

**The construction and validation of an equivalent form of the
Developmental Trauma Inventory Appraisal Scale**

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Abstract

Trauma is unfortunately a common occurrence in children. For some children, the effects can be pervasive and multifaceted, leading to behavioural and psychological disorders which persist into adulthood if left untreated (Collishaw et al., 2007). To prevent this there is a need to provide cost-effective, evidence-based therapy. Cognitive theory asserts that the manner in which trauma is appraised predicts the onset and persistence of PTSD more so than the trauma itself (Barlow, Goldsmith Turow, & Gerhart, 2017; Cromer & Smyth, 2010). Identification of trauma appraisals enables a personalised therapeutic intervention to identify the trauma victim's specific cognitive appraisals to be developed (Barlow et al., 2017). Many existing measurements of trauma appraisals are limited by a restricted operational definition of trauma, and do not incorporate the full range of trauma-related developmental appraisals (Valjee and Collings, 2016), limiting the effectiveness of the scale. In response, Valjee and Collings (2016) developed a Developmental Trauma Inventory (DTI) Appraisal Scale, a brief screen of developmental trauma appraisals found in children exposed to complex trauma. To track the effectiveness of therapy, and to do further research in support of a cognitive-mediation perspective, an alternate form of the DTI Appraisal Scale was found to be lacking. Employing a quantitative, cross-sectional survey research design, a self-administered questionnaire was completed by a convenience sample of high school learners. To create the new measure appraisals, drawn from a pool of trauma appraisals which were most strongly correlated with items from the original scale, were selected. The new scale was found to have high levels of internal consistency and convergent validity with the original scale. Cross validation of the new scale on a new sample revealed significant levels of internal consistency and high levels of correlation between the two scales using item analysis and convergent validity. This study builds onto the research conducted by Valjee and Collings (2016) to develop a reliable and valid alternate form of the DTI Appraisal Scale.

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Chapter One

Introduction and Background

1. Introduction

In low and middle income countries (LMIC) such as South Africa, the psychological cost of childhood trauma (Kaminer & Eagle, 2010) takes its toll on an already overburdened mental health system, making effective, evidence-based psychotherapy (Lund, Petersen, Kleintjes, & Bhana, 2012) for traumatised individuals essential.

Exposure to trauma is commonplace in South Africa. Statistically, over 70% of adult South Africans have been exposed to potentially traumatic events (Atwoli et al., 2013). Growing up in this environment, South African children are also at risk of exposure to trauma. Regardless of whether the trauma is a single incident or repetitive and ongoing, the psychological consequences of traumatic stress can have deleterious effects on their development and psychological health (Ford, 2005), which in turn adds to the burden of mental illness in South Africa.

1.1 Background to the research problem

In considering the psychological processes involved in posttraumatic stress disorder (PTSD) a number of theories have been suggested by experts in the field. Brewin and Holmes (2003) assert that early theories of PTSD can be separated into three different types, namely conditioning, information processing and social-cognitive theories. Social cognitive theories have informed current thinking about the psychological processes involved in PTSD by focusing on the manner in which trauma disrupts previously held mental structures and beliefs (Brewin & Holmes, 2003). Trauma can disrupt our view of the world as being a place with

reliable rules and principles, that the world is caring and meaningful, and that we are worthy. A person's deeply held beliefs and assumptions can be destroyed (Brewin & Holmes, 2003; Janoff-Bulman, 1992). The event may serve to reinforce negatively held schemas. For example, a traumatic event may serve to confirm a person's view of self as incompetent and the world as unpredictable and dangerous (Brewin & Holmes, 2003; Foa et al., 1999).

Although many children may experience trauma, each child's response is unique (Hornor, 2013), indicating that a number of factors may either increase or decrease the child's vulnerability to developing PTSD (Afifi & MacMillan, 2011; Rutter, 2007). A cognitive-mediation perspective postulates that posttraumatic outcomes are the result of an interaction between the individual and the environment, with this interaction being mediated by the individual's cognitive appraisals of the traumatic event (Valjee & Collings, 2016).

In support of a cognitive-mediation perspective, research has demonstrated that a "victim's appraisal of a traumatic event is likely to play a mediating role in the development and maintenance of posttraumatic outcomes," (Calvete, 2014; Cromer & Smyth, 2010; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999; Shenk, Putnam, Rausch, Peugh, & Noll, 2014; Valjee & Collings, 2016; Verelst, De Schryver, De Haene, Broekaert, & Derluyn, 2014). More specifically, research findings support the role of cognitive factors in the maintenance of PTSD in children (Ehlers, Mayou, & Bryant, 2003; Hitchcock, Ellis, Williamson, & Nixon, 2015; Mitchell, Brennan, Curran, Hanna, & Dyer, 2017).

1.2 Rationale and significance of the study

Attempts to validate a cognitive-mediation perspective have been restricted by operational definitions and a lack of valid measures that incorporate the full range of trauma-related appraisals (Valjee & Collings, 2016). In response, Collings, Valjee, and Penning (2013)

developed a Developmental Trauma Inventory (DTI), which is a screening instrument for interpersonal childhood trauma. The rationale for the development of this inventory was firstly to ensure that the range of appraisals associated with developmental trauma outcomes in children and adolescents was incorporated into a proposed new measure; secondly, to ensure a child's full victimisation profile was incorporated into the operational definition of trauma exposure by including exposure to both interpersonal and community violence; and thirdly, to ensure that the operational definition of PTSD includes using validated measures of PTSD and complex PTSD in children (Collings, Valjee, & Penning, 2013). Furthering the utility of the DTI, Collings and Valjee (2016) developed a brief screen, the Developmental Trauma Inventory (DTI) Appraisal Scale, in order to assess children's cognitive appraisals of traumatic events.

In children, where exposure to trauma results in posttraumatic stress reactions, supportive counselling may be necessary to restore their pre-trauma functioning. Substantial empirical evidence has emerged for the effectiveness of cognitive behavioural therapy (CBT) in the treatment of PTSD in both adults and children (Eagle & Kaminer, 2015). The core mechanisms used in CBT for PTSD is the re-telling and re-processing of the trauma memory. Underlying this mechanism is identifying and modifying maladaptive trauma appraisals (Eagle & Kaminer, 2015). From a therapy point of view, it is helpful to identify the trauma appraisals specific to each individual which may be functioning to maintain the distress. The DTI Appraisal Scale can be used in therapy to identify the client's negative trauma appraisals. A therapeutic intervention targeting specific cognitive appraisals may then be created for the individual. The rationale is that modifying the appraisals may lead to the alleviation of their symptoms.

An alternative, but equivalent form of the DTI Appraisal Scale will enable the scale to be administered before therapy begins, and to be used after a number of therapy sessions, or

vice versa, to assess treatment effects. An alternate form means that an equivalent version of the scale is constructed with similar items, but differently worded (Durrheim & Tredoux, 2004), which eliminates the problem of memory effects which could confound estimates of treatment efficacy (Durrheim & Tredoux, 2004).

If it is established that the alternate form of the DTI Appraisal Scale has equivalent reliability, then a change in trauma-related cognitions could more confidently be attributed to therapy (rather than to confounding variables such as memory) (Elklit et al., 2007). An alternate form of the scale will also enable further research in support of a cognitive-mediation perspective, using prospective research designs, (as opposed to retrospective research designs), which would allow for causal inferences to be more easily established (Colman, 2009).

The ultimate goal is to support the need in South Africa for effective, evidence-based psychotherapeutic interventions for traumatised individuals.

1.3 Research objectives and questions

This research builds on previous research conducted by Valjee and Collings (2016) by creating an equivalent form of the DTI Appraisal Scale for use in research and therapeutic settings.

The objective, therefore, was to establish an alternate form of the DTI Appraisal Scale, and to determine the validity and reliability of the alternate form of the measure.

The questions asked were:

- Does the proposed measure incorporate the predominate range of developmental trauma appraisals found in posttraumatic outcomes?
- Can this measure be deemed to be a reliable and valid alternate form of the DTI Appraisal Scale?

1.4 Ethical clearance for the study

This study was granted Ethical clearance by the University of KwaZulu-Natal (UKZN) ethics committee on 7 October 2015 (Appendix A).

1.5 Outline of the dissertation

Chapter 1 provides the background, rationale, and significance of the study. It ends by defining the current research objectives and questions. Chapter 2 comprises a review of the literature on trauma, and more specifically, childhood trauma and the role of cognitive appraisals in maintaining post-traumatic outcomes. The underlying conceptual framework on which the study is based is outlined. Following this, Chapter 3 outlines the research design and methodology. This includes details of the construction of the item-pool and research questionnaire, the study sample, the data collection and analysis methods used, and the ethical procedures adhered to. The study results are reported in Chapter 4. Chapter 5 contains a discussion of the implications of the findings. The limitations of the study, recommendations for further research; and a conclusion are provided in Chapter 6.

Chapter Two

Literature Review and Conceptual Framework

2. Introduction

This literature review begins by giving an overview of the prevalence of trauma at both global and local levels. The reader is provided with an indication of the varying types of trauma which South African children are exposed to.

Historically, trauma researchers have tended to conceptualise trauma as a once-off, single-incident event such as a motor-vehicle accident, but more recently theorists have begun to extend this definition to include enduring or complex trauma such as ongoing exposure to interpersonal violence (Herman, 2015).

The following section details the effects of trauma on a child. In addition to PTSD and psychological disorders such as anxiety and depression, complex childhood trauma may also affect the neurobiological development of a child (Ford, 2005).

The section thereafter introduces the theoretical framework (Cognitive-mediational model of traumatic reactions) in conceptualizing posttraumatic stress outcomes in children. This perspective is based on TRANSACTIONAL THEORY (Spaccarelli, 1994), which hypothesises that the sequelae of trauma is a result of the interaction between the individual and the environment. Consequently, not every child exposed to trauma will develop trauma symptoms. The section that follows, provides an overview of risk and protective factors which are thought to mediate a child or adolescent's responses to trauma.

A brief history of early theories that inform current thinking is provided. Central to the cognitive model is the nature of trauma appraisals and the manner in which these trauma-

appraisals persist to maintain PTSD. The latest research on trauma appraisals, particularly in children, will be presented.

In order to determine each individual's idiosyncratic trauma appraisals following trauma, Valjee and Collings (2016) developed the Developmental Trauma Inventory (DTI) Appraisal Scale. The rationale for developing this measure is discussed, as well as the shortcomings of other existing trauma-appraisal measures.

The trauma-appraisals provided by administering the DTI Appraisal Scale allows for a customised psychotherapeutic intervention to be developed. An alternate but equivalent form of the DTI Appraisal Scale which mitigates memory effects, will enable an assessment of the trauma-related appraisals to be conducted at different points in time, which may aid a therapist in the assessment of the efficacy of therapy in alleviating trauma-related cognitions.

2.1 Trauma

Herman (2015) describes a traumatic event as one where an individual is rendered helpless by an overwhelming force. Traumatic experiences are usually unanticipated. They overwhelm and disorganise the individual's ordinary systems of adaptation to life; the systems which ordinarily provide them with a feeling of control, association, and meaning (Herman, 2015; Kaminer & Eagle, 2010). The word *trauma* is often used to describe both the event and the subjective response to the experience (Kaminer & Eagle, 2010). In the words of Kaminer and Eagle (2010), "the outcome and its cause are inextricably intertwined," (p. 2).

Psychological trauma refers to psychological wounding or the severe disruption of a person's psychological functioning as a result of one or many traumatic events (Kaminer & Eagle, 2010). Children's vulnerability and dependence on adults to protect them (Pinheiro, 2006), and their immature systems of adaptation to events beyond their control means that they are easily overwhelmed by traumatic experiences.

The focus of this study is on *psychological trauma in children and adolescents*. Children and adolescents are defined as those individuals 21 years and younger.

2.2 The prevalence of trauma

2.2.1 Global prevalence of childhood trauma

A recent meta-analysis, conducted by Stoltenborgh, Bakermans-Kranenburg, Alink, and Ijzendoorn (2015) attempted to provide an estimate of the extent of child maltreatment, globally. They included 244 studies and 551 prevalence rates for maltreatment (defined as sexual, physical and emotional abuse, and neglect). "*The overall prevalence rates for self-report studies (mainly assessing maltreatment ever during childhood) were 127/1000 for sexual abuse (76/1000 among boys and 180/1000 among girls), 226/1000 for physical abuse, 363/1000 for emotional abuse, 163/1000 for physical neglect and 184/1000 for emotional neglect* (Stoltenborgh et al., 2015, p. 37).

The researchers found that studies on the maltreatment of children appear to focus to a large degree on sexual abuse and to a far lesser degree on emotional abuse and neglect. A large number of studies are done in more developed countries where research is primarily conducted using self-report measures (Stoltenborgh et al., 2015).

In non-westernised parts of the world, such as Africa, South America, and Asia, child maltreatment research is lagging behind the rest of the world (Pinheiro, 2006). Far fewer studies were available from these parts of the world, meaning that a large number of people are under-represented in child maltreatment research. In many cases, informant studies were used as opposed to self-report studies, with informant studies being problematic in a number of respects. Firstly, informant studies exclude the children who are being maltreated but have not yet been brought to the attention of child protective agencies. Secondly, informant studies report on the *incidence* of new cases during specific time periods, while self-report studies report on the *prevalence* of maltreatment during childhood and adolescence. Therefore, any statistics available on the worldwide prevalence of childhood trauma should be viewed with some caution, as they are likely to provide an underrepresentation of the extent of the problem (Stoltenborgh et al., 2015).

2.2.2 The prevalence of trauma in South Africa

Findings from The South African Stress and Health Study (SASH; Williams et al., 2004) reveal that 75% of South Africans have experienced a traumatic event in their lifetime. The trauma most frequently reported was the unexpected death of a loved one. “*Witnessing trauma, threat to one’s own life, criminal victimisation, and intimate partner abuse,*” (Williams et al., 2007, p. 852) were also frequently reported. More than half of the participants reported multiple traumas (Williams et al., 2007).

In the year 2000, South Africa had a death due to injury rate of 157.8 per 100 000 population. This is almost double the international rate of 86.9 per 100 000 population, with many of these deaths caused by violence. Studies show that interpersonal violence accounts for almost half of all deaths due to injury in South Africa, which is four and a half times the

international rate of violence-related deaths (Seedat, Van Niekerk, Jewkes, Suffla, & Ratele, 2009).

South Africa is plagued by varying forms of violence such as *political violence*; with many South Africans carrying the long lasting effects of state-perpetrated violence during the apartheid era (Kaminer & Eagle, 2010). In terms of *criminal violence*, South Africa is ranked at the top of the world rankings as the country with the most violent crimes (Altbeker, 2007; Masuku, 2002). Eighty per cent of robberies involve the use of a firearm or a knife (Masuku, 2002). With respect to *gender-based violence*, Kaminer, Grimsrud, Myer, Stein, and Williams (2008) found that the most common form of violence experienced by women is “*physical abuse by an intimate partner, childhood physical abuse and criminal assaults*,” (Kaminer et al., 2008, p. 1589). These researchers state that 14% of women report having been physically abused by an intimate partner. In 1995, South Africa was named the rape capital of the world by the Human Rights Watch (Nowrojee, Manby, Human Rights, & Women’s Rights, 1995).

Indirect exposure to trauma is also common in South Africa. Indirect trauma, or vicarious trauma, includes observing violence or injury to a third person, or being told of a trauma that happened to someone else, especially if that person is close to you (Kaminer & Eagle, 2010). Results from the SASH study indicate that 43% of the participants knew of a trauma to a close other (Williams et al., 2007).

Many South African citizens have experienced multiple traumas in their lifetimes (Williams et al., 2007). Previous experiences of trauma are likely to compound the impact of later traumas (Kaminer & Eagle, 2010). The cumulative effect of multiple traumas and high rates of distress takes its toll on the psychological health of South Africans (Williams et al., 2007).

2.3 Children and trauma in South Africa

It is within the above-described context of violence that many South African children grow up. A study conducted by The Centre for Justice and Crime Prevention in South Africa, called the National Youth Victimization Study (NYVS, 2005), provides an indication of how commonplace exposure to violence and crime is for South African youths. The study was conducted between September 2004 and September 2005 on young people between the ages of 12 and 22 years. The results show that 42% of the participants were victims of crime or violence. The crimes included theft, robbery, housebreaking, physical assault, sexual assault or rape, and car hijacking (Burton, 2006).

The Optimus Study was conducted in South Africa in 2016. The aim of this study was to gain an understanding of the extent and impact of child sexual abuse in South Africa. The findings revealed that one in every three children in South Africa were a victim of sexual abuse at some point in their lives. Additionally, half to two-thirds of children and adolescents reporting being victimised by violence also reported experiencing repeated forms of victimisation. Interestingly, findings (Artz et al., 2016) from a recent study found that both males and females were equally susceptible to victimisation, with differences reported regarding the form of victimization (sexual).

In addition to personal victimisation, children in South Africa are exposed to violence within their communities, homes, and schools. Richter, Mathews, Kagura and Nonterah (2018) conducted a cohort study in Soweto, Johannesburg. They report that only one per cent of the children in the study sample had not been exposed to or experienced violence in their homes, schools and, or, communities over the preceding two decades.

A survey conducted in five township schools in Cape Town provides an indication of how prevalent child victimisation is: 73% of the participants had seen someone being beaten-

up, 57% had witnessed someone being assaulted with a sharp weapon, 45% had witnessed a perpetrator threatening someone with a firearm, and 35% had seen someone being killed in their community (Shields, Nadasen, & Pierce, 2008).

Children are also frequently exposed to multiple traumas. For example, besides child abuse and domestic violence that commonly occur together, there is often a large overlap in a child's exposure to community and other forms of violence (Margolin & Gordis, 2000).

The United Nations International Children Fund's (UNICEF) global report *Hidden in Plain Sight* (2014) details the impact and consequences of physical, sexual and emotional abuse on children. The report states that the consequences are unfortunately often intergenerational since children exposed to violence may perpetuate the same patterns of violence and abuse against their spouses and children.

2.4 Types of Trauma

The preceding section (2.3), *Children and trauma in South Africa*, gives an indication of the prevalence of trauma in South Africa. The following section (2.4), will illustrate the nature of trauma outcomes (in terms of mode, locus of exposure and contextual conceptualizations).

Research conducted by Stoltenborgh et al., (2015), found that operational definitions of maltreatment may be varied and restricted to certain types, for example, sexual, physical and emotional abuse, and physical and emotional neglect. As a result children's exposure to vicarious trauma or interpersonal violence, for example, may not be included in the operational definition of trauma used in research, resulting in the extent and effects of trauma being underestimated.

Single-incident trauma and complex trauma

Traumatic events may occur as unexpected isolated events, such as a motor vehicle accident or a natural disaster. Alternatively, trauma may be ongoing and repetitive as is often the case in sexual abuse, physical abuse and domestic violence (Courtois & Ford, 2009). Repeated exposure may lead to complex traumatic reactions (Cloitre et al., 2011), with Terr (1991) distinguishing between single-incident trauma (i.e. Type I trauma) and enduring or complex trauma (i.e. Type II trauma).

Complex trauma is not only characterised by sustained and repeated instances of maltreatment, but is also often of an interpersonal nature. Research has predominantly focused on single-event and recurrent event trauma exposure in relation to sexual and physical abuse, however studies (Ford, 2005; Van der Kolk, 2005) have identified complex trauma outcomes (apart from PTSD and its associated features) that have demonstrated support for the inclusion of developmental pathways as well as locus of exposure in order to understand the child's complete victimization profile.

Multiple trauma

Emotional abuse may co-occur with sexual or physical abuse (Toth & Cicchetti, 2006), and a child may be exposed to both community violence and family violence (Margolin & Gordis, 2000). Shields et al. (2008) report that older children who had witnessed more violence experienced an 'exposure accumulation effect' and reported more distress. Findings from a study conducted by Hodges et al. (2013) found that children who experience many different types of trauma tend to present with a wider range of symptoms of trauma than children with more circumscribed trauma histories.

Indirect or vicarious trauma

Indirect or vicarious exposure to trauma is when an individual hears about or witnesses the trauma, for example, an incident of assault or abuse (Barbarin, Richter, & de Wet, 2001). Vicarious exposure to trauma has been found to be associated with posttraumatic symptoms and psychological impairment. Price et al. (2013) found that these problems are generally less severe than those observed in individuals who experience direct trauma. In contrast, Barbarin et al. (2001) report that vicarious exposure to violence produces a similar effect to that of direct victimisation. It appears that when a child observes violence against someone they know, the trauma response is increased (Boney-McCoy, & Finkelhor, 1995).

Interpersonal violence

Exposure to interpersonal violence is now recognised as a possible precursor to PTSD (Margolin & Vickerman, 2011). The physical proximity of the child to an incident of trauma, and how well the child knows the victim have an impact on the effect of the trauma on the child (Boney-McCoy, & Finkelhor, 1995; Price, Higa-McMillan, Kim, & Frueh, 2013). Price et al. (2013) assessed the effects of trauma type, and the part that interpersonal proximity plays in the trauma experience, on the symptomatology of children and adolescents. The study concluded that trauma inflicted by a known or close ‘other,’ and which involved close interpersonal proximity, was associated with externalising behaviours (i.e. oppositional defiance and conduct problems), with higher levels of exposure to interpersonal trauma being related to higher degrees of impairment. It appears that the expectation of being directly involved in violence increases when the child has a closer relationship with the victim. This increases the adverse effects of the trauma on the child (Boney-McCoy, & Finkelhor, 1995).

In summary, to determine a child’s full victimization profile, a variety of factors need to be considered (Barbarin et al., 2001; Price et al., 2013). A restricted operational definition

of trauma will provide a limited understanding of the extent and prevalence of trauma and may underestimate the full impact of trauma on a child or adolescent.

2.5 The effect of trauma

Traumatic events often involve “*threats to life or bodily integrity, or a close personal encounter with violence and death*” (Herman, 2015, p. 33). At the time of exposure to trauma, an individual feels intense fear and helplessness in the face of what is perceived as an all-powerful force. The event overwhelms a person’s sense of safety, control, and ability to cope with life (Herman, 2015).

2.5.1 Disturbances in psychological processes

Some individuals remain unscathed by the incident, but others may go on to develop PTSD. PTSD can be characterised by a number of disturbances in psychological processes such as memory, dissociation, affective reactions, coping styles and beliefs. (Brewin & Holmes, 2003).

Memory

In PTSD, memory of the traumatic incident is often affected. Some individuals experience confusion and forgetfulness whereas others describe their trauma memories as vivid and long-lasting. Flashbacks are frequently experienced; they are characterised by sensory detail such as vivid images and sounds, and feel as if they are being relived in the present (Brewin & Holmes, 2003).

Dissociation

Symptoms of dissociation may be described as an ‘out of body experience’ which commonly includes emotional numbing, derealisation and depersonalisation (Brewin & Holmes, 2003).

Cognitive-affective reactions

At the time of the trauma, victims may feel extreme fear, helplessness or a sense of horror. Research indicates a strong relationship between trauma victims who experience strong reactions and victims who go on to develop PTSD. The experiencing of high levels of anger and shame (Grey, Holmes & Brewin, 2001) or reacting with mental defeat during the trauma are also associated with PTSD (Ehlers, Maercker & Boos, 2000).

Cognitive coping strategies

Some victims of trauma may attempt to avoid thinking of the incident. However, extensive evidence has shown that deliberate attempts to suppress and avoid unwanted thoughts and memories usually result in a slower recovery from PTSD (Dunmore, Clark & Ehlers, 2001).

Beliefs

The subjective perception of the trauma and how it relates to the individual’s beliefs about the self, others and the world at large is evident in trauma victims who have developed PTSD (Dunmore, Clark & Ehlers, 1999). This reaction to trauma is central to this study and will be expanded on further in this dissertation.

2.5.2 The sequelae of complex childhood trauma

Exposure to prolonged and multiple trauma in childhood may result not only in the symptoms of PTSD and depression (Cross, Fani, Powers, & Bradley, 2017), but also in deficits in affective and interpersonal self-regulatory capacities (Cloitre et al., 2009; Van der Kolk, Roth, Pelcovitz, Sunday, & Spinazzola, 2005). Chronic trauma impedes the neurobiological development of a child (Cross et al., 2017; Ford, 2005) and compromises the child's capacity to "*integrate sensory, emotional and cognitive information into a cohesive whole*" (Van der Kolk, 2005, p.3).

In addition to the symptoms of PTSD, the symptoms of complex PTSD can be divided into 5 domains, namely: "*a) emotion regulation difficulties, b) relational disturbances, c) alterations in attention and consciousness (e.g., dissociation), d) adversely affected belief systems, and e) somatic distress or disorganization,*" (Cloitre et al., 2011, p. 616).

Consequently, many children may meet the diagnostic criteria, according to the DSM 5 for disorders such as depression, anxiety, attention deficit hyperactivity disorder, or conduct disorder, but these disorders do not encapsulate the child's self-regulatory and relational impairments (Van der Kolk et al., 2005). Many of these disorders are related to deficits in executive function. Op den Kelder, Ensink, Overbeek, Maric, and Lindauer (2017) found more deficits in executive functioning in adolescents exposed to complex trauma than adolescents exposed to single-event trauma.

2.5.3 PTSD in the DSM 5

To conclude this section on the effects of trauma, an overview of the changes to, and the current criteria for a diagnosis of PTSD in the Diagnostic and Statistical Manual of Mental Disorders (DSM 5; American Psychiatric Association (APA), 2013), is given. This reiterates what has already been written in this document and also gives a summary of the current thinking and knowledge on PTSD.

One of the changes in the DSM 5 involves a re-conceptualisation of what constitutes a traumatic experience. The DSM 5 states that a trauma can be experienced directly, witnessed, or experienced vicariously. In addition, there is acknowledgement that trauma symptoms may result from exposure to multiple forms of trauma (Miller, Wolf, & Keane, 2014).

Symptoms of PTSD include intrusive thoughts of the incidence. This may be in the form of flashbacks or distressing dreams. These memories are often triggered by environmental or internal cues that remind the individual of the trauma (APA, 2013).

In addition, the individual may attempt to avoid anything that reminds him or her of the trauma through the suppression of trauma-related memories, thoughts, or feelings (APA, 2013).

The individual may also experience hyper-arousal. This may take the form of irritability and angry outbursts, reckless behaviour, hyper-vigilance, difficulty concentrating, difficulty sleeping, or an exaggerated startle response (APA, 2013).

In DSM 5, a fourth symptom cluster has been added to the PTSD diagnostic criteria which addresses negative changes in cognitions and mood. The individual may not remember all aspects of the trauma; they may experience ongoing, negative beliefs about themselves, others or the world at large; feelings of fear, horror, anger, guilt or shame persist; blame is

attributed to others or to one's self; diminished interest in significant activities and feelings of detachment occur, plus an inability to experience positive affect (APA, 2013).

The addition of this fourth symptom cluster to the PTSD diagnostic criteria reflects a recognition of the shattering of basic assumptions and negative changes to belief systems which are associated with PTSD (Eagle & Kaminer, 2015), thereby acknowledging the centrality of cognitive aspects of PTSD which are fundamental to the work of Janoff-Bulman (1992) and Ehlers and Clark's (2000) cognitive models of traumatic reactions (Kaminer & Eagle, 2010).

The acceptance of complex PTSD as a new diagnosis was proposed for inclusion in DSM 5 but not subsequently included. Clinically, such a diagnosis would be beneficial as it would encourage the development of effective treatment for children who have experienced complex trauma (Herman, 2012). Eagle and Kaminer (2015) note that, despite its non-inclusion in DSM 5, complex PTSD has gained significant support as a formulation amongst clinicians working with victims of trauma.

DSM 5 (APA, 2013), has for the first time since its inception in 1952 incorporated developmental differences in symptom presentation regarding trauma outcomes (symptom profile for children six years and under). However, researchers in the area of developmental victimization (Collings et al, 2013, DSM-IV-Field Trials; Finkelhor, 2008; Herman, 2001; van der Kolk, 2005) have found increasing support for outcomes that cannot be sufficiently conceptualized under the existing diagnostic category "Trauma- and stressor related disorders" (APA, 2013, p. 265) in DSM 5.

2.6 Theoretical framework

The next section of the literature review draws on theoretical models which consider the role of cognitive appraisals as mediators in the development and maintenance of posttraumatic stress (Ehlers & Clark, 2000; Janoff-Bulman, 1992).

2.6.1 Psychological theories of PTSD

Early theories which have informed current thinking about the psychological processes (discussed in section 4.1) involved in PTSD can be divided into three types: i) Conditioning theories which focus on learned associations and the role played by avoidance; ii) Information processing theories which centre on the way that the traumatic event is stored in memory, its recall, and associated stimuli and responses; and iii) Social cognitive theories which focus on the manner in which trauma disrupts previously held mental structures and beliefs, and the processes employed to assimilate incompatible assumptions with those previously held beliefs (Brewin & Holmes, 2003). Brewin and Holmes (2003) assert that social cognitive theories deliver good explanations of the emotions and beliefs elicited by trauma and the process of adjustment and recovery.

Social cognitive theories form the basis of the theoretical framework for this study; further discussion on conditioning and information processing theories is therefore not undertaken and the reader is referred to Brewin and Holmes (2003) for further information.

2.6.2 Social cognitive theories

Stress response theory and the theory of shattered assumptions are early theories which have informed current social-cognitive perspectives on traumatic reactions.

Stress response theory

Horowitz's (1986) stress response theory asserts that people's first reaction to trauma is outcry and indignation at the realisation of the traumatic event. Secondly, there is an attempt to combine the new trauma information into their existing knowledge-base with many individuals having difficulty assimilating the new trauma information into their existing cognitive schemas. This pressure triggers psychological defence mechanisms which are used to avoid recall of the trauma. However, the fundamental psychological striving to assimilate the new trauma information with the old, means that trauma memories may enter into consciousness via flashbacks and nightmares. The oscillation between intrusions and avoidance allows the new trauma information to be processed incrementally. Failure to assimilate the trauma is said to result in post-traumatic symptoms since the trauma information stays in active memory and persists in intruding and then being avoided.

Brewin, Dalgleish, and Joseph (1996) describe Horowitz's theory as a social-cognitive theory since it encompasses a broader perspective on beliefs about the self, the world, and the future, plus the need for cognitive-change to facilitate recovery.

Theory of shattered assumptions

A key construct in the theory of shattered assumptions is that trauma disrupts deeply-held beliefs of our view of the world as a place characterised by reliable rules and principles, and the assumptions that the world is caring, full of meaning, and that we are worthy (Brewin & Holmes, 2003; Janoff-Bulman, 1992). This is seen in trauma survivors who question why the trauma happened and why they in particular became victims. Survivors often have difficulty reconciling trauma experiences with their existing beliefs about others, themselves, and the world at large (Kaminer & Eagle, 2010).

Janoff-Bulman (1992) asserts that we all hold implicit assumptions which we are not necessarily conscious of, regarding the world. These assumptions are integral to our internal cognitive models of how the world works. For example, we may subconsciously believe that we are good persons, that others are essentially good, and that the world is governed by just social laws. That is, ‘if I am a good person bad things will not happen to me’ (Kaminer & Eagle, 2010). The traumatic incident may destroy this assumption plus one’s belief in the order and justness of the universe. This creates feelings of distress, distrust, and vulnerability for many trauma survivors (Kaminer & Eagle, 2010).

A key influence of this theory is recognising common themes in schema change, the individual’s role in preventing or facilitating this process, and the possibility of reframing the trauma in a positive light to facilitate post-traumatic growth (Brewin & Holmes, 2003).

Ehlers and Clark’s cognitive model

Individuals who experience PTSD tend to appraise the trauma and its sequelae in a manner that infers a current sense of threat. The trauma is not confined to a time-limited event, but is seen to have global implications for the future. The two major mechanisms causing this reaction include the negative appraisals of the trauma or its consequences and the poor integration of the trauma memory into autobiographical knowledge. The threat may be viewed as external, that is, ‘nowhere is safe,’ or internal, such as ‘I am incompetent’ (Ehlers & Clark, 2000). Responses to trauma such as flashbacks, intrusive memories, mood swings, and numbing are common. An individual may, however, perceive these to be indications of poor mental health (‘I am going mad’) and not part of the recovery process. Such appraisals produce negative emotions (i.e. depression or anger), which encourage the use of maladaptive coping strategies to decrease the distress, such as thought suppression which results in the thought

surfacing more often thus elevating and maintaining PTSD symptoms (Cheung & Bryant, 2017; Ehlers & Clark, 2000; Steil & Ehlers, 2000).

Some individuals may react during the trauma with mental defeat, that is, they stop caring whether they live or die. This may increase the likelihood of developing negative appraisals about oneself as being vulnerable to danger and unable to act effectively (Brewin & Holmes, 2003).

Ehlers and Clark also differentiated between data-driven processing and conceptual processing of trauma which affects the encoding of the trauma memory. Where data-driven processing focuses on sensory information, conceptual processing focuses on contextualising the information, organising it and understanding the meaning of the situation which in turn aids in integrating the trauma memory into autobiographical memory. Data-driven processing results in strong perceptual priming, making it difficult to retrieve the memory intentionally. Factors such as dissociation and emotional numbing which occur during the trauma also make evaluating the event difficult (Brewin & Holmes, 2003).

Lastly, Ehlers and Clark postulate that maladaptive coping behaviour such as thought suppression, avoidance of trauma reminders, adoption of safety behaviours, using medication and alcohol, and cognitive processing styles such as the use of dissociation or rumination, work to maintain the symptoms of PTSD.

The addition of a fourth symptom cluster to the PTSD diagnostic criteria, as discussed in section 2.5.3 of this chapter, supports the use of Ehlers and Clark's cognitive model and characterises much of the contemporary work on trauma (refer to section 2.8.2 of this chapter) and trauma interventions (refer to section 2.9.1 of this chapter).

2.7 Conceptual framework

2.7.1 A cognitive-mediational perspective

In the literature reviewed, two broad perspectives are adopted to account for post traumatic outcomes. These are a stimulus-based perspective and a cognitive-mediational perspective. A stimulus-response model attributes variations in PTSD outcomes to factors such as the intensity and frequency of the trauma, the extent of the traumatic exposure, and the nature of the interpersonal relationship between the victim and the perpetrator (Valjee & Collings, 2016).

On the other hand, a cognitive-mediational perspective is based on transactional theory (Spaccarelli, 1994) where post-traumatic outcomes are regarded as the product of an interaction between the individual and the environment, with this interaction being mediated by the individual's cognitive appraisals of the traumatic event (Valjee & Collings, 2016).

Spaccarelli's (1994) transactional model assumes that child development occurs through person-environment interactions (Sameroff & Fiese, 2000; Schwarzer & Taubert, 2002). Socio-contextual factors (e.g. social support and parent-child relationships); (cf., Afifi & MacMillan, 2011; Hitchcock et al., 2015) and intrapersonal variables (such as personality and age) are seen as playing a role in increasing or decreasing the child's resilience.

The constructs of the model transact in a causal and a bi-directional manner which may mean that negative cognitive appraisals and behavioural responses create a vicious cycle, with a traumatic event possibly leading to problematic coping strategies which in turn may lead to an increase in stress and greater psychopathology (Schwarzer & Taubert, 2002; Spaccarelli, 1994).

2.7.2 Mediating and moderating variables

Children may be exposed to a number of traumatic life events. However, not every child will go on to develop PTSD (Hornor, 2013). Drawing on a cognitive-mediational perspective, this section provides an overview of risk and protective factors which may mediate or moderate a child's response to trauma.

A meta-analysis of studies conducted by Trickey, Siddaway, Meiser-Stedman, Serpell, and Field (2012) using a sample size of more than 30 000 participants provides a comprehensive overview of risk factors for PTSD in children. Generally, the researchers found that peri-traumatic factors (fear and fear for one's life) and post-traumatic factors (cognitive impact, social and family support, and pre-trauma psychopathology) had a larger effect on PTSD than demographic factors (age, sex and ethnicity) and the severity of the trauma. In order to examine the various factors that contribute to the development of post-traumatic stress, the following categories were used: "*demographic factors, pre-trauma factors, objective trauma characteristics, subjective trauma characteristics, post trauma individual factors and post trauma psychological environment*" (p.123). These categories are addressed below.

Demographic factors

Age may affect a child's vulnerability to developing PTSD. Younger children's lack of previous knowledge and inability to express themselves, and their immature regulation of emotions may affect their understanding and appraisal of an event, increasing their post-traumatic distress (Salmon & Bryant, 2002).

Gender also plays a role in traumatic outcomes. Men tend to be exposed to more traumatic incidents than women, but a higher prevalence of PTSD and depression is found in women. Women are more likely to experience interpersonal trauma (Cromer & Smyth, 2010), which is higher in levels of betrayal, and more strongly related to symptoms of PTSD according

to conducted studies (Goldberg & Freyd, 2006; Tang & Freyd, 2012). However, Cromer and Smyth (2010) did not report a gender difference in symptoms of PTSD following non-interpersonal trauma.

Pre-trauma factors

Research has shown that previous trauma may increase a child's reactivity, and thus vulnerability, to developing post-traumatic stress symptoms (Foy, 1996). Copeland, Keeler, Angold, and Costello (2007) assert that a history of anxiety disorders is a good predictor of post-traumatic stress symptoms following trauma exposure. Trickey et al. (2012) observed a small-medium effect size for low IQ, pre-trauma psychological problems, low self-esteem, and bereavement on post-traumatic stress.

Objective trauma characteristics

From a stimulus-based perspective, factors such as the severity of the trauma and the level of exposure to the trauma affect subsequent post-traumatic outcomes (Pine & Cohen, 2002; Jackson, Gabrielli, Fleming, Tunno, & Makanui, 2014).

Copeland, Keeler, Angold, and Costello (2010) caution that although extreme stressors are potent risk factors for post-traumatic stress, a sufficient number of children who are exposed to low impact stressors also develop PTSD. The relatively low risk of low-impact stressors is increased in individuals with a history of adverse experiences such as interpersonal loss (death of a loved one or parental separation), pre-trauma psychopathology, and an adverse family environment (Copeland et al., 2007).

The type of trauma that an individual is exposed to is a strong indicator of whether or not PTSD develops. In interpersonal trauma exposure the rate is one in four people whereas in non-interpersonal trauma the rate of developing PTSD after trauma is one in ten. Interpersonal

trauma is often chronic; a loss of social support, feelings of self-blame, and a sense of betrayal are common (Alisic et al., 2014).

Research has demonstrated that it is not only the number of adverse events that an individual experiences, but the number of different trauma types which increases the likelihood of psychological and health problems in an individual (Cromer & Smyth, 2010; Finkelhor, Ormrod, & Turner, 2007a; Finkelhor, Ormrod, & Turner, 2007b; Hodges et al., 2013).

Subjective trauma characteristics

Subjective factors such as an individual's level of fear and perceived threat during the trauma can influence the onset of PTSD (Perrin, Smith, & Yule, 2000; Trickey et al., 2012).

Post-trauma individual characteristics

Factors such as co-morbid psychological difficulties, acute stress disorder, and an individual's coping style can be considered risk factors for increased post-traumatic stress (Trickey et al., 2012).

As mentioned earlier, deliberate attempts to avoid intrusive thoughts and memories of the event are related to slower recovery from post-traumatic outcomes (Dunmore et al., 2001; Ehlers, Mayou, & Bryant, 1998). Other coping styles such as rumination (Ehlers, Mayou, & Bryant, 1998) and the use of safety behaviours (Dunmore et al., 2001), may also increase the risk of adverse post-traumatic outcomes.

Post-trauma psychological environment

a) Social support and family structure

Collishaw et al. (2007) and Shields et al. (2008) agree that adequate social support and family structure are important factors which can help children cope with the effects of being exposed to traumatic events. Collishaw et al. (2007) explored resilience in a long-term follow-

up of a community sample of children who had been abused. Not all the children showed adverse psychopathology in adulthood. Resilience in these individuals was attributed to good interpersonal relationships with parents, friends, and partners (Collishaw et al., 2007).

A recent study by Münzer, Ganser, and Goldbeck (2017) demonstrated that negative posttraumatic appraisals mediate the relationship between social support and posttraumatic outcomes. This research added to past studies by Hitchcock et al. (2015), Meiser-Stedman et al. (2009) and Bryant, Salmon, Sinclair, and Davidson (2007) who also demonstrated that there is a negative correlation between supportive social interactions and posttraumatic stress symptoms and maladaptive posttraumatic appraisals in children.

b) Primary care-givers

A mother's ability to regulate her distress well and/or a family's ability to buffer the effects of traumatic exposure can constitute protective factors for the child (Barbarin et al., 2001).

In family violence, parents may be emotionally unavailable to their children (Van der Kolk et al., 2005) as they may have been victimised themselves (Dutton, 2000) and may be suffering from PTSD (Chemtob & Carlson, 2004), or have psychological problems of their own (Trickey et al., 2012). In such situations, children cannot necessarily rely on their primary caregivers for protection and support (Margolin & Gordis, 2000). Van der Kolk (2005) asserts that the degree to which the family environment can be implicated in the maltreatment occurring, the caregiver's response to the disclosure of abuse or victimisation, and the extent of the primary caregiver's own experience of childhood trauma and psychopathology, will all affect the child's response to the trauma.

To summarise, if a transactional model (Spaccarelli, 1994) is applied then the impact of developmental trauma may be conceptualised as being not only a product of the nature of

the traumatic exposure (type, frequency, severity etc.) but also a range of mediating or moderating variables, which includes socio-cultural factors (such as family conflict, marital separation and available social support) and the negative cognitive appraisals of the trauma.

2.8 The meaning of trauma

Furthering a cognitive-mediational perspective, the second tenet of a transactional model is that traumatic outcomes are mediated by the formation of negative cognitive appraisals of the trauma (Spaccarelli, 1994).

Research on trauma appraisals supports this outlook. Researchers have found that the manner in which trauma is appraised, predicts the onset and persistence of PTSD more so than the trauma itself (Barlow, Goldsmith, Turow, & Gerhart, 2017; Cromer & Smyth, 2010; Dunmore, Clark, & Ehlers, 1999; Dunmore et al., 2001; Steil & Ehlers, 2000; Trickey et al. 2012).

Dunmore et al. (1999) focused on identifying the cognitive factors specifically related to the start and persistence of PTSD. The factors identified were: “*mental defeat, mental confusion, negative appraisal of emotions, negative appraisal of symptoms, perceived negative responses from others, permanent change, avoidance/safety behaviours, global beliefs before and after assault and change in belief*” (p.824-825). Individuals who engage in maladaptive cognitive or behavioural strategies such as avoidance or safety seeking, prevent the negative trauma appraisals from being disconfirmed, resulting in negative beliefs being maintained. The factors found to be involved in the onset of PTSD are: detachment during the trauma, the perception that others are not responding in a supportive manner, and attempts to mentally make minor changes to what happened during the trauma (Dunmore et al., 1999).

Trauma appraisals also influence the nature of the emotions which develop post-trauma. For example, an appraisal of ‘it was my fault’ may lead to feelings of guilt or loss, while an appraisal that ‘my life has changed forever,’ may lead to feelings of sadness (Ehlers & Clark, 2000). Moser, Hajcak, Simons, and Foa (2007) posit that negative trauma-related cognitions can account for the association between PTSD and depressive symptoms.

2.8.1 Types of trauma appraisals

The available literature has identified specific trauma appraisals which accompany post-traumatic stress. Foa et al. (1999) divides these appraisals into three cognitive themes:

i) Negative internal evaluations about the self, such as the belief that ‘I attract disaster’ (Agar, Kennedy, & King, 2006; Cromer & Smyth, 2010; Ehlers & Steil, 1995; Moser et al., 2007). In a study conducted by O'Donnell et al. (2007) it was found that negative self-evaluations over time elevated symptoms of PTSD more than ‘external cognitions of the world at large’ did. These findings suggest that internal cognitions are more powerful in the development and maintenance of PTSD. Negative self-appraisals increase an individual’s feeling of incompetence and thereby enhance beliefs that the world at large is a dangerous place (Moser et al., 2007; O'Donnell et al., 2007). As a result, negative self-related cognitions over time tend to be more influential in strengthening and maintaining PTSD symptoms than negative cognitions about the world at large (O'Donnell et al., 2007).

ii) External cognitions about others and the world at large (Agar et al., 2006; Brewin & Holmes, 2003; Cromer & Smyth, 2010; Dunmore et al., 2001; Foa et al., 1999) where the individual perceives the world to be dangerous and unpredictable. For example, “*the next disaster will strike soon,*” (Ehlers & Clark, 2000, p. 322).

iii) Self-blame cognitions. These include self-evaluations of one’s behaviour and peri-trauma reactions (Agar et al., 2006). There appears to be some controversy as to whether self-

blame cognitions are indicative of greater PTSD (Frazier & Schauben, 1994). Agar, Kennedy and King (2006) report that self-blame in a sample of students did not predict PTSD, whereas negative appraisals about the world and the self, predicted PTSD. O'Donnell et al. (2007) found that high levels of self-blame evaluations were related to better psychological recovery (O'Donnell et al., 2007).

The importance of considering various appraisal categories, and how they work simultaneously in the onset and maintenance of post-traumatic distress, is considered in a study by Deprince, Chu, and Pineda (2011). They investigated six specific appraisal categories (alienation, betrayal, shame, self-blame, fear and anger) and how they accounted for the variance in specific trauma-related distress (PTSD, dissociation and depression). Alienation or disconnection from self or others ('Even though I have friends, I am still lonely') was highly correlated with dissociation and depression. Further associations were found between betrayal and dissociation, shame and PTSD, and self-blame and depression.

2.8.2 Recent research on trauma appraisals

In reviewing the recent literature on trauma appraisals, there appears to be a progression from initially focusing on cognitive factors that occurred during the trauma and post-trauma (more specific to single-incident trauma), to looking at complex trauma (Barlow et al., 2017) and factors specific to the individual such as attachment anxiety (Ogle, Rubin, & Siegler, 2016), and psychological vulnerabilities such as attributional style, ruminating over the trauma (Roley et al., 2015; Spinhoven, Penninx, Krempeniou, van Hemert, & Elzinga, 2015), fear of anxiety-related symptoms, and looming cognitive style (Elwood, Hahn, Olatunji, & Williams, 2009). Models such as the diathesis stress model have been applied to view which vulnerability factors have the largest influence on the development of PTSD (Elwood et al., 2009).

For example, Barlow et al. (2017) suggest that childhood abuse may result in adult post-traumatic symptoms through cumulative negative appraisals which disrupt emotional regulation mechanisms, but it is the effect of the negative appraisals which is most potent. The model considers the interrelatedness of trauma appraisals, emotional regulation, and levels of self-compassion in maintaining traumatic outcomes and in enabling recovery. A further finding in this study is a mechanism of trauma appraisal leading to symptoms of intrusion and avoidance.

Further research asserts that individual differences in adult attachment influences how some individuals interpret traumatic events. Individuals with high attachment anxiety tend to evaluate trauma to be central to their identity, resulting in greater post-traumatic stress severity (Ogle et al., 2016).

2.8.3 A cultural perspective

Very little research has been conducted on the interaction between trauma appraisals and post-traumatic stress symptoms from a non-western, collectivist culture perspective. Jobson and O’Kearney (2009) report that in interdependent cultures only trauma appraisals of ‘alienation’ separated victims of trauma with PTSD from those without PTSD. Engelbrecht and Jobson (2016), using a qualitative approach, explored the meanings attached to trauma from a collectivistic view. They report that trauma is predominantly perceived as a physical stressor, with many symptoms being somatised. Appraisals of trauma are further influenced by an individual’s interconnectedness or relatedness within a group (family or community). The group is often a member’s reason for being, so if the trauma has caused loss regarding the individual’s role within the group, for example, feelings of dejection or alienation are common. The view of the self is diminished on a collective and an individual level and the perception of self as a valued, capable person is threatened. A therapeutic intervention would need to focus

on the individual's relatedness within the group to restore a healthy self-concept (Engelbrecht & Jobson, 2016).

2.8.4 Cognitive appraisals in child trauma

Research findings also support the role of cognitive factors in the maintenance of PTSD in children (Ehlers et al., 2003; Hitchcock et al., 2015; Mitchell et al., 2017); negative interpretations of the traumatic event, the consequences of traumatic exposure, and the severity of traumatic symptoms are found to be correlated with the severity of post-traumatic symptomatology.

As is the case of adults, dysfunctional cognitive strategies such as rumination, thought suppression, and persistent dissociation are also associated with PTSD severity in children (Ehlers, Mayou and Bryant, 2003).

The negative appraisals reported to be associated with post-traumatic symptoms in children include feelings of vulnerability and the fear of future harm befalling them (Bryant et al., 2007); being permanently changed by the trauma (Meiser-Stedman, Yule, Smith, Glucksman, & Dalgleish, 2005; Stallard & Smith, 2007); and a sense of injustice (Stallard & Smith, 2007).

In a systematic review, Alisic, Jongmans, van Wesel, and Kleber (2011) caution however, that adult theories of traumatic symptomatology cannot simply be applied to children. Salmon and Bryant (2002) concur in this and stress the importance of considering developmental factors such as knowledge, language development, and emotional regulation when considering a cognitive theory of PTSD in children. For example, self-blame appraisals are often not reported in children; a finding that may reflect the fact that children do not see themselves as responsible for their situations whereas adults assume more responsibility (Mitchell et al., 2017).

The predictive power of appraisals following trauma on rates of post-traumatic stress in children is reportedly independent of factors such as the child's age, post trauma symptoms, injury severity, or parental post-traumatic stress (Bryant et al., 2007; Meiser-Stedman et al., 2009), and trauma type (Mitchell et al., 2017).

Ponnamperuma and Nicolson (2016) assessed the predictive power of negative trauma appraisals on post-traumatic stress symptoms in a sample of Sri Lankan adolescents who had been exposed to the 2004 tsunami. The adolescents who had experienced greater cumulative trauma reported more negative appraisals. Furthering the research, regression analysis was used to control for risk factors such as female gender, low social support, and continuing adversity. Their findings supported the contention that negative trauma appraisals are good predictors of post-traumatic stress symptoms. Furthermore, the relationship between negative trauma appraisals and posttraumatic symptoms appears to be quite specific as the appraisals did not forecast depression or other internalising symptoms.

A study by Martin, Cromer, Deprince, and Freyd (2013) assessed the influence of multiple trauma and the level of betrayal (the relational closeness of the victim to the perpetrator) associated with the traumatic event. They found that higher levels of cumulative trauma and feelings of betrayal resulted in more trauma-related symptoms being reported. However, trauma-related appraisals predicted more adverse trauma outcomes over and above the effects caused by multiple trauma and the levels of betrayal.

In summary, findings from the contemporary research reviewed, provides strong support for the predictive power of negative trauma appraisals on PTSD and the role of cognitive factors in the maintenance of PTSD in children.

2.9 Psychotherapeutic interventions

Counselling is an effective intervention for treating the symptoms of PTSD (Erford et al., 2016). The latter found no difference between interventions which were trauma-focused and ones that were not trauma-focused. However, evidence to support trauma-focused cognitive behavioural therapy is strong (TF-CBT; Bisson & Andrew, 2007; Diehle, Schmitt, Daams, Boer, & Lindauer, 2014; Ehlers, Clark, Hackmann, McManus, & Fennell, 2005; Kubany, Hill, & Owens, 2003; Lenz, Haktanir, & Callender, 2017; Meiser-Stedman et al., 2017; Smith et al., 2013). Diehle et al. (2014) investigated the effectiveness of various forms of psychotherapy on trauma-related cognitions, and concluded that TF-CBT is the most effective form of therapy to reduce trauma related cognitions. TF-CBT was defined as including imaginal and in vivo cognitive restructuring. Nixon, Sterk, Pearce, and Weber, (2017) report that trauma-related exposure is not necessarily a prerequisite for successful treatment. In this study, at a one year follow-up, post-traumatic symptoms and co-morbid symptoms of depression and general anxiety showed significant reductions compared to pre-treatment levels when either TF-CBT or cognitive therapy were used (Nixon et al., 2017).

In keeping with the cognitive theories of PTSD (Ehlers & Clark, 2000), the aim of TF-CBT is to revise negative cognitions and personal meanings of an event, amend the autobiographical memory disruption and, as a result, resolve the problematic behavioural and cognitive strategies maintaining the posttraumatic symptoms (Ehlers & Clark, 2000). The effectiveness of CBT treatment is mediated by shifts in cognitive appraisals of the trauma and its effects (Ehlers et al., 2005; Smith et al., 2007).

A second important aspect of CBT for PTSD is the ability to create a therapeutic intervention personalised to meet the trauma victim's specific cognitive appraisals (Barlow et al., 2017). For instance, reducing a targeted appraisal may also increase self-compassion

(Schumm, Dickstein, Walter, Owens, & Chard, 2015), which in turn may improve the efficacy of cognitive reappraisals (Diedrich, Hofmann, Cuijpers, & Berking, 2016).

2.9.1 Trauma-focused cognitive behavioural therapy in children

The benefit of TF-CBT, specifically in young people, has been gaining support (Gilboa-Schechtman et al., 2010; Gillies, Taylor, Gray, O'Brien, & D'Abrew, 2013; Goldbeck, Muche, Sachser, Tutus, & Rosner, 2016; Meiser-Stedman et al., 2017; Nixon, Sterk, & Pearce, 2012; Shein-Szydlo et al., 2016; Smith et al., 2013). Meiser-Stedman et al. (2017) focused on the efficacy of CT for PTSD (CT-PTSD) as a treatment for children and adolescents (8-17 years) with PTSD, two to six months post a single-incident trauma. The results showed that significantly more of the participants (71%) were free of PTSD post-treatment than those on the waiting list (27%), and this recovery was maintained at six and 12 months post-treatment. The study demonstrates the efficacy of a psychotherapeutic intervention over natural recovery in children and adolescents, in the early treatment of established PTSD (two to six months post-trauma). Goodall et al. (2017) extended current research by demonstrating that children between the ages of three and eight years old can work cognitively and therefore benefit from a CBT model adapted specifically for them.

However, there appears to be a lack of empirical studies focusing on TF-CBT in children with complex PTSD (Smith et al., 2013). A study by Shein-Szydlo et al. (2016) demonstrates the effectiveness of CBT in addressing complex trauma in a sample of Mexican street children. The study reported significant improvement in the symptoms of PTSD when compared to those in the waiting list group. The results also expanded evidence (Smith et al., 2007) that TF-CBT may reduce disruptive behaviours such as anger and irritability observed in children with PTSD.

2.10 Assessment of trauma appraisals

2.10.1 Trauma appraisal assessment instruments

In order to assess a person's trauma-related cognitions, a number of trauma appraisal assessment instruments have been developed; the measures vary according to the underlying theory and the appraisals that are thought to be involved. Janoff-Bulmann (1992) developed the World Assumptions Scale (WAS), based on the theory of shattered assumptions, to assess perceived self-worth and goodwill of the world at large. Research however, has shown mixed results on the validity and reliability of the WAS, with researchers querying whether it is the WAS itself, or the assumptive world theory on which the WAS is based that is giving these results (Elklit, Shevlin, Solomon, & Dekel, 2007; Kaler et al., 2008). Foa et al (1999) reported that the measure was found to differentiate between individuals who had experienced a trauma and those who had not, but scores on the measure were not found to be strongly correlated with reported levels of trauma. One plausible reason for this is that the WAS is designed as a measure of cognitions found in individuals who have experienced trauma in general, and not in those with chronic PTSD (Elklit et al., 2007; Foa et al., 1999). However, Elklit et al. concluded that further work is needed on the psychometric properties of the WAS (Elklit et al., 2007). Kaler et al. (2008) suggested that a superior measure is needed to measure trauma outcomes based on world assumptions theory as they found low test-retest reliability and little evidence of construct validity in the WAS.

Incorporating McCann and Pearlman's (1990) focus on beliefs of "*safety, trust, power, esteem and intimacy*" (Foa et al., 1999 p.303), a Personal Beliefs and Reactions Scale (PBRS) was developed to include a measure of a victim's personal appraisal of both the trauma and related behavioural and affective consequences of the trauma (Foa et al., 1999). It was specifically developed to assess trauma appraisals in victims of interpersonal violence.

Consequently, some items in the subscales are relevant for this specific group of trauma survivors but may not be relevant for victims of other trauma types (Vogt, Shipherd, & Resick, 2012).

Vogt et al. (2012) based the development of a Posttraumatic Maladaptive Beliefs Scale (PMBS) on the PBRs. Their objective was to develop a brief measure that could be applied in clinical and research settings, and across a variety of trauma types. Initial psychometric support for this measure shows promise. However, the sample was validated against a sample of women with PTSD following interpersonal trauma, and needs to be validated further on victims of other trauma types as well as with a sample of men.

The Posttraumatic Cognitions Inventory (PTCI) which was constructed as a comprehensive measure of trauma appraisals consists of three subscales: “*Negative Cognitions About Self, Negative Cognitions About the World, and Self Blame*” (Foa et al., 1999, p.311). Unlike the WAS, it was found to discriminate well between traumatised individuals with PTSD, and those without PTSD (Foa et al., 1999). The Children’s Posttraumatic Cognitions Inventory (CPTCI), based on the PTCI, was developed to assess dysfunctional posttraumatic assumptions in children and adolescents. It consists of two sub-scales: “*permanent and disturbing change and fragile person in a scary world*” (Meiser-Stedman et al., 2009, p. 438.), which relates to appraisals of personal integrity and physical harm which are thought to maintain symptoms of PTSD in children (Meiser-Stedman et al., 2009).

In a follow-up study to examine the psychometric properties of the CPTCI further, issues concerning the generalisability of the measure were noted. In the study, measures of PTSD and CPTCI appraisals were recorded in victims of single-incident trauma recruited from three different hospitals. The researchers note that it would be useful to further the clinical

utility of the CPTCI by evaluating the psychometric properties in a clinical population (McKinnon et al., 2016).

Studies which have used the CPTCI suggest that it is a useful measure of trauma appraisal regarding the maintenance of PTSD in the youth (Salmon, Sinclair, & Bryant, 2007). However, like the PTCI, the psychometric properties of the CPTCI are based on single-event (Type I) trauma in children, as opposed to ongoing chronic trauma such as community violence, verbal abuse, sexual abuse, or multiple traumas (Meiser-Stedman et al., 2009).

In summary, considering the above studies, it appears that many of the existing measures of post-traumatic cognitions are only relevant for victims of specific traumas, that is, either single incident trauma (e.g. CPTCI) or interpersonal trauma (e.g. PBRS and PMBS); scales like the PBRS are however cumbersome with items ranging in number between 31-84 making them impractical for use in clinical settings (Vogt et al., 2012). Further, the reliability and validity of some measures have been questioned (e.g. the WAS) and finally, besides the CPTCI there appears to be no other measure which has been designed specifically for use with children.

2.11 Developmental Trauma Inventory Appraisal Scale

Conceptually, attempts to validate the cognitive-mediational model have been restricted by operational definitions and the absence of valid measurements which address the full range of trauma-related appraisals (Valjee & Collings, 2016). Given the limitations of existing measures, Valjee and Collings (2016), as already mentioned, developed a brief screen, the DTI Appraisal Scale, to assess children's cognitive appraisals of traumatic events.

Firstly, however, Collings et al. (2013) developed the DTI which is a screen for interpersonal childhood trauma. It was developed for use in school-going children and

adolescents in contemporary South Africa where the incidence of complex trauma and multiple trauma is high. All trauma probes were sourced from the existing literature on developmental trauma measures and research studies on childhood trauma, in order to incorporate a child's complete victimisation profile. An all-encompassing operational definition of 'traumatic exposure' was used: "*emotional abuse, community assault, domestic assault, witnessing domestic violence, witnessing community violence, indecent assault, rape, domestic non-accidental injury and/or domestic neglect*" (Collings et al., 2013, p. 342). The DTI consists of 33 items in the scale which incorporates the abovementioned eight domains of traumatic exposure. The results of the study found preliminary support for the use of the DTI to assess developmental trauma in the South African context.

In order to create the DTI Appraisal Scale, Valjee and Collings (2016) used the DTI as a measure to capture a child's full response to victimisation. In addition, the PTCI, Davidson Trauma Scale (DTS; Davidson, 2003) and the Structured Interview for Disorders of Extreme Stress – Self Report (SIDES – SR; Pelcovitz, et al., 1997), were used to validate measures of PTSD and complex PTSD. These measures were used to ensure that the key constructs in the study were operationalised.

The initial phase of the research involved identifying the scale items of the proposed appraisal scale. This was done by performing item analysis on a selection of probes for trauma-related cognitions obtained from research and the literature on developmental trauma (Valjee & Collings, 2016). After pre-testing the new measure, it was incorporated into a questionnaire which also contained the abovementioned measures (i.e. the DTI, the PTCI, the DTS and the SIDES – SR). The questionnaire was administered to a non-clinical sample of 477 adolescents who were victims of interpersonal violence during childhood.

The standard psychometric measures of the new appraisal scale were established to ensure its reliability and validity. A mediational analysis using the Sobel test (Baron & Kenny, 1986) was conducted to determine the conceptual validity of the new scale.

The results of the study indicate that the DTI Appraisal Scale can be considered a reliable and valid measure of cognitive appraisals encompassing validated measures of both PTSD and complex PTSD outcomes in children and adolescents. Additionally, in line with the cognitive-mediational model of traumatic outcomes, the findings indicate “*that items on the DTI appraisal scale measure a construct which effectively mediates the relationship between traumatic exposure and the severity of posttraumatic outcomes*” (Valjee & Collings, 2016, p. 347).

2.12 An alternate form of the Developmental Trauma Inventory Appraisal Scale

An alternate form means that an equivalent version of the scale is constructed with similar items which are differently worded (Durrheim & Tredoux, 2004). An equivalent form of the scale will have similar item content and item difficulty with comparable means and standard deviations (Terre Blanche, Durrheim & Painter, 2006).

An equivalent form of the DTI Appraisal Scale will enable the DTI Appraisal Scale to be administered before therapy begins, and the alternate form to be administered after a number of sessions of therapy, or vice versa. Use of an alternate form of measurement eliminates the problem of patients remembering their initial responses and confounding the findings. If it is established that an equivalent form of the DTI Appraisal Scale has adequate psychometric properties, post-intervention changes in trauma-related cognitions can more confidently be attributed to intervention effects, rather than to memory or testing effects.

In order to add to the existing body of knowledge on the best practices for treating trauma victims with CBT, it is necessary to conduct prospective studies with less confounding variables such as recollection bias (Steil & Ehlers, 2000), and where the results are more precise and carry more weight than findings obtained from retrospective studies (Colman, 2009). Elklit et al. (2007) note that in trauma appraisal research, there appear to be very few prospective studies which have examined changes in scores either between pre-trauma and post-trauma cognitions, or in trauma appraisals over time. In this regard, a tool such as an alternate form of the DTI Appraisal scale is needed since such a measure would reduce practise or memory effects and permit a more meaningful assessment of treatment effects.

2.13 Chapter conclusion

This literature review serves to provide a contextual and theoretical background to this study. Given the high prevalence of trauma in South Africa, research which adds to the body of knowledge on therapeutic interventions which have the propensity to alleviate posttraumatic outcomes is essential.

The overarching conceptual framework of this study is a cognitive-mediational perspective which is based on Spaccarelli's (1994) transactional theory. Cognitive theory suggests that the negative manner in which trauma is appraised predicts the onset and maintenance of post-traumatic outcomes even more so than factors such as the severity of the trauma or the nature of the injuries sustained. To further research on developmental trauma in South Africa, and the nature of cognitive appraisals in PTSD, Valjee and Collings (2016) developed the DTI Appraisal Scale. This study was undertaken to build onto this research and create an alternate form of the DTI Appraisal Scale. A reliable and valid equivalent form will

assist in research by being able to track trauma appraisals over time and to assess treatment efficacy without the confounding variable of practise or memory effects.

This literature review also serves to demonstrate that the approach adopted by this study is supported by contemporary research on developmental trauma and studies supporting the use of cognitive behavioural therapy with children and adolescents who have been victims of trauma.

Chapter Three

Research Design and Methodology

3. Introduction

This research is considered applied research as the aim is to expand instrumental knowledge (Neumann, 2014) by creating an equivalent form of the DTI Appraisal Scale. The objectives of the study were to ensure that the new measure incorporated the prevailing range of developmental trauma appraisals identified in posttraumatic outcomes and that the new measure would be a reliable and valid alternate form of the DTI Appraisal Scale. This chapter details the research design and methodology.

3.1 Ethical clearance

Ethical clearance was obtained from the Humanities Ethics Committee at the University of KwaZulu-Natal on the 7 October 2015, (given in Appendix A), before the start of the study. Gate-keeper permission was obtained from the principal of the school.

3.2 Generating a pool of trauma appraisals for the questionnaire

In order to create an equivalent form of the DTI Appraisal Scale, a pool of statements similar to the items on the original DTI Appraisal Scale was generated. These statements were sourced from available research and literature on trauma appraisals (Barlow, Goldsmith Turow, & Gerhart, 2017; Brewin & Holmes, 2003; Cromer & Smyth, 2010; Dunmore, Clark, & Ehlers, 1999; Dunmore et al., 2001; Ehlers & Clark, 2000; Janoff-Bulman, 1992; Kaminer & Eagle, 2010; Steil & Ehlers, 2000); a review of available trauma appraisal scales (Foa et al., 1999; Janoff-Bulmann, 1992; Meiser-Stedman et al., 2009; Vogt et al., 2012); interviews with

experts in the field of developmental trauma (Professor S Collings and S Valjee); and an analysis of the item content of the original DTI Appraisal Scale (to ensure equivalence of content domains and manifestations across parallel versions of the measure).

This selection of appraisals, and original items from the DTI Appraisal Scale were included in the questionnaire. The appraisals that most strongly correlated with the items from the original scale were selected to create a new scale.

3.3 Questionnaire design

As this is a quantitative study and requires a larger sample size for the data to be statistically valid, a structured, self-administered questionnaire was designed.

The research questionnaire was divided into three sections. The first section contained standard demographic questions about age, grade, ethnic group and gender.

The second section of the questionnaire contained questions about the participant's exposure to a traumatic experience in the previous year. The first question of this section of the questionnaire was an open-ended question about a particularly traumatic event: "*What is the scariest or most upsetting thing that happened to you in the last year?*" The answers to this question were content analysed. The second question in this section was a close-ended question which related to the participant's response to the experience of the trauma: "*How scared or upset did it make you feel?*" The responses to this question were measured according to the following rating scale:

0 = *not at all*, 1 = *A little*, 2 = *Quite a lot*, 3 = *Very*, 4 = *Extremely*.

The third section of the questionnaire contained the pool of 43-items described above, which were included as statements of trauma appraisals. These items were divided into two

separate questions according to the appraisals which were likely to occur during the trauma and those which were likely to occur post-trauma. These questions were also scored using a 5-point Likert scale, with response options being:

0 = *not at all*, 1 = *A little*, 2 = *Moderately*, 3 = *Quite a lot*, and 4 = *Extremely*.

A copy of the questionnaire is provided in Appendix C.

3.4 Sample

Data were collected from a convenience sample of school learners attending an English medium high school located in Wentworth, Durban (KwaZulu-Natal, South Africa), during November 2017 to January 2018.

The questionnaire was administered to 154 learners. Of the 154 completed questionnaires, three were not usable due to extensive missing data, resulting in a final sample of 151 participants. The participants varied in age from 13 years to 21 years (mean = 16.34 and standard deviation = 2.08). They consisted predominantly of Black Africans, almost half were in grade 11. The sample was relatively evenly split between males and females (Table 1).

Table 1

Total Sample (n = 151)

Sample Characteristic	n	%
Gender		
Male	78	51.7
Female	73	48.3
Grade		
8	29	19.2
9	20	13.2
10	30	19.9
11	72	47.7
Race		
Black African	126	83.4
Other	25	16.6

3.5 Data collection procedures

As this study required working with a sample of learners, strict adherence to the UKZN Research Ethics policy was ensured. The learners were made aware of the research during Life Orientation classes during which the teachers used an information sheet to disseminate the information. The background, purpose and limitations of the research was explained, and confidentiality and the rights of the participants were ensured (Appendix D). Written consent was obtained from those pupils who agreed to participate in the research, as well as from their primary caregivers (Appendix E). The questionnaires were administered, completed, and collected during Life Orientation lessons.

The names of the participants were never requested during the research. Should any of the participants have experienced any undue trauma as a result of taking part in the study, they were asked to approach the administrator who would refer them to a counsellor.

Data collected during the study is being kept in a secure location by the supervisor for a period of five years after which it will be shredded.

3.6 Data reduction

The data collected was coded, checked, and entered into an Excel spread sheet. This was imported into IBM SPSS Version 24 (Pallant, 2013). The data analysis was conducted through the use of the SPSS statistical programme, version 24.

3.7 Data analysis

3.7.1 Content analysis

The participants' responses to Question 5: '*What is the scariest or most upsetting thing that happened to you in the last year?*' were content analysed to quantify the types of trauma the respondents' had experienced.

Quantitative content analysis is defined by Neuman (2014) as "objective and systematic counting and recording procedures to produce a numerical description of the content in a text" (p. 371). The respondent writes an answer to the question without the knowledge that it will be content analysed, that is, there is no awareness of the researcher. The information generated is therefore objective, precise and repeatable, and can be quantitatively analysed (Neuman, 2014).

The coding framework used to content analyse this question is based on coding categories previously developed by Collings and Gopal (2016; cf. Table 2). This coding framework is based on Hobfoll's (1998) conservation of resources theory, which uses a hierarchical structure of categories (primary, secondary and tertiary) depending on how closely an individual depends on the resource for survival. A traumatic event such as such as *I was pushed into a pool and almost drowned* is categorised within the primary category as there is a direct threat to the individual's safety or physical wellbeing. *I was sent to the principal's office* is placed within the tertiary category (failure, blame, punishment) as it is a more indirect or distal threat to survival (Collings & Gopal, 2016).

Table 2

Emergent Coding Categories

Category	Threat	Categories
Primary	Survival/physical integrity	Traumatic exposure
	Basic survival resources	Material resources
	Safety/physical wellbeing	Safety/harm (self)
Secondary	Social capital	Death/loss/separation (others)
		Illness/injury (others)
		Interpersonal issues/disputes
Tertiary	Financial capital	Poverty/unemployment
	Competence/censure	Failure/blame/punishment
	Self-concept	Social standing

3.7.2 Quantitative analysis

The quantitative data analysis of the findings was divided into two phases: phase one consisted of developing a parallel version of the DTI Appraisal Scale and phase two, a preliminary validation of the parallel version as an alternate form of the DTI Appraisal Scale.

In order to do this however, the sample needed to be split into two. Random number charts were used to derive two samples (Pallant, 2013), namely Sample one and Sample two. Sample one was used to derive an alternate form of the scale and Sample two was used to cross validate the alternate version of the scale. Sample one consisted of 75 participants and Sample two of 76 participants. As correlations can be misleading if the populations on which they are based are not homogenous (Durrheim & Tredoux, 2004), it was important to ensure that the two samples did not differ significantly in terms of demographic characteristics. Table 3 demonstrates that the two samples did not differ significantly in terms of demographic characteristics.

Table 3

The Characteristics of the Two Samples used in the Study

Sample Characteristic	Sample 1 (n = 75)		Sample 2 (n = 76)		Statistic	p
	n	%	n	%		
Gender					$\chi^2(1) = 1.16$	0.989
Male	38	50.7	40	52.6		
Female	37	49.3	36	47.4		
Grade					$\chi^2(1) = 1.59$	0.903
8	15	20.0	14	18.4		
9	11	14.7	9	11.8		
10	16	21.3	14	18.4		
11	33	44.0	39	51.4		
Race					$\chi^2(1) = 1.77$	0.898
Black African	62	82.7	64	84.2		
Other	13	17.3	12	15.8		
Age	(Mean = 16.11)		(Mean = 16.42)		$t(149) = 1.78$	0.893

Phase 1: Development of a parallel version of the DTI Appraisal Scale**Correlation analysis**

An alternate form of the DTI Appraisal would have different item content but measure the same construct as the DTI Appraisal Scale (Collings, 2011). Identifying the appraisals which correlated highly with the appraisals from the original scale was the first step in creating a parallel version of the DTI Appraisal Scale.

Using Sample one, correlational analysis was conducted on each of the seven items from the original DTI Appraisal Scale to identify the items from the 43 selected items for the parallel version of the scale.

A correlation coefficient gives an indication of the strength of the linear relationship between variables. Ranges vary from -1 to +1; a value close to 0 reflects a weak relationship (Neuman, 2014).

The correlation analysis conducted enabled a new scale of seven items to be developed. Items with the highest correlation coefficient to each of the seven items from the original DTI Appraisal Scale were retained.

Internal consistency of the new measure

Once a new scale was developed, the internal consistency was investigated by obtaining a Cronbach's coefficient alpha for the original DTI Appraisal Scale and the alternate form.

A measure of internal consistency gives an estimate of the extent to which each item on a measure correlates with the other items (Terre Blanche, Durrheim & Painter, 2006). The expectation is that the scores for the individual items would be highly and significantly correlated with the total score of all the items (Collings, 2011).

Cronbach's coefficient alpha ranges from 0, that is, no internal consistency, to 1, indicating maximum internal consistency (Terre Blanche, Durrheim & Painter, 2006). "*Questionnaire-type scales with an alpha value of greater than 0.75 are considered reliable (internally consistent)*" (Terre Blanche, Durrheim & Painter, 2006, p. 154).

Convergent validity

Construct validity is important since it is an indication of the extent to which scores on a test are a good measure of a specific construct (Collings, 2011). Convergent validity, a form of construct validity, attempts to determine whether the total scores of different measures are related to one another (Terre Blanche, Durrheim & Painter, 2006). In this study one would expect that the total scores on the two measures designed to be equivalent, and administered to the same sample, would be significantly and highly correlated.

A correlation between the total scores on the two scales was established to test the convergent validity of the measures.

Phase 2: Cross validation of the alternate form of the DTI Appraisal Scale

Once a seven item parallel version of the scale had been developed, the psychometric properties of the new measure were cross validated using Sample two.

Item analysis

Item analysis focuses on the degree to which an item on one test correlates to a corresponding item on another test which is designed to measure the same construct (Collings, 2011). An item analysis was conducted to establish the correlation between the items on the original and the alternate form of the scale using Sample two.

Internal consistency

A Cronbach's coefficient alpha was established on the original and the new scale using Sample two, to cross validate the internal consistency of both scales using a different sample.

Convergent validity

A correlation between the total scores on the two scales was conducted using Sample two to test the convergent validity of the measures using a new sample.

3.8 Chapter conclusion

To summarise, this chapter describes the research methodology used in this study to ensure that the research objectives and questions set out at the beginning of the study could be answered. They are:

- Does the proposed measure incorporate the predominate range of developmental trauma appraisals found in post-traumatic outcomes?

- Can this measure be deemed to be a reliable and valid alternate-form of the DTI Appraisal Scale?

Chapter Four

Results

4.1 Introduction

This chapter presents the major findings that emerged from the analysis of the data. The specific objectives were to assess whether or not the newly developed measure incorporated the prevailing trauma appraisals found in post-traumatic outcomes, and whether or not it could be deemed to be a reliable and valid alternate form of the DTI Appraisal Scale.

4.2 Nature of the trauma

The researcher first investigated the ‘nature of the trauma’ which respondents referred to when they responded to the question on trauma appraisals later in the questionnaire. Question five of the questionnaire asked: “*What is the scariest or most upsetting thing that happened to you in the last year?*” This open-ended question was analysed using quantitative content analysis, based on Hobfoll’s (1998) conservation of resources theory. This coding framework uses the resource categories: primary, secondary and tertiary depending on how closely the trauma threatened the individual’s survival. Table 4 shows that the trauma reported by the participants involved mainly threats to primary resources (37%), followed closely by secondary resources (35%). This also gives an indication of the nature and extent of the trauma which South African adolescents are exposed to.

Table 4

Emergent Coding Categories: Nature of the Trauma

Emergent coding category	Threat	Category	%
Primary	Survival/physical integrity	Traumatic exposure	24.5
	Basic survival resources	Material resources	5.9
	Safety/physical wellbeing	Safety/harm (self)	15.1
Total			37.0
Secondary	Social capital	Death/loss/separation (others)	18.5
		Illness/injury (others)	1.9
		Interpersonal issues/disputes	13.9
	Financial capital	Poverty/unemployment	0.6
Total			35.0
Tertiary	Competence/censure	Failure/blame/punishment	19.2
	Self-concept	Social standing	3.3
Total			22.5
Non-response			5.3

4.3 Phase 1: Development of a parallel version of the DTI Appraisal Scale

Using correlation analysis the statements of trauma appraisal from the pool of 43-items which most strongly and significantly correlated with the seven items from the original DTI Appraisal Scale, comprised the alternate form of the DTI Appraisal Scale. The correlation coefficient of each item is given in Appendix H. The trauma appraisals highly correlated with the original DTI Appraisal Scale and, which make up the alternate form of the DTI Appraisal Scale are listed below in Table 5.

Table 5

The Trauma Appraisals Highly Correlated with the DTI Appraisal Scale which formed the Alternate Form of the DTI Appraisal Scale

	DTI Appraisal Scale	Alternate Form of the DTI Appraisal Scale	<i>r</i>
1.	At the time I felt angry	At the time I felt very cross	0.94**
2.	At the time I felt afraid	At the time I was very scared	0.93**
3.	At the time I felt numb or in shock	At the time I felt like I was in a dream	0.95**
4.	I have felt guilty or to blame for what happened	I could have done something to prevent what happened	0.94**
5.	The experience has changed me in a negative way	I do not believe in myself because of what happened	0.95**
6.	Since the experience I have found it hard to trust others	Other people like me less because of what happened	0.96**
7.	Because of the experience, I no longer believe that the world is a safe place	Since the experience I feel as if no place is safe	0.94**

Note. ** $p < 0.001$

4.3.1 Internal consistency

Once the new scale was developed the internal consistency of the alternate form was investigated by obtaining a Cronbach's co-efficient alpha for the scale. A Cronbach's coefficient of 0.92 was obtained which indicates that the alternate form has highly significant levels of internal consistency.

4.3.2 Convergent validity

The researcher then investigated convergent validity between the DTI Appraisal Scale and the alternate form. A correlation of 0.94 was obtained. A high correlation is an indication that the two scales measure the same construct.

4.4 Phase 2: Cross validation of the new scale on a different sample

Phase 2 of the analysis included cross validating the reliability and validity of the new scale using Sample two.

4.4.1 Item analysis

An item analysis was conducted to establish the correlation between the items on the original measure and the alternate form of the scale using Sample two. Table 6 details the scores received for each item. These scores indicate that when correlation analysis is conducted between the items on the original and alternate form of the scale, using a different sample, the results still indicate high levels of correlation which are highly significant on all seven items of the scale.

Table 6

Cross Validation of the correlation between items on the DTI Appraisal Scale and the Alternate DTI Appraisal Scale using Sample 2

	DTI Appraisal Scale	Alternate Form of the DTI Appraisal Scale	<i>r</i>
1.	At the time I felt angry	At the time I felt very cross	0.87**
2.	At the time I felt afraid	At the time I was very scared	0.94**
3.	At the time I felt numb or in shock	At the time I felt like I was in a dream	0.95**
4.	I have felt guilty or to blame for what happened	I could have done something to prevent what happened	0.94**
5.	The experience has changed me in a negative way	I do not believe in myself because of what happened	0.89**
6.	Since the experience I have found it hard to trust others	Other people like me less because of what happened	0.97**
7.	Because of the experience, I no longer believe that the world is a safe place	Since the experience I feel as if no place is safe	0.95**

Note. **p < 0.001

4.4.2 Internal consistency

A Cronbach's alpha coefficient of 0.94 was achieved. This indicates that the alternate form has highly significant levels of internal consistency even when the scale is administered to a different sample.

4.4.3 Convergent validity

A score of $r = 0.95$ at a significance level of $p < 0.001$ indicates that the correlation between the total scores on the original and the alternate forms, are highly significant. These findings provide support for the convergent validity of the alternate form of the DTI Appraisal Scale.

4.5 Chapter Conclusion

The first phase of this research was to develop a parallel version of the DTI Appraisal Scale. Items from an item-pool of 43 statements of trauma appraisals which were most highly correlated with the seven items from the DTI Appraisal Scale were used for the alternative form of the DTI Appraisal Scale. The results indicated high levels of correlation.

The new measure was found to have highly significant levels of internal consistency and convergent validity. Cross validation of the scores on a secondary population sample provided further evidence of the alternate form being psychometrically equivalent to the DTI Appraisal Scale.

Chapter Five

Discussion

Results from the preliminary investigations of this study indicate that the alternate form of the DTI Appraisal Scale is a promising new measure. The alternate form correlates well with the original DTI Appraisal Scale. High levels of construct validity and internal consistency were obtained, and then cross validated using a different sample. These results suggest that the new scale can be considered a valid and reliable alternate form of the DTI Appraisal Scale which can be used in research or therapeutic settings.

5.1 Current trauma appraisal assessment instruments

Current trauma appraisal assessment instruments include the World Assumptions Scale (WAS), but research has shown mixed results on the validity and reliability of the WAS (Elklit, Shevlin, Solomon, & Dekel, 2007; Kaler et al., 2008). The Personal Beliefs and Reactions Scale (PBRs) was designed to assess trauma appraisals in victims of interpersonal violence, but may not be relevant to other trauma types (Vogt, Shipherd & Resick, 2012). The development of the Posttraumatic Maladaptive Beliefs Scale (PMBS) was based on the development of the PBRs, and validated via a sample of women only with PTSD following interpersonal trauma. Although the measure is regarded as promising, it needs to be further validated against victims of other trauma types and also a sample of men (Voget et al., 2012). The Posttraumatic Cognitions Inventory (PTCI) was found to differentiate between those individuals with PTSD, and those without PTSD (Foa et al., 1999), but was not designed for children. The Children's Posttraumatic Cognitions Inventory (CPTCI) is based on the PTCI and designed to use with children and adolescents, however, the psychometric properties of the CPTCI are based on single-event traumas. It appeared that there was no trauma appraisal

assessment instrument specifically viable for use with children and adolescents in South Africa affected by developmental trauma. This provided the motivation for the creation of the DTI Appraisal Scale.

Results from the study designed by Valjee and Collings (2016) to create the DTI Appraisal Scale found that the DTI Appraisal Scale is a reliable and valid measure of negative trauma appraisals and, in line with a cognitive-mediational framework, can be used to “*measure a construct which effectively mediates the relationship between traumatic exposure and the severity of posttraumatic outcomes*” (Valjee & Collings, 2016, p. 347).

However, endeavours to validate a cognitive-mediation model have been limited by a lack of an alternate form of the DTI Appraisal Scale which can be used to monitor changes in trauma-related cognitions. The alternate form is a promising new measure which can serve this purpose.

5.2 A comprehensive definition of trauma

Reflecting on the literature reviewed, the DTI Appraisal Scale and the alternate form can be said to be representative of recent thinking and research in the trauma field. The two scales meet specific criteria which were thought to be lacking in trauma-appraisal assessment instruments. That is, they can be said i) to be based on an operational definition of developmental trauma which includes both single-incident and complex trauma; ii) to incorporate the predominate range of developmental trauma appraisals found in posttraumatic outcomes; and iii) to be used to monitor changes in trauma-related cognitions in children and adolescents in research and therapeutic settings.

5.3 Utilised in a research setting

An alternate form will enable research using prospective research designs which allow for causal inferences to be established. The confounding problem of recollection bias is diminished (Steil & Ehlers, 2000) and findings carry more weight than those gained from retrospective studies (Colman, 2009). In trauma appraisal research, there appears to be few prospective studies which have observed changes in trauma appraisals over time or noted changes in scores between pre-trauma and post-trauma cognitions (Elkit et al., 2007).

5.4 Psychotherapeutic interventions

If an alternate form of a measure is available, then following therapy the alternate form may be used to reassess the therapeutic outcomes. In this context, changes in negative trauma appraisals can more confidently be attributed to therapy rather than to recollection bias or testing effects. This allows for the use of CBT in individuals exposed to trauma to become more evidence-based.

In addition, an ability to create a therapeutic intervention which is customised and targeted at an individual's specific cognitive appraisals may improve the efficacy of the treatment (Diedrich et al., 2016). The alternate form of the DTI Appraisal Scale will enable customised therapeutic interventions to be created for children and adolescents seeking therapy for PTSD.

Recent research has demonstrated the effectiveness of cognitive therapy for use in children with PTSD (Gilboa-Schechtman et al., 2010; Gillies, Taylor, Gray, O'Brien, & D'Abrew, 2013; Goldbeck, Muche, Sachser, Tutus, & Rosner, 2016; Meiser-Stedman et al., 2017; Nixon, Sterk, & Pearce, 2012; Shein-Szydlo et al., 2016; Smith et al., 2013). Goodall et al. (2017) and Meiser-Stedman et al. (2017) focused on children between the ages of three and

17 years following single-incident traumatic events. Goodall et al (2017) demonstrated that even children between the ages of three and eight years old can work cognitively.

5.5 Limitations of the study

Limitations of this study include a too small sample size to effectively validate the alternate form. A larger sample size would allow for more robust statistical analysis. The psychometric properties of the measure could also be cross validated using samples drawn from different age groups, cultures and areas.

This study was conducted in a general population of learners in an English medium high school in South Africa. This is not a clinical sample, therefore each learner would have been subjected to varying degrees of subjective trauma, and may or may not have been suffering from symptoms of post-traumatic stress. The learners were only asked to report on *the scariest or most upsetting thing that has happened to you in the last year*. The trauma however, may have occurred anytime within the year affecting the nature of the trauma appraisal as in some learners natural recovery may have already taken place. No standard measure of PTSD or complex PTSD was used.

5.6 Further research

Additional research using a larger, more varied population sample is needed to further validate the alternate form. Both measures could be administered to samples of people who have experienced different categories of trauma such as single-incident trauma or interpersonal violence. The aim would be to see how the measures perform using varying trauma types, that is, if the same levels of internal consistency are obtained.

Evidence of convergent construct validity of the alternate form could be obtained by establishing correlation between the total scores on the alternate form, the DTI Appraisal Scale, and a further measure such as the PTCI (Foa et al., 1999), which was also developed to measure trauma-related appraisals.

Further research could be conducted to ensure that trauma appraisals appropriate to a collectivist culture are also included, for example, appraisals that relate to an individual's feeling of interconnectedness to their family or community (Engelbrecht & Jobson, 2016).

Chapter Six

Conclusion

The first national mental health summit in South Africa in 2012 was an opportunity to take stock of the mental health services available in the country. It was reported that 75% of people with mental health disorders do not have access to the care they need. A solution proposed for this problem was to develop evidence-based and culturally appropriate treatment that can be delivered cost effectively (Lund et al., 2012). The high incidence of trauma and violence in South Africa is a contributing factor to the burden of mental illness in the country. This research provides a tool to contribute to the growing body of knowledge on trauma and to enable cost-effective, evidence-based treatment to be provided.

The alternate form of the DTI Appraisal Scale was developed specifically for use in a South African context. It may tentatively be described as a valid, brief measure of trauma appraisals. It was designed for use in children and adolescents exposed to developmental trauma and to incorporate a comprehensive definition of PTSD and complex PTSD.

Together with the DTI Appraisal Scale, it may be used to measure trauma-related appraisals over time. In a research setting, an alternate form of the DTI Appraisal Scale will allow for prospective studies to be conducted. In a therapeutic setting, the measure will allow therapists to assess an individual's negative cognitive appraisals following exposure to trauma and to create a therapeutic intervention focusing on these appraisals. In conjunction with the DTI Appraisal Scale, the therapist can administer the measure to establish if therapeutic recovery is happening by assessing changes in an individual's trauma-related appraisals.

The alternate form of the DTI Appraisal scale is a promising new measure. Given further research the DTI Appraisal Scale and the Alternate form may ultimately be used to

ensure that trauma focused cognitive therapy specified for use in a non-western setting is evidence-based, cost-effective and culturally appropriate.

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Appendix A: Ethical approval



7 October 2015

Mrs Tracy Lynne Thomson 214802207
School of Applied Human Sciences
Howard College Campus

Dear Mrs Thomson

Protocol reference number: HSS/1408/015H
Project title: The construction and validation of an equivalent form of the Development Trauma Inventory (DTI) Trauma Appraisal Subscale

Expedited-Full Approval

In response to your application dated 30 September 2015, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol have been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

Please note: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

.....
Dr Shenuka Singh (Chair)
Humanities & Social Sciences Research Ethics Committee

/pm

cc Supervisor: Prof Steven Collings
cc Academic Leader Research: Dr J Steyn
cc School Administrator: Ms Nozipho Ndlovu

Humanities & Social Sciences Research Ethics Committee

Dr Shenuka Singh (Chair)

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Founding Campuses: ■ Edgewood ■ Howard College ■ Medical School ■ Pietermaritzburg ■ Westville

Appendix B: Permission to use database

Appendix C: Questionnaire

Questionnaire: Please answer all questions

1. What is your age?	_____ years					
2. What grade are you in?	_____ grade					
3. What is your ethnic group?	<input type="checkbox"/> African <input type="checkbox"/> Coloured <input type="checkbox"/> White <input type="checkbox"/> Indian <input type="checkbox"/> Other					
4. Are you male or female?	<input type="checkbox"/> Male <input type="checkbox"/> Female					
5. What is the scariest or most upsetting thing that has happened to you in the last year (WRITE WHAT HAPPENED IN THE SPACE BELOW)						
_____ _____ _____						
6. How scared or upset did it make you feel (put a cross in one box)? <input type="checkbox"/> Not at all <input type="checkbox"/> A little <input type="checkbox"/> Quite a lot <input type="checkbox"/> Very <input type="checkbox"/> Extremely						
7. How did you feel at the time it was happening?						
		Not at all	A little	Moderately	Quite a lot	Extremely
At the time I felt angry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time I felt like I was in a dream	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time I was very scared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time I wanted to lash out at someone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time my mind just went blank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time I felt very cross	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time I wanted to escape from what was happening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time I found it hard to control my anger	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time I was very frightened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time I felt as if it was happening to someone else	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time I wanted to do something terrible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time I felt afraid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time I just froze and couldn't do anything	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time I wished I could just run away	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time I thought I was going to die	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time I wanted to get away from what happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time I felt numb or in shock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time I wanted to hurt someone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At the time I felt like everything was unreal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. How do you feel **now about what happened?**

	Not at all	A little	Moderately	Quite a lot	Extremely
I feel guilty or to blame for what happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Since the experience I have avoided other people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Since the experience I've found it hard to trust others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I find it hard to be close to others because of what happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Because of the experience I no longer believe that the world is a safe place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The experience has changed me in a negative way	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Because of what happened I no longer believe that good things happen to good people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Since the experience others have avoided me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel damaged because of what happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Because of what happened I worry more about what tomorrow will bring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I do not believe in myself because of what happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am less of a person because of what happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I could have done something to prevent what happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel responsible for what happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will never be the same because of what happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Someone else might have prevented what happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
People care less about me because of what happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I could have prevented what happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other people like me less because of what happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel inadequate because of what happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Since the experience I feel less confident about the future	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What happened is my fault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Since the experience I feel as if no place is safe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My life is less meaningful because of what happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**YOU HAVE COMPLETED THE QUESTIONNAIRE
THANK YOU FOR PARTICIPATING**

Appendix D: Information sheet

Project Title: Developing a scale to assess trauma experiences in the youth

Dear Learner

We are doing a study to find out what bad or horrible things some children may have seen or experienced, and how this may have affected them. The purpose of the research is to develop questions which will tell a counsellor what effect a traumatic experience has had on a child. By answering our questionnaire about yourself and what you have experienced you will be contributing to this research. Please read the information below and decide whether you will take part in the study or not:

- Participation in the study is purely on a voluntary basis, all learners in the high school will be given the opportunity to participate in the study.
- You will not be asked to put your name on the answer sheet so no-one will know what you have written.
- If you agree to take part in this study you will be asked to fill in a form with some short questions about what may have happened to you, and how you felt about it.
- The form is two pages long and should take about 10 minutes to finish.
- There are no wrong or right answers.
- You will not be forced to give any information which you would rather keep private.
- You are free to stop taking part at any time.
- The teacher who hands out the questions will explain what you have to do and will answer any of your questions.
- Please make sure that you answer the questions as honestly as you can.
- The teacher will also give you the name of a person you can contact if you feel distressed after answering the questions and feel that you want to talk to someone privately.
- You can also contact the researchers if you have any questions about the study.
 - Project leader: Professor Steven Collings (031 2602414)

If you would like to take part in the study, please sign the consent form and bring it back to your school. If you are under 18 years, please ask your parent/guardian to sign the form as well.

Thank you for your interest in this study.

Appendix E: Consent documentation form

Informed Consent Form

I(Learner's full name) have been informed about the details of the study:

I have read and understood the written information about the study. I understand everything that has been explained to me and freely agree to take part in the study.

I understand that I am free to withdraw from the project at any time.

Signature: _____ **Date:** _____

If under the age of 18 -

I have been informed about the details of the study: Exploring negative experiences children may have had, and their reaction to them.

I have read and understood the written information about the study.

Signature/ Mark of thumbprint of parent or guardian: _____ **Date:** _____

Appendix F: The nature of the trauma participants were exposed to.

Emergent category	Primary and secondary categories	Description	No.	%
Death/loss/separation (others)	Death of significant others	Fearfulness arising from the death of parents, caretakers, family members or significant others	26	17
Failure/blame/punishment	Failure	Fearfulness relating to failure, underperformance, or performance anxiety	25	17
Traumatic exposure	Interpersonal violence – direct exposure	Being a victim of interpersonal violence	18	12
	Non-interpersonal trauma	Traumatic events (without reference to interpersonal violence)	12	8
Interpersonal issues/disputes	Peers	Fearfulness relating to interpersonal disputes or disagreements of any nature	11	7
	Intra-familial	Fearfulness relating to interpersonal disputes or disagreements of any nature	10	7
Material resources	Possessions	Fearfulness arising from loss, damage to, or theft of material possessions	9	6
Non-response to question			8	5
Traumatic exposure	Interpersonal violence – vicarious exposure	Witnessing interpersonal violence, or being aware of interpersonal violence involving a specific victim	5	3
Safety/harm (self)	Illness pain and injury	Fearfulness relating to threats to the individuals physical wellbeing (including pain, injury and illness)	4	3
Failure/blame/punishment	Punishment	Fearfulness relating to punishment or censure as a result of failure or underperformance	4	3
Safety/harm (self)	Dangerous experiences - natural dangers	Fearful, non-traumatic, exposure to: common life events or to natural phenomena	3	2
Illness/injury (others)	Wellbeing of significant others	Fearfulness relating to threats to the physical wellbeing of significant others (including pain, injury and illness)	3	2
Social standing	Individual self-esteem	Fearfulness associated with perceived threats to the individual's self-image	3	2

Traumatic exposure	Interpersonal violence – ambient violence	Awareness of interpersonal violence (without reference to a specific victim)	2	1
Safety/harm (self)	Dangerous experiences – the unknown	Fearfulness as a result of exposure to circumstances which are unfamiliar, unusual, ambiguous, or unpredictable	2	1
Death/loss/separation (others)	Loss of, or separation from significant others	Fearfulness associated with temporary or permanent separation from caretakers or significant others	2	1
Social standing	Social self-esteem	Fearfulness associated with threats to the individuals social self esteem	2	1
Safety/harm (self)	Dangerous experiences – imaginary/supernatural dangers	Fearful experiences relating to imaginary, supernatural, religious or paranormal phenomena	1	1
Poverty/unemployment	Financial capital	Fearfulness associated with an inability to acquire basic survival resources (e.g. food, shelter and clothing) as a result of poverty and/or unemployment	1	1

Collings & Gopal (2016)

Appendix G: Item selection using sample one (n=75)

Item from the original scale	Proposed Item	Correlation
1) At the time I felt angry	At the time I just wanted to lash out at someone	0.90**
	At the time I felt very cross	0.94**
	At the time I found it hard to control my anger	0.89**
	At the time I wanted to hurt someone	0.88**
	At the time I wanted to do something terrible	0.91**
2) At the time I felt afraid	At the time I was very scared	0.93**
	At the time I wanted to escape from what was happening	0.89**
	At the time I wished that I could just run away	0.87**
	At the time all I wanted to do was get away from what was happening	0.90**
	At the time I was very frightened	0.89**
3) At the time I felt numb or in shock	At the time I thought I was going to die	0.82**
	At the time my mind just went blank	0.91
	At the time I just froze and couldn't do anything	0.90**
	At the time I felt like everything was unreal	0.89**
	At the time I felt as if it was happening to someone else	0.85**
4) I felt guilty or to blame for what happened	At the time I felt like I was in a dream	0.95**
	I feel responsible for what happened	0.87**
	I could have done something to prevent what happened	0.94**
	Someone else might have prevented what happened	0.86**
	I could have prevented what happened	0.91**
	I feel inadequate because of what happened	0.89**
	What happened is my fault	0.87**

5) The experience has changed me in a negative way	I feel damaged because of what happened	0.91**
	I do not believe in myself because of what happened	0.95**
	I am less of a person because of what happened	0.87**
	I will never be the same because of what happened	0.90**
	My life is less meaningful because of what happened	0.88**
6) Since the experience I have found it hard to trust others	Since the experience I have avoided other people	0.90**
	I find it hard to be close to others because of what happened	0.91**
	Since the experience others have avoided me	0.90**
	People care less about me because of what happened	0.89**
	Other people like me less because of what happened	0.96**
7) Because of the experience I no longer believe that the world is a safe place.	Because of what happened I no longer believe that good things happen to good people	0.90**
	Because of what happened I worry more about what tomorrow will bring	0.89**
	Since the experience I feel less confident about the future	0.91**
	Since the experience I feel as if no place is safe	0.94**

****p<.001**