in her seat during class. Even when she stays in her seat, Marie is often looking around the room rather than focusing on her assignments. She also has a hard time getting along with other students due to her angry outbursts and aggressiveness. At times, Marie is quiet and keeps to herself. But, sometimes she is irritable and will hit other students without being provoked. Marie does not like to be touched by others and will react by yelling or hitting if someone bumps her or touches her when she did not see them coming. I’m worried because the other students complain that Marie is mean to them. She seems to be unable to control her

anger. When I give redirection for Marie to sit down, or do her work, she is defiant and refuses to do what she is told.”

Marie currently lives with her biological mother. Her father is no longer living with them after he was arrested for domestic violence. Marie witnessed her father physically assaulting her mother. One evening, her parents were fighting when her father attempted to kill both Marie and her mother. Marie developed nightmares and behavioral difficulties at school following the attack. She has been receiving counseling outside of school and has a diagnosis of posttraumatic stress disorder (PTSD).

Research has shown that children with PTSD are more likely to demonstrate behavioral difficulties than children without PTSD. Children with diagnoses of PTSD demonstrate difficulties including problems maintaining attention, outbursts of anger or aggression towards others, and becoming easily startled or distressed by seemingly usual events such as loud noises or being touched by strangers. Children with PTSD are also more likely to have difficulty with tasks that require verbal memory and comprehension such as answering questions about information they hear and understanding what they read. Difficulty keeping information in memory while completing work tasks has also been associated with PTSD in children.

**Appendix D**

## Attribution Survey

Based on the information that you have been provided about Marie, please rank each possible cause listed for Marie's difficulties from 1 to 10 with 1 being the most likely cause of her difficulties and 10 being the least likely cause of her difficulties. Give each possible cause listed a different ranking.

- \_\_\_\_\_ Laziness / Lack of motivation or effort
- \_\_\_\_\_ Disliked by teacher and/or classmates
- \_\_\_\_\_ Lack of parental support
- \_\_\_\_\_ Specific learning disability
- \_\_\_\_\_ Emotional problems
- \_\_\_\_\_ Attention deficit hyperactivity disorder
- \_\_\_\_\_ Lack of Sleep
- \_\_\_\_\_ Medical or health problems (including vision and/or hearing problems)
- \_\_\_\_\_ Lack of intelligence / ability
- \_\_\_\_\_ Lack of basic academic skills

Did you choose specific learning disability as one of your top three causes of the student's difficulties?

\_\_\_\_\_ Yes      \_\_\_\_\_ No

Did you choose attention deficit hyperactivity disorder in your top three causes of the student's difficulties?

\_\_\_\_\_ Yes      \_\_\_\_\_ No

Did you choose emotional problems as one of your top three causes of the student's difficulties?

\_\_\_\_\_ Yes      \_\_\_\_\_ No

**Appendix E****Emotional Difficulties Survey Question**

Since you indicated that Emotional Problems was within the top three likely causes of Marie's difficulties, please indicate which of the following potential emotional problems is the most likely emotional cause of Marie's difficulties.

- \_\_\_\_\_ Depression
- \_\_\_\_\_ Anxiety
- \_\_\_\_\_ Posttraumatic Stress Disorder
- \_\_\_\_\_ Bipolar Disorder

## Appendix F

### Demographic Questionnaire

Please answer the following questions.

- 1) What race/ethnicity do you consider yourself to be? Select all that apply.
- |  |  |                                       |  |  |  |
|--|--|---------------------------------------|--|--|--|
| <input type="checkbox"/> American Indian or Alaska Native<br><input type="checkbox"/> Black or African American<br><input type="checkbox"/> Caucasian<br><input type="checkbox"/> Hispanic, Latino, or Spanish? Please select all that apply: <table style="margin-left: 20px; border: none;"> <tr> <td style="width: 50%;"><input type="checkbox"/> Mexican</td> <td style="width: 50%;"><input type="checkbox"/> Puerto Rican</td> </tr> <tr> <td><input type="checkbox"/> South or Central American</td> <td><input type="checkbox"/> Other Spanish culture or origin</td> </tr> </table> | <input type="checkbox"/> Mexican                         | <input type="checkbox"/> Puerto Rican | <input type="checkbox"/> South or Central American | <input type="checkbox"/> Other Spanish culture or origin | <input type="checkbox"/> Asian<br><input type="checkbox"/> Native Hawaiian or Other Pacific Islander<br><input type="checkbox"/> Other (Please specify: _____) |
| <input type="checkbox"/> Mexican   | <input type="checkbox"/> Puerto Rican                    |                                       |  |  |  |
| <input type="checkbox"/> South or Central American   | <input type="checkbox"/> Other Spanish culture or origin |                                       |  |  |  |

- 2) What is your age?

- 3) Sex?

- Male
- Female
- Other

- 4) What degrees do you hold?

- |   |  |
|---|--|
| <input type="checkbox"/> Bachelor's degree<br><input type="checkbox"/> Education Specialist Degree<br><input type="checkbox"/> Doctor of Philosophy | <input type="checkbox"/> Master's Degree<br><input type="checkbox"/> Education Doctorate |
|---|--|

Major and/or Area of Study for each degree: \_\_\_\_\_

- 5) What education certifications and/or endorsements do you currently hold?

- |  |   |
|--|---|
| <input type="checkbox"/> Elementary Teaching Certificate<br>Please list grade range: _____<br><input type="checkbox"/> Special Education Endorsement<br><input type="checkbox"/> Content Area or Specialized Endorsement (Please list): _____<br><input type="checkbox"/> Other: _____ | <input type="checkbox"/> Secondary Teaching Certificate<br>Please list grade range: _____<br><input type="checkbox"/> ESL Endorsement |
|--|---|

- 6) How many years of experience do you have:

a. As a teacher?

b. In education in a position other than teaching?

i. What positions in education have you held other than as a teacher?

ii. How long did you work in the position(s)?



## Appendix G

### Resources for Teachers

Thank you for your participation in this survey. The purpose, as stated prior to completion of the survey is to examine the impact of providing more information on teacher's attributions about a student's behaviors as well as ability to identify accommodations that can be used in the general education classroom to increase student success. Information that you may not have received is that this research is regarding working with children with PTSD.

If you would like more information about working with students in your classroom that have PTSD, please see the following:

[Identifying, Assessing, and Treating PTSD at School](#) by Amanda Nickerson (2009)

If you or someone you know would like services due to experiencing trauma that may be impacting day-to-day activities, please contact one of the following agencies for assistance:

La Frontera Arizona: <http://www.lafronteraarizona.com/>

Pantano Behavioral Health: [www.pantanobh.org/](http://www.pantanobh.org/)

Providence Service Corp.: [www.provcorp.com/](http://www.provcorp.com/)

National Alliance on Mental Illness - Arizona (NAMI): <http://www.namiaz.com/>

If you are someone you know is severe distress and in need of immediate assistance, please contact:

Southern Arizona Mental Health Corporation (SAMHC)

2502 N Dodge Blvd Tucson, AZ 85716

(520) 617-0043

[info@samhc.com](mailto:info@samhc.com)

**Appendix H**  
**Potential Accommodations List**

<b>PTSD Recommended Accommodations</b>	<b>Non-Recommended Accommodations</b>
<b><i>Social Emotional Accommodations</i></b>	
Speak in a calm voice	Behavior contract – reward system or token economy
Teach strategies for self-calming	Call parents / parent conference
Be aware of triggers/stressors and provide warning when possible if events are expected to be stressful	Decrease homework / spelling lists etc
Teach stress management/coping skills	Create separate work space for student such as a personal office away from the class
Help increase student awareness of emotional responses	Preferential seating
Be willing to model safe and appropriate expression of emotions	Refer to counselor
Create an environment that is safe, structured and supportive	Time out area
Provide multiple modes for emotional expression such as writing, drawing, art etc	Shortened instructions / simplify directions
Teach/Review safety guidelines for personal space, inappropriate forms of touch, and ways to express feeling unsafe	Frequent bathroom breaks
<b><i>Academic accommodations</i></b>	Use highlighting for reading
Pair with positive student models and/or use collaborative learning groups	Provide place holders when reading
Use direct instruction model	Visual cuing
Choose independent assignments to insure 90% accuracy rate	Noise buffers
Increased level of praise for desired work habits and effort	Study carrels
Allow for private responses to teacher rather than the in front of the classroom	Extended time to complete assignments
Reduce assignments when needed to decrease frustration level	Altered lighting
Provide scaffolding for oral responses to increase success when requesting oral responses	Sensory regulation such as shoulder touching, stress toys
Provide opportunities for choices in academic tasks when possible	
Use high interest topics / thematic units	
Multi-modal instruction – visual, auditory, hands-on, art based, ect.	
<b><i>Behavioral accommodations</i></b>	
Have clear and consistent classroom structure and schedule	
Decrease use of directives when possible	

Allow for preferred academic activities to be completed before less preferred academic activities to increase motivation	
Allow for movement when talking – do not require eye contact	

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