

The responses of young children after witnessing extreme life events

Mariette van der Merwe

Associate Professor, Centre for Child, Youth and Family Studies, Community Psychosocial Research (COMPRES), Faculty of Health Sciences, North-West University, Potchefstroom.

Email: Mariette.VanDerMerwe@nwu.ac.za

ORCID: 0000-0002-2038-3227

Abstract

South African children are exposed to high levels of trauma. With the overwhelming needs of direct victims, children who have witnessed traumatic events can be overlooked as a neglected and vulnerable client group. This article highlights the differential responses of children who have witnessed extreme events by addressing one objective of broader intervention research, namely, using a qualitative descriptive design to describe the responses of young children after witnessing extreme life events. The sensory effects of trauma, cognitive and emotional responses of 7 participants between five and ten years old are outlined. A group of 36 children who witnessed an extreme event outside their school were also included as participants. The findings indicate that the sensory experiences were overwhelming and often prompted disturbing emotions, thoughts, and behavioural responses. All participants engaged in post-traumatic play and retrospective intervention fantasies as expressed in words and play.

Keywords:

Allostatic load; child witness to trauma; differential responses; extreme life events; traumatic memory; sensory effects.

INTRODUCTION

Blom's 1986 study highlighted the challenges of young witnesses to trauma. A truck crane collided with a pedestrian overpass next to a school in Michigan, while children were on their way to school. There were about 20 children on the bridge who were directly impacted and injured. More than 100 children witnessed the event from the school grounds. Blom's work focused on these witnesses. The research, on which this article is based, was influenced by the work of Blom (1986) and specifically the attention to the responses of young witnesses to trauma.

The main aim of the study was to develop a social work practice model for intervention with young children traumatised by witnessing extreme life events through intervention research. This article aligns with a specific objective of describing young children's responses following the witnessing of extreme events.

Bloom and Farragher (2013) emphasise the importance of having a "scientifically informed and complex biopsychosocial understanding of what goes wrong for human beings under conditions of overwhelming stress" (Bloom & Farragher, 2013: 5). The contribution of this article is a representation of the voices of children who have been traumatised by witnessing diverse traumatic events. Murray (2019: 1) postulates that researchers should listen to the voices of children and attend closely to the views of each child. This article is an example of child-centred qualitative research (Crump & Phipps, 2013: 131) that seeks to enhance the understanding of the responses of young witnesses to extreme events, from their own perspectives. Children who witness extreme life events often experience severe multi-dimensional distress. By gaining insight into their responses, social workers and other professionals can tailor interventions that address the needs of young witnesses of trauma.

In this article, after a brief overview of developmental aspects and trauma, the methodology and profile of participants will be outlined. The findings will then be discussed, supported by participant quotes, and drawings.

DEVELOPMENTAL ASPECTS

The age range of the participants, spanning from five-to-ten years old, represents a critical period of cognitive, psychosocial, and physical development. Within this developmental stage, children are transitioning from pre-operational to concrete operational thinking (Gibs & Harley, 2021: 10; Lopez Levers, 2023: 28; Tucker, 2017: 273-277). However, exposure to traumatic events can disrupt this developmental trajectory by diverting attention away from typical developmental milestones (Goodyear-Brown, 2019: 24; Lopez Levers, 2023: 27; Malchiodi, 2021: 5). Traumatic experiences can redirect developmental pathways at crucial junctures when children are acquiring new cognitive abilities (Davies & Troy, 2020: 5). Van der Kolk (2015: xii) underscores that coping with trauma drains the individual's energy and emotional resources, making them less capable of attending fully to present demands.

As Bloom and Farragher (2013: 5, 10) indicate, trauma can significantly derail the normal maturation processes of the brain, body, and mind, effectively altering the developmental architecture of the brain itself. Peverill, Rosen, Lurie, Sambrook, Sheridan and McLaughlin (2023: 7) elaborate how childhood trauma extensively affects the structural development of the brain. It is evident that the capacity of traumatised children to engage in age-appropriate tasks and activities may be compromised when their cognitive and emotional resources are usurped by traumatic experiences (Kerig, 2023: 384).

TRAUMA

There are many definitions of trauma and what one person experiences as traumatic might not be perceived similarly by someone else. Additionally, there is a distinction between a traumatic event and trauma. Trauma is rooted in the nervous system, the body, and the psyche, rather than in the traumatic event (Payne, Levine & Crane-Godreau, 2015: 5). Briere and Scott (2015: 10) conclude that trauma can temporarily overwhelm the individual's internal resources, or coping abilities generating extreme distress, leading to psychological symptoms. Miller-Karas (2023: 18) link traumatic experiences with life-threatening events. All participants in this study experienced death or threatened death. For this research, such occurrences were considered extreme events. Broska, Poganietz and Vögele (2020: 4) define an extreme event as a "dynamic occurrence within a limited timeframe that impedes the normal functioning of a system or systems" and include smaller and large-scale events in the definition. This research focused on small scale events that potentially impeded the functioning of the participating children and their families.

The concept, allostatic load, is important in this study. The allostatic stress load is the cumulative "wear and tear" on the body that expands when the person experiences on-going or chronic stress (Bloom & Farragher, 2013: 9; Miller-Karas, 2023: 21; Wiley, Bei, Bower & Stanton, 2017: 283). The allostatic load is associated with the physiological consequences of repeated or chronic stress exposure. A combination of positive, tolerable, toxic, and traumatic stress leads to allostatic load (Bloom & Farragher, 2013: 9; Miller-Karas, 2023: 21). Wiley et al (2017: 284) argue that allostatic load is related to the process of allostasis, which means that during change processes and challenges, individuals repeatedly try to adapt and sustain stability. The extreme events to which participants were exposed aggravated their allostatic loads in the form of toxic and traumatic stress.

METHOD

In this phase of the study, it was appropriate to adopt a qualitative approach considering the importance of obtaining rich and nuanced data to inform the larger intervention research study. Information on the responses of participants to trauma has served as the basis for interventions to address the identified needs. Time was spent with the participants in a comfortable space where they could engage in play and discuss what happened to them, at their own pace.

Research design

Intervention research (Roestenburg & Strydom, 2021: 461) offered a framework to develop a social work intervention for young children who have witnessed trauma. Within the broader framework of intervention research, a qualitative descriptive research design, as outlined by Sandelowski (2000), guided the process to meet the objective of describing the responses of young children after witnessing

extreme life events. In line with the perspective of Sullivan-Bolyai and Bova (2021: 4) a qualitative descriptive design focuses on providing an accurate description of what participants contributed, keeping close to their accounts and perspectives.

Recruitment and informed consent

The prospective participants were a hard-to-reach population. Purposive sampling ensured that information-rich participants were selected. The inclusion criteria required participants to fall within the specified age range (five to ten years) and to have witnessed extreme life events. Recruitment efforts involved disseminating research notifications to social workers, schools, and faith-based organisations, eliciting referrals from these entities. In addition, the researcher actively monitored media reports of extreme events involving child witnesses. In such instances, the researcher engaged potential mediators, such as: clergy; school principals; and friends of the affected families. These mediators provided an overview of the research to the parents of potential participants. Upon these parents expressing interest, the researcher subsequently initiated contact to provide more detailed information about the study. Following this, the informed consent process was meticulously followed for those who expressed their willingness to participate.

In accordance with the Belmont Report (1979: 23195), both parents and children were fully informed about what would be expected of them during the research, as well as about voluntary participation and the option to withdraw at any stage without consequences. After obtaining parental permission, the child participants gave their assent.

Data collection and analysis

Semi-structured interviews were conducted with seven participants and group sessions with 36 children who witnessed an accident at their school, their parents, grandparents, siblings, other family members, teachers, principals, and professionals, such as social workers and psychologists who had contact with the participants. In the profile of the participants, only the direct contacts with the participants are mentioned, in line with the focus of this article. Child witnesses who participated in the study were, as part of the research, involved in the intervention sessions. During contact with the child participants, trauma scene drawings were especially helpful to elicit trauma-related discussions (Van der Merwe, 2009: 294). No drawings were interpreted, but the children often talked while drawing and the researcher asked probing questions. The transcripts of these discussions were thematically analysed by reading and re-reading the transcripts. The analysis was iterative and moved between initial coding, more specific coding linked to quotations of participants, and then to themes and sub-themes (Braun & Clarke, 2022: 6).

Ethical considerations

Ethical clearance for this study was obtained from the Stellenbosch University where the author pursued a DPhil. in Social Work during the late 1990s. The research proposal was subjected to a simultaneous scientific and ethical review, receiving approval for both components. However, it is important to note that at the time, the assignment of ethics numbers was not a standard practice in most universities, including the issuing institution. This research period precedes the emergence of more contemporary ethical guidelines, such as the 2010 Singapore statement on research integrity, the 2013 Helsinki declaration, and the 2015 Department of Health, Ethics in Health research guidelines (Greeff, 2021). Instead, during this era, guidance for research involving human participants often relied upon the principles of respect, beneficence and justice outlined in the 1979 Belmont report concerning research with human participants (Belmont report, 1979; Botma, 2022: 5).

Privacy and anonymity protocols were followed by separating participant information from all other data. Participant identification was anonymised by using numbers on all drawings and transcripts. The research was also conducted within the scope of practice and the Code of Conduct for social workers.

Goodyear-Brown (2019: 197) describes practical strategies to hold the “hard story” of children and to foster emotional safety during discussions and play related to their traumatic experiences. One such strategy involves using lined-up dominoes with sticky notes that allow children to write different aspects of a memory or an event (Goodyear-Brown, 2019: 67). This way of working externalises memories and

grounds the child in the here-and-now similar to trauma scene drawings. The Subjective Units of Distress (SUDS) awareness is an important part of the “holding” of the trauma story and ensuring a sense of safety. During research interviews, children were empowered to stop trauma-related discussions at any time if they experienced distress. The SUDS were discussed and role-played with participants. Non-verbal cues, such as shaking a rattle or other gestures, were accepted forms of communication indicating a desire to disengage from traumatic material. In addition, the researcher remained attuned to subtle physical indicators such as toe movement, and loss of attention, using these cues as prompts to address SUDS levels. Webber, Smith and Mascari (2023: 452) refer to this process of acknowledging distress and re-grounding as “returning to the window of tolerance”.

Participants

Participants in this study were exposed to extreme events as indicated in Table 1, which provides an overview of the traumatic events witnessed by them. The average duration of the exposure of participants to the extreme events was between 30 and 60 minutes.

Table 1: Profile of participants

PARTICIPANT NUMBER AND GENDER	AGE AT TIME OF RESEARCH (age at time of extreme event)	TRAUMATIC STRESSOR	RESEARCH INTERVIEWS
Participant 1 Male	8 years (8 years)	Witnessed how his brother was hit by a car and fatally injured while riding his bicycle (<i>pedal bike death</i>)	6
Participant 2 Male	8 years (8 years)	Home burned to the ground while two children were home alone (<i>house fire</i>)	4
Participant 3 Male	9 years (9 years)	Witnessed near drowning of older brother in a flooded river. This was the only case in the research linked to a natural disaster (<i>near drowning of brother</i>)	1
Participant 4 Female	5 years (3 years)	Witnessed parents' injuries and mutilation in a serious motor vehicle accident (<i>motor vehicle accident</i>)	4
Participant 5 Male	6 years (6 years)	Survivor in crash between minibus and petrol tanker (<i>minibus-taxi/petrol tanker collision</i>)	1
Participant 6 Male	8 years (5 years)	Saw mutilated body of mother after murder (<i>mother mutilated and killed</i>)	3
Participant 7 Male	10 years (9 years)	On scene a few minutes after mother was killed outside the home (<i>mother shot</i>). This participant was included in the dissemination phase of this study.	7
W-community group: 36 children	Grade 1	Witnessed how two young children died under the wheels of a bus	

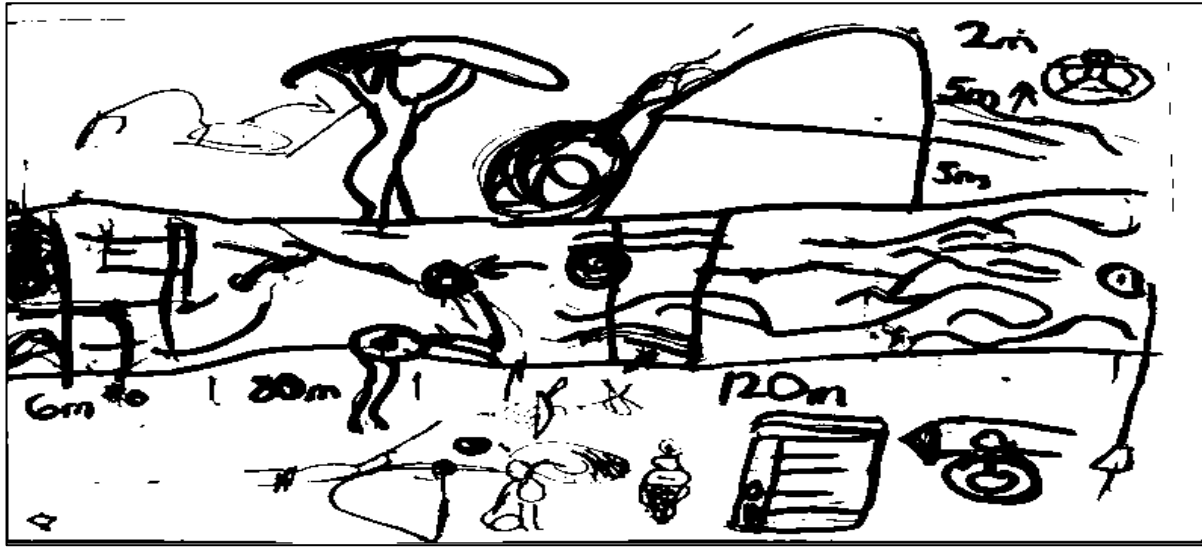
The W-Community group, as shown in Table 1 consisted of 36 children in a primary school in a community in Gauteng. This group of participants witnessed how two young children died under the wheels of a bus right in front of the school. The name of the community is not mentioned to protect privacy and confidentiality.

The 36 participants who witnessed the W-incident were all exposed to loss of life and witnessed mutilation. P1 (*pedal bike death*) witnessed his brother's death as well as some mutilation (serious head injuries), while P5 (*minibus-taxi/petrol tanker collision*) witnessed the deaths and mutilation of two friends and unknown passengers. He was trapped in the wreckage of the taxi and could not escape exposure to the mutilation of the deceased passengers. Both P6 (*mother mutilated and killed*) and P7 (*mother shot*) lost their mothers and witnessed mutilation. The mother of P6 was killed in a stabbing incident at work while the mother of P7 was shot by a neighbour. P2 (*house fire*) nearly died in a house fire, but he managed to save his brother and himself. P3 (*near-drowning of brother*) and P4 (*motor vehicle accident*) witnessed the near-death of family members. P4 also witnessed the mutilation of her mother's face resulting from injuries sustained in the automobile crash.

FINDINGS

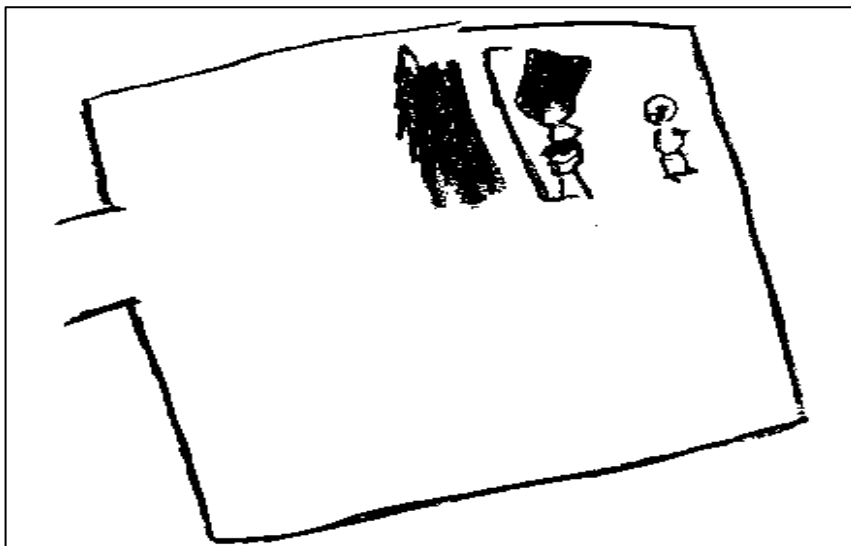
During individual sessions with the child participants, they made rudimentary trauma scene drawings representing different parts of the traumatic events. The trauma scene drawings were not spontaneous drawings. The researcher requested participants to draw basic outlines of the scenes of the trauma. The drawings served as a backdrop for the children to show what they have witnessed, using additional drawings and basic trauma-related items such as small play figures. Webber, Smith and Mascari (2023: 452) use the word, storyboards, to describe a way of working, similar to trauma scene drawings, in which scenes from the trauma are drawn on various panels to depict what happened. Figure 1 shows the trauma scene drawing of P3. He used play figures to illustrate and narrate the near-drowning incident involving his brother.

Figure 1: Near drowning of brother (P3)



Some participants used just one trauma scene drawing over a few sessions, expanding their trauma narratives on the drawings. On a very basic trauma scene drawing (Figure 2), P6 described how and where he and his father discovered his mother's body after she was murdered at her workplace.

Figure 2: Mother murdered at work place (P6)



Participants were able to show and describe what they had witnessed using trauma scene drawings. They did not always convey a full verbal narrative of their experiences, but they could form play narratives, where they followed their unique processes to make sense of what had happened.

Multi-dimensional trauma responses

Since the study's completion in the late 1990s, there has been an upsurge in literature concerning the multi-dimensional responses to traumatic exposure. Notably, the present discourse on trauma focuses extensively on the neurobiology of trauma (Ford, 2020: 35; Tomko, 2023: 56; Treisman, 2021: 58; Van der Kolk, 2020: 605). However, it is worth acknowledging that Young (1995: 264) has already eloquently described the biology of traumatic memories in 1995. Going back even further, Young (1995: 264) references a 1922 report on shell-shock (Enquiry into Shell-Shock, 1922) which had already established a link between the endocrine glands and the "vegetative nervous system".

Currently, there is a shift away from pathologising trauma toward understanding reactions to traumatic stress within a growth-directed context. However, it is widely recognised that after traumatic exposure, individuals may be entrenched in survival mode, experiencing persistent hyperarousal or hypoarousal (Ford, 2020: 35). This can lead to cycles of re-experiencing and avoidance, while the traumatic event remains mostly unaddressed. Ford and Greene (2017: 101) assert that exposure to trauma can result in a multitude of life-changing biopsychosocial effects. Manda (2015: 1) adds moral and spiritual aspects to these changes. P7, whose mother was murdered in their backyard, perceptively said that wisdom should be added to explorations of thoughts, emotions, behaviour, sensory experiences, and body reactions, within the context of trauma. The responses of the participants will be discussed in this section in the following themes and subthemes as outlined in Table 2.

Table 2: Themes and subthemes

Themes	Subthemes
Sensory experiences	
Cognitive aspects	• Shattered assumptions • Dialectic nature of trauma
Emotional responses	• Fear, anxiety, and worry • Sadness, loss, and grief • Anger and rage • Guilt, blame and shame • Helplessness
Behavioural responses	Post-traumatic play and intervention fantasies
Spiritual and moral aspects	

Sensory experiences

All 43 participants in the study witnessed visually disturbing material. Additionally, their traumatic memories encompassed sensory experiences related to smell, sound, touch, taste, and spatial orientation (proprioception). It may be helpful to map out these sensory experiences, as demonstrated in Table 3, which is an example of the sensory experience of P2. This way of working aligns with the work of Aoki and Nozawa (2024: 285), Gibbs and Harley (2021: 128) and Malchiodi (2021: 4), emphasising a therapeutic focus on the sensory aspects associated with trauma.

Table 3: Plotting the sensory experience of P2

P2 (house fire)		
	Visual	Fire, Smoke
	Auditory	Explosion, clapping sound; crying of brother
	Touch/tactile	Heat
	Smell/olfaction	Chemical smell; smoke; fire
	Taste/gustation	Smoke
	Spatial/Proprioceptive	Running with brother to escape the fire

Table 4 can be used to assess the sensory experience of young witnesses to trauma.

Table 4: Assessment of sensory experience

Name:			Date:		
Extreme event:			Date:		
Perceptual experience	Description	Duration of exposure	Degree		
			Mild	Upsetting	Severe
Visual					
Sound					
Smell					
Touch					
Taste					
Spatial					

Table 5 summarises the sensory experiences of the participants. There is a link between the senses and triggers when intense images are re-experienced as flashbacks as if happening right now (Brewin, 2014: 9; Van der Kolk, 2014: 66), which can lead to sensory overload (Welsh, 2018: 19). Aoki and Nozawa (2024: 286) distinguish between moving images, like a vehicle in motion, versus still or static images, like faces. To facilitate trigger management, it is imperative to understand the type of sensory experiences or sensory fragments (Corrado, 2024: 41; Gibbs & Harley, 2021: 111).

Table 5: Sensory experiences of the participants

Participants								
	W-community	P1 (pedal bike death)	P2 (house fire)	P3 (near drowning of brother)	P4 (motor vehicle accident)	P5 (minibus-taxi/petrol tanker collision)	P6 (mother mutilated and killed)	P7 (mother shot)
Visual	Mutilation Body parts Blood Mud Rain	Mutilation	Fire Smoke	Struggle Panic Whirlpool	Mutilation Crashed car	Mutilation Body parts Crashed car and tanker	Mutilation Blood Partial decapitation	Body posture Blood
Sound	Spades used to pick up bodies Rain	Crash Impact	Explosion Clapping sound Crying of brother	Screams for help Sound of river	Crash Screams	Warning shouts Screams of dying people Sound of Jaws of life	Father yelling	Gunshot
Smell	Blood Corpses	Blood Oil	Fire Smoke Chemical smell	Mud Water Sweat	Petrol Bodies Blood	Blood Chemical	Blood (like fire, tin)	Blood
Touch	None	Tried to lift brother. Stood at fence while watching paramedics – touching the metal of gate	Heat	Thorns in his feet when he ran for help Breathless with a burning sensation in his throat	Stranger offering comfort by holding her			
Taste	Metallic	Could not recall	Smoke	Sweat, salty	Chemical	Chemical	Sweet cool drink	Bitter taste

Spatial movement	Running away; or being motionless at the scene	Stood motionless at gate	Running with brother	Running to get help	Sensitive to tipping (due to movement of the car during impact)	Sensitive to tipping (due to crash)	Stood motionless	After being motionless initially, he ran away
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Within the W-group, heightened sensitivity was observed to auditory cues such as the sound of spades, environmental conditions such as overcast, rainy weather and mud, seeing buses, and olfactory stimuli such as the smell of blood. P6 experienced exposure to distressing sensory images, a description provided in trauma scene drawings (Figure 2). Additionally, P6 recounted the following:

“Here was the desk. And here mom lay, behind the desk. Here was the blood, a lot of blood. There was glass everywhere and her face was on the glass and the blood. Her hands were bounded at the back with things in her flesh. Here was the other auntie. She screamed ‘help, help’. My dad saved her life. There was blood on her face also. There was blood on the other side of the desk also. The blood was from the door to the back of the desk. Mom was lying with her whole body in the blood. I said ‘Mom’, but she did not answer.”

Although P6’s father urged him to leave the building almost immediately after entering, P6 captured clear details about the event. While he could vividly describe sensory experiences, initially the sequence of events and chronological placement of the event on his timeline were incorrect. At first recalling being a baby when it happened, P6 later remembered being able to walk in and run out, allowing him to accurately place the event chronologically on his timeline. Sensory exposure can still be encoded after impact, as evidenced by P6, who could clearly recall the taste of a cold drink given to him by someone after he left the scene where they found his mother.

Following the W-accident, it was obvious that even the young witnesses of the event, could already narrate previous extreme life events to which they had been exposed such as other car accidents, death of family members and freak accidents. Their reactions to witnessing the W-accident were influenced by the templates they had formed because of such previous exposure. Furthermore, their exposure to the W-incident would have resulted in the formation of new templates that would include many memory fragments captured during the impact of the incident. Van der Kolk (2015: xvi) describes how sensory imprints of trauma influence multi-dimensional responses in the aftermath. It will be outlined in the next sections how the children reacted to their traumatic exposure, driven by the sensory imprint.

Cognitive aspects

There is an intricate interplay between responses dictated by the primitive brain and the higher brain functions. Responses cannot be exactly framed and located within a specific brain region (Aoki & Nozawa, 2024: 284). It would appear that, in the early time span following traumatic exposure, unregulated responses originating in the limbic system are more prevalent. In practice, it has been found that children struggle at first to counter strong emotions with logical thought patterns, particularly when memories of the event are fragmented, and the logical sequence of events has not been played out or verbalised. Shattered assumptions and changes in belief systems will be outlined next.

Shattered assumptions

Janoff-Bulman’s (1992) seminal work on shattered assumptions and the loss of the assumptive world sheds light on how trauma affects individuals’ core beliefs about themselves and the world around them. Traumatic exposure can shatter fundamental assumptions, such as the belief in the worthiness of the self and the world’s meaningfulness and benevolence (Corrado, 2024: 44; Janoff-Bulman, 1992: 52; Lopez Levers, 2023: 24). According to Gordon (2019: 31), exposure to trauma can prompt individuals to confront existential questions about their identity and purpose. Wycoff and Franzese (2019: 5) refer to the beliefs about themselves and their caregivers that traumatised children carry in their metaphorical

“invisible backpacks”. For example: *‘I am not worthy; I have no power in this dangerous world’* and *‘Caregivers are unreliable and not able to protect me’*.

For traumatised children, such negative beliefs are a heavy burden to bear in the assumptive world. While working on a timeline, P7 said: *“My road [of life] is running into a dead end.”* This statement can be linked to shattered assumptions and can also point to a sense of a foreshortened future leading to difficulties in goal setting and a positive future orientation (Corrado, 2024: 41; Terr, 1990: 224). P7 also said: *“I was a child till about four-to-five years and then, like a Baby Genius, I shot up to be an adult.”* He asked: *“Do you know what I want to be when I grow up? I just want to grow up.”* P1 verbalised a change in self-perception when he said: *“I am not a cool dude anymore.”*

P6 engaged in post-traumatic play, staging a scenario with play figures, representing his family members, in a graveyard setting where they died one-by-one and were buried. When only the father and dog-play figures remained, P6 said: *“...and the father and the dog lived unhappily ever after.”* This shift from the conventional ‘happily ever after’ to ‘unhappily ever after’ in this participant’s narrative reflected the weight of the ‘invisible backpack’, which added to his allostatic load. Negotiating shattered assumptions about oneself and the world can be difficult amid developmental demands and the everyday challenges of living. The dialectic nature of traumatic material further compounds this burden, as will be described next.

Dialectic nature of trauma

Herman (1997: 1) describes the dialectic nature of psychological trauma, where individuals oscillate between denial and re-experience, stating: “The conflict between the will to deny horrible events and the will to proclaim them aloud is the central dialectic of psychological trauma.” Already in 1990, Terr (1990: 77) talked about the “blank spot in memory and a blank spot in feeling.” Added to this, Gordon (2019: 31) mentions emotional numbness, which can lead to isolation from possible social support. Goodyear-Brown (2019: 19) alludes to an intricate “dance toward and away from trauma content.” Similarly, Beckley-Forest and Monaco (2021: 10) allude to children moving in and out of traumatic material. Levine (2015: 55) uses the term, “pendulation” to describe the oscillation between contraction and expansion of traumatic material.

P7’s dialogue contained fragments indicative of the dialectic nature of trauma when he described the many memory fragments associated with his traumatic experience, as: *“...a wheel with many pictures”*. He metaphorically referred to such trauma memories as: *“...the red flame”*, or *“...brain visions”* and *“...a windstorm”*. He said he: *“...goes somewhere in his head when the red flame overwhelms his thinking”*. He would indicate how full his head was with the “red flame” in the week preceding each session and said: *“I am bundling up all my words until I come here to talk about the red flame”*. He also said: *“It [the memories] flows through, and then I block it away”*, illustrating the ongoing struggle to confront versus avoid traumatic content. P7 acknowledged the safety mechanism of SUDS, recognising its role in the management of distress:

“I can use the rattle-SUDS when I do not want to talk about what happened; but I am keeping my words until I am here. I can mellow out here [the session]. He also perceptively said that I am in a bubble, but the problem is, I have spikes and the spikes are going to burst my bubble. I need a stainless-steel bubble”.

The metaphor of the bubble (protection) with spikes (danger) is another good example of the dialectic nature of P7’s memory process. P6 presented a typical dialectical acknowledgement versus denial of trauma-related fears expressed as follows: *“Sometimes it feels as if I am afraid, but I am not”*. This statement reflects the ambivalence and complexity of his emotional experience, in which he may recognise the presence of fear while simultaneously attempting to distance himself from it. P6 further described the visceral nature of his distress, stating that: *“...it feels as if my eyes are watery when I think of Mom”*. This sensory detail illustrates the intense emotional response triggered by thoughts of his mother. However, he then juxtaposed this with a vivid metaphor: *“Then a lorry comes full speed and drives over me. Then I am dead. That is how it feels”*. This metaphorical description encapsulates the overwhelming and catastrophic nature of his fear, highlighting the profound impact of trauma on his psyche. Overall, P6’s narrative highlights the intricate interplay between acknowledgement and denial in processing trauma-related emotions.

Van der Kolk (2014: 2) addresses the core of the dialectic nature of trauma by highlighting the fact that the rational part of the brain attempts to deny what happened and succeeds in many ways. In contrast, the primitive brain retains implicit sensory-linked memories that remain prone to reactivation at even the slightest reminders of traumatic exposure (Mark-Griffin, 2023: 17). As a result, a “recalibration of the brain’s alarm system” occurs, which can result in faulty danger messages from the primitive brain (Van der Kolk, 2014: 2). In a similar vein, Goodyear-Brown (2019: 23) mentions “dysregulation of the brain stem” caused by trauma. This dilemma, grounded in the difference in the functioning of the two brain regions, paves the way for the oscillation between the approach and the avoidance of traumatic material.

Traumatic exposure causes an interruption in episodic memory. Fragmented traumatic memories are primarily situationally accessible or implicit when triggered by environmental and intrapersonal cues. It inevitably causes physiological and psychological arousal that aggravates the difficulties with meaning-making and working toward verbally accessible or explicit memories (Damis, 2022: 63; Van der Kolk, 2014: 178). Damis (2022: 64) refers to Brewin’s work on the Sensory Representational System (S-Reps) and the Contextualised Representational System (C-Reps) (Brewin, 2014: 88), which can be associated with implicit memory (S-Reps) and explicit memory (C-Reps). In line with this, Levine (2015: 21) describes how implicit memories are grounded in senses, affect and behaviour, often as part of subconscious processes. The dialectic nature of trauma, with pendulation between denial and re-experience can be energy consuming. The intra-psychic process of numbing and denial, as well as the inability to recall details of the events, was more prevalent in participants where loss of life occurred.

Emotional responses to trauma

Herman (1997: 34) highlights on the one side the disconnect between “normally integrated functions” when traumatised persons may feel powerful emotions that are disconnected from the extreme event, while on the other side where they have clear, but emotion-free memories. Levine (2015: 22) points to the important link between emotions and body reactions.

P7 mentioned his emotional responses in general and said that he felt “*bloated with feelings*” after his mother’s murder and that sometimes it was difficult for him to identify a specific feeling. He indicated strong feelings of heaviness, saying: “*My heart feels like a block of black cracked ice*”. Although it is difficult to clearly separate the emotional responses, fear and anxiety, sadness, loss and grief, anger and rage, guilt, blame and shame will be discussed next.

Fear, anxiety, and worry

Manda (2015: 2) discusses how trauma-induced fear and terror derail a sense of comfort. Learning theories, such as fear conditioning, offer insights into fear following exposure to traumatic stress (Ford & Greene, 2017: 101; Gibbs & Harley, 2021: 122), when a fear structure or fear network develops (Aoki & Nozawa, 2024: 284). This fear structure may encompass fears that are directly related to the incident or conditioned unrelated fears, which can permeate other areas of life. Santen (2007) cites an example of fear described by a 12-year-old boy who referred to his trauma-related fear as “the brain-cutter”, which, “is a big fear-factory with 11 fear-machines. The fear-machines must prevent that memories will come out. The fear-machines tick, and then the fear is coming out” (Santen, 2007: 60).

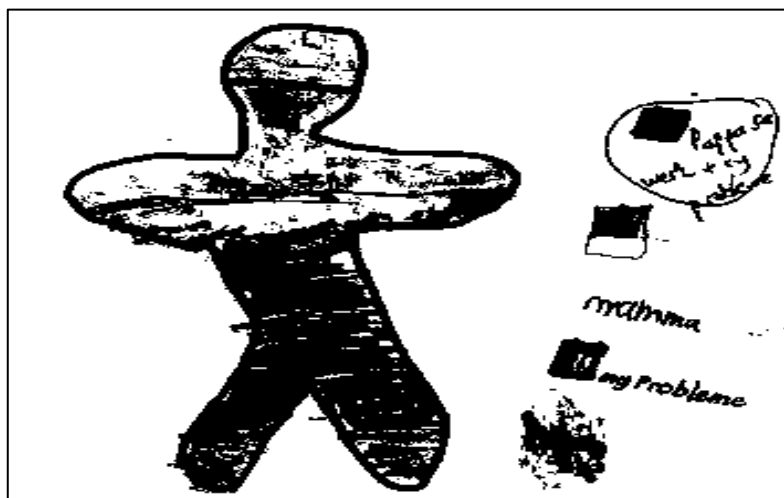
P4 was obviously afraid of getting in a car. P2 showed a direct trauma-related fear of a television, as it was understood that the house fire was caused by a malfunctioning television. This participant also expressed fear that the event would recur. P1 developed a fear of sleeping or bathing alone. He used to bathe with his brother. He said that he relived what happened, especially at night. He was also scared of ghost stories he had heard before his brother’s death, as if those stories had gained new significance after the extreme event. Two months after his brother died, P1 reported that fear and anxiety were his main feelings. P6 indicated his high fear levels on the drawing in Figure 3.

Figure 3: Line drawing indicating fear levels (P6)



In Figure 4, P7 depicted various levels of worry and indicated what caused it. He said that: “Everything is going wrong with me”. P7’s family struggled with complex psychosocial problems, and he received little support. He described family members as: “It is like having a lot of zombies around me”.

Figure 4: Worry depicted by P7



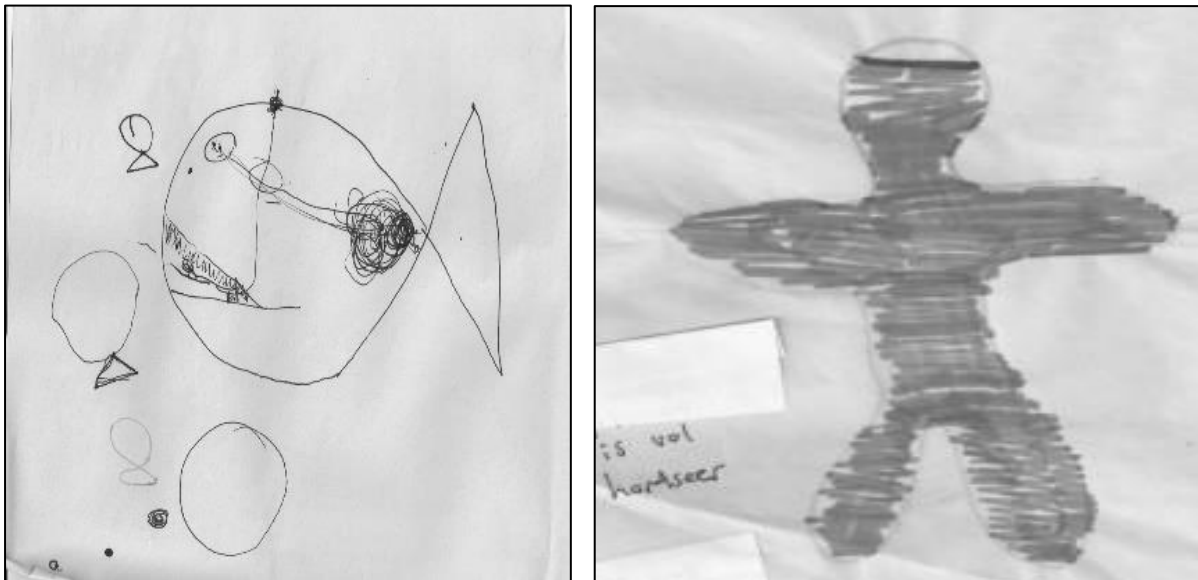
Welsh (2018: 4) classifies worry as a subdivision of anxiety. Anxiety and worry can cause sleeping problems, muscle tension, irritability, restlessness, and problems with concentration (Welsh, 2018: 5). Worry can occupy considerable space in the minds of young children when they become hypervigilant and worry about their own safety and the safety of others (Goldbeck & Jensen, 2017: 5). In this regard, P7 stated: “I now have eagle eyes like a detective, to keep me safe”. Children often have difficulty controlling their worries.

Sadness, loss, and grief

Participants in this study showed sadness on a continuum from lingering sadness to traumatic bereavement in those cases where there was loss of life. Longing for the deceased was a pervasive reaction in P1, P6 and P7. Figure 5 illustrates P7’s sadness following the death of his mother. He said that: “My mother’s life was cut short, and My mom’s life sunk; her road has been cut”. He also indicated

that his sadness was connected to anniversary events such as the day of the week when she died, places and sounds linked to the places they visited together, i.e., hearing church bells. He further stated: *"I feel, as if I am a whale full of steel stones"* (see Figure 5).

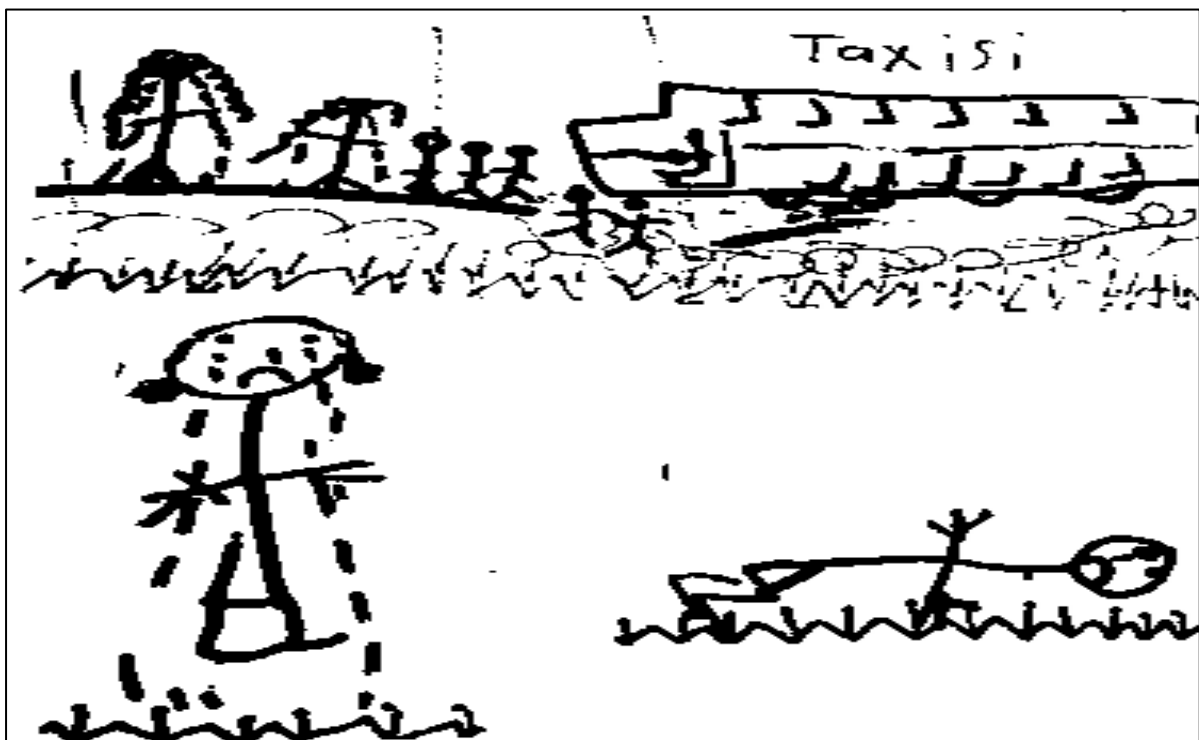
Figure 5: P7 like a whale full of steel stones and full of sadness after the death of his mother



The sadness of the participants did not always emerge as crying, but also as quiet and withdrawn behaviour. P1 related to a book on bereavement with a metaphor of upside-down hearts, indicating sadness. He said: *"My heart is heavy with sad. It is upside down. It looks like a tea"*. P4 made a drawing of a pain worm in which she indicated various extreme life events and upheavals related to the parents' complicated relationship. She also indicated school-related incidents that made her sad. P7 said that his sadness over his mother's death is a *"pale feeling without colour"*.

In Figure 6 one of the W-group participants showed how upset she was when witnessing the intense sadness of the family members of the deceased children.

Figure 6: The aftermath of the extreme event



It was learnt from the W-incident and P1 that children can be spared some upsetting sensory experiences if they are removed from the trauma scene as soon as possible. It can be very difficult for them to witness extreme emotion expressed by family members. The activity surrounding rescue efforts can also be disturbing.

Some extreme events can lead to the loss of familiar environments. This was the case with P2 (house fire), P6 who was removed from his father's care, and P7 who had to move to a different province to live with his father. Such changes in living arrangements can complicate the responses to extreme events when children must adapt to new environments, new peers and schools.

Anger

Anger is a common post-trauma reaction, often emerging without specific provocation (Gordon, 2019: 30) or be directed at different targets such as the perpetrator, third parties, the legal system and self-directed (Lenferink, Nickerson, Kashyap, De Keijser & Boelen, 2024: 182). Beckley-Forest and Monaco (2021: 21) refer to embodied "frozen rage". All the participants verbalised anger and/or portrayed it in play re-enactment and post-traumatic play. For example, P1 said: "*I get so angry I can melt ice in my ears*". P2 verbalised anger while vigorously scribbling on a line drawing of a television set (the source of the fire).

Guilt, blame and shame

Guilt is closely associated with self-directed anger (Lenferink et al, 2024: 182). This interplay may lead to a mind burdened with self-reproach (Gordon, 2019: 31). Furthermore, Lopez Levers (2023: 5) differentiates guilt, which relates to specific behaviour, from shame, which pertains to a person's sense of worthiness.

P1 expressed his sense of guilt because he took his brother from the safety of the garden enclosure, to drive to a friend on their bicycles. P1 expressed remorse, saying: *I stood at the gate and cried because it was my fault. We should not have gone out with our bicycles. We should have stayed inside.* P1's feelings of guilt were further illustrated through elaborate symbolic play involving a crocodile play figure placed in a pretend dam in a desert landscape. Within this play scenario, he put snakes in the desert with various props such as dolls and cars. He said that two of the dolls were himself and his [pretend] twin. In clinical practice, it was noticed that children sometimes introduced a twin figure or a friend into their play, almost as if to bolster their ego strength. P1 emphasised the hazardous nature of the desert in his play by placing a 'No Entry' sign, symbolising the perceived danger posed by lethal snakes inhabiting the desert. The "No Entry" sign and the desert filled with poisonous snakes in P1's play can be symbolically linked to the dangerous road outside the garden gate, where the traumatic accident occurred. P1's play scene becomes a metaphorical representation of the events surrounding the accident. He placed a toy camel at the entrance of the desert, to kill the dangerous snakes. He then linked the play almost directly with the traumatic event, saying: *The boy took the baby into the desert. He took him by his head and threw him on the snake.* In his narrative, he acknowledged his awareness of the danger present on the road outside his home, but still chose to take his brother there, symbolically represented as "*throwing him on the snake.*"

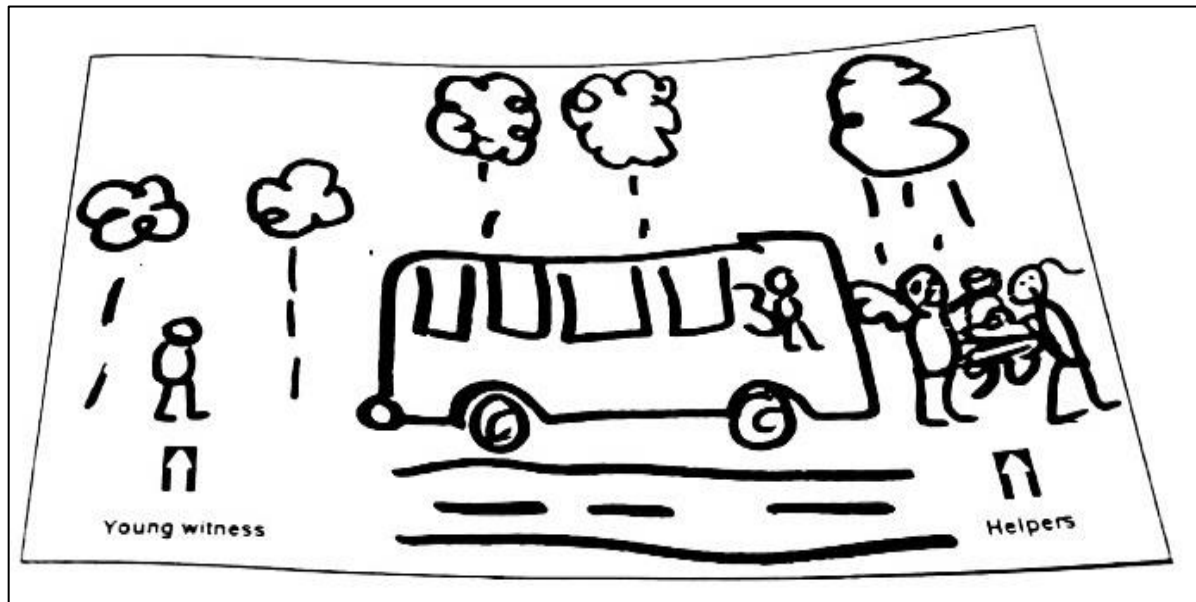
Following this intense play, P1 engaged in aggressive play, symbolising his frustration and turmoil. Pushing over all the toys and chasing the crocodile out of the dam reflects his attempt to release pent-up emotions. The subsequent action of P1's play figure going to catch fish and leaving the baby doll in the desert further highlights his internal conflict and feelings of guilt. This segment of play illustrates how traumatised children use play to process and make sense of fragmented memories and associated emotions. Through symbolic play, children like P1 can explore and express their inner turmoil, providing insight into their psychological struggles following a traumatic event.

Self-blame and shame can prevent people from talking about their traumatic experiences (Welsh, 2018: 1). Consequently, some repetitive thoughts and triggers associated with the traumatic experience remain unexpressed. Welsh (2018: 2) suggests that voicing these "darkest experiences" is crucial for the process of integrating traumatic events.

Helplessness

Beckley-Forest and Monaco (2021: 17) frequently observe themes of helplessness in the post-traumatic play of children. An illustrative example of this sense of helplessness is shown in Figure 7, a drawing submitted by one of the participants in the W-group.

Figure 7: Drawing depicting helplessness



In Figure 7, the participant reverted to a type of tadpole figure, typical of earlier developmental stages. The absence of arms in the drawing may also symbolise a feeling of powerlessness. Additionally, the participant's depersonalisation, characterised by the lack of facial features and expression, further underscores the sense of helplessness experienced. According to Gordon (2019: 18) the traumatised person can be represented as "tiny, diminished, peripheral, barely surviving" in children's drawings, as shown in Figure 7.

P5 was helpless when he was trapped in a minibus-taxi after a horrific accident. In this confined space, he was unable to escape the distressing sights and sounds, which later solidified into strong traumatic memory fragments, manifesting as flashbacks and triggers. His distress was exacerbated by the physical proximity to the impact zone and the close psychological proximity to some of the deceased.

Similarly, P4 demonstrated helplessness in a play scene where she pretended that people were trapped in the wheels of play cars. She said: *"They had nothing sharp with them – only people in the wheel. They are just locked in the wheel. Nobody will come [to save them], as these trapped people are the only people living there"*. This symbolic play reflects retrospective attempts by many participants to grapple with and reverse feelings of helplessness associated with their traumatic experiences. Through play, they strive to regain a sense of control and agency over the overwhelming events they faced.

Behavioural responses

In the aftermath of trauma, children often exhibit internalising and externalising behaviour (Cummings, Addante, Swindell & Meadan, 2017: 2729). Individual responses are influenced by mediating variables such as the pre-event context, individual characteristics, and event variables (Cummings et al, 2017: 2733). It is also worth noting that behaviour in the aftermath of trauma exposure can be adaptive rather than indicative of pathological patterns (Briere & Scott, 2015: 79). Terr (1990: 182) and Herman (1997: 39) both refer to post-traumatic play and re-enactment as behavioural expressions of memory.

Post-traumatic play and intervention fantasies

Goldbeck and Jensen (2017: 13) highlight that young children often engage in repetitive post-traumatic play to master their experiences and express intrusive memories. Similarly, Beckley-Forest and Monaco (2021: 17) observe that metaphors used by children during post-traumatic play can provide cues to the emotions and cognitions linked to the traumatic exposure.

When young children re-experience traumatic events, they often show remnants of the experience in their play (Cummings et al, 2017: 2729). Post-traumatic play has been extensively described in the literature. Pynoos, Goenjian, Tashjian, Karakashian, Manoukian, Steinberg and Fairbanks (1993) provide an early example, demonstrating how children's drawings reflected the aftermath of the 1988 Armenian earthquake, which resulted in the loss of over 25 000 lives. In the immediate aftermath of the earthquake, their drawings depicted scenes of disorder, with grey and colourless images depicting fallen trees and houses lying askew. However, as the community gradually recovered and the children integrated their experiences, their drawings began to incorporate more colour and symbols of hope, such as flowers. Briere and Scott (2015: 79) use the term "recovery algorithms" for such indications of re-experience, suggesting that they can eventually lead to the processing of traumatic experiences. However, post-traumatic play is not merely play; it is hard work, as illustrated by P7, who, while playing with a clay volcano, said that: *"I am not playing; this is serious, serious"*. This underscores the profound and often intense nature of post-traumatic play as children deal with their traumatic experiences.

Repetitive play can remain static over time (Beckley-Forest & Monaco, 2021: 11). Mastery of the trauma narrative can be observed in the way children use play material. For instance, a child may use a play sword to re-enact a witnessed stabbing incident. Such re-enactment may persist without significant variation over several play sessions, accompanied by a play narrative of applying red paint (symbolising blood) to the arm and compulsively washing it off. However, a significant shift occurs when the child begins to use the play sword for different purposes, such as pretending that it is a gearstick on a pretend car. This shift indicates a reduction in the intensity of the play object's association with the traumatic event and a decreased need for re-enactment.

Retrospective intervention fantasies are often observed in post-traumatic play. In one instance, P6 enacted a scenario where he locked a toy mother figure inside a play garage explaining: *"She [the mother] could not go to work as she was locked in the garage"*. The subtle message suggests that had his mother been unable to leave for work on the day of the event, she might still be alive. Additionally, P6 created a small notice board with the words: *"No thieves allowed. Don't come anybody here"*. He indicated that such a notice board has been placed at his mother's place of work, suggesting an intervention fantasy, as if to imply that if such precautions had been taken, his mother could still be alive.

P6 engaged in intricate pretend play showing how a police dog freed his deceased mother and her colleague by chewing through the ropes around their hands. P7 also expressed an intervention fantasy when he said: *"If I had a time-travel machine, I would have taken his [perpetrator] brandy away"*.

In what appears to be a retrospective intervention fantasy, P1 placed a police officer and a dog figure in his desert play scene to deter people from entering the dangerous desert full of snakes. He placed flowers in a green part of the desert play scene, where it rained, and while talking softly he placed a baby doll with a bottle in the drawing. He strategically placed road and traffic control signs on the play scene to *make it safe*. He scattered play figures of dead animals all over the desert, saying: *"People are not allowed there, and if they go there, they die"*. He added a play phone to the desert scene, saying that people can make S.O.S. phone calls from there. This intricate post-traumatic play reflected his traumatic experience and efforts to resolve the lingering effects.

Spiritual and moral aspects

Manda (2015: 1) emphasises that while a biopsychosocial lens provides valuable insight into trauma responses, it may not encompass the entire spectrum of these responses. Moral and spiritual dimensions also play a significant role and should be considered. The moral reasoning of the participants in understanding their experiences was evident when they discussed feelings of guilt and reflected on the negative behaviour of adults that contributed to the extreme events.

P7 demonstrated a strong belief that the actions of the perpetrator were influenced by two factors, namely alcohol abuse and the devil. He said: *"The devil made him [the perpetrator] do it. The devil asked Jesus if he may test [name of perpetrator] and by chance, it worked. He [the perpetrator] was*

remote-controlled by the devil.” He added that alcohol made the perpetrator *brainless* and then, almost philosophically, stated that: *“Life goes on”*. Spiritual responses intertwined with shattered assumptions were evident in the beliefs of P7. He frequently expressed the belief that his mother was in heaven, by stating that: *“I wish there was a golden phone up there [heaven] with unlimited airtime”*. He also said that: *“God is my secret weapon. The moon is God’s spotlight”*. As pointed out, he felt lonely within his microsystem, and his spiritual belief system offered strong support. However, he was ambivalent regarding this support, saying that: *“Sometimes it is as if God punishes me too much”*. It is important to consider the view of Malinga-Musamba and Maundeni (2012: 255) that, apart from the loss of the victim, survivors can experience intrapersonal loss when they question their beliefs, values, and faith. P7’s experiences underscore the complex interplay between trauma, spirituality, and personal belief systems, illustrating the profound impact of such events on an individual’s worldview and sense of self.

CONCLUSION AND IMPLICATIONS FOR PRACTICE

This qualitative study describes the responses of young witnesses to extreme events from their own perspectives, shedding light on the intricate interplay of sensory, cognitive, emotional, behavioural and spiritual aspects after traumatic exposure. By outlining the nuanced responses of children, this study underscores the importance of recognising and addressing the multifaceted effects of trauma in this vulnerable population, which can inform targeted interventions. Central to this understanding is the recognition of the individualised nature of trauma responses influenced by a complex interplay of individual, family, and community characteristics, including historical and intergenerational variables (Hallett & Donelan, 2019: vii).

Sensory experiences were a core aspect during and after extreme events and hold the key to trigger management and making sense of trauma responses, as trauma is encoded through the senses (Gibbs & Harley, 2021: 82). Levine (2015: 7) describes the fragmented and complex nature of traumatic memories and how these memories are imbued with the sensory experience and sensations of the traumatic event. Trauma has been said to “leaves traces” or “the body keeps the score” (Van der Kolk, 2014: 1). Levine (2015: 7) refers to the “hard and frozen imprints” or “engrams” left by traumatic experiences that lead to “perceptual priming” (Brewin, 2014: 76). According to Goodyear-Brown (2019: 29), the amygdala is “a pretty sloppy processor”, when it perceives environmental cues as if they are related to the traumatic event, and then responds as if the encoded sensory input in the aftermath of trauma is also threatening. In the amygdala, these memories are scattered and do not have a coherent storyline. Examples of how participants used play and metaphors to create more coherent storylines of their trauma were cited.

In this study, it is noteworthy that all participants engaged in post-traumatic play, potentially serving to “each emotional toxicity,” as proposed by Goodyear-Brown (2019: 1). This implies that through their play, children can gradually release the negative emotional residue associated with their traumatic exposure. Participants demonstrated the ability to articulate their experiences eloquently through metaphorical and innovative language.

From the findings, implications for practice emerge. Firstly, the sensory impact of trauma can be mitigated if young witnesses are promptly removed from traumatic scenes coupled with comfort and information. P1 stood at the garden fence on his own, witnessing the efforts to save his brother. He was distressed by the hysterical and extremely upset behaviour of the driver who hit his brother on the bicycle. If a calm adult could have removed him from the scene, attending to his somatic needs, i.e., water, something to eat and a warm blanket, while keeping him informed of what was happening, he would have been spared at least some sensory input. From this example, it is also clear that sensory input does not stop after immediate impact. The value of understanding the sensory experiences of participants is clear and Tables 3 and 4 can be used in practice to aid such understanding which can form the basis of trigger mapping.

As indicated by a participant, they were clearly guided by innate wisdom during and after the events. Recognising inherent wisdom during and after exposure to extreme life events, holds promise for fostering post-traumatic growth. When the multi-dimensional responses to trauma are explored, the focus should also be on growth aspects such as wisdom.

Incorporating trauma-informed practices into service provision, as advocated by Taylor (2023: 7) and Treisman (2021: 148) is essential for effectively addressing the diverse and pervasive effects of trauma that affect children’s functioning (Peverill et al, 2023: 1).

In conclusion, witnesses of trauma are a vulnerable, yet often overlooked population in need of therapeutic support. As Gordon (2019: 32) notes, trauma can be relegated to the periphery of our minds and social worlds, perpetuating a cycle of silence and neglecting to address trauma. The needs of young witnesses should be addressed with compassion and sensitivity. Despite their age and developmental stage, the capacity of young children to express themselves with clarity and creativity should not be underestimated, as demonstrated by the participants' quotes throughout the study.

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