

The role that teachers play in overcoming the effects of stress and trauma on children's social psychological development: evidence from Northern Uganda

Alison S. Willis · Michael C. Nagel

Received: 29 July 2013 / Accepted: 30 July 2014 / Published online: 11 October 2014
© Springer Science+Business Media Dordrecht 2014

Abstract Based on social psychological and neurobiological models of human development, this paper proposes that the role of the teacher is central in the rehabilitation of children who have suffered the effects of stress and trauma. The purpose of this paper is to describe the experiences of educators regarding children's learning. This study used a qualitative methodology to categorise the variation of experiences regarding children's learning as described by 10 school teachers and six school leaders from two government and two non-government primary schools in Northern Uganda. Among the significant findings of the study were the categorical descriptions of children's learning as 'fragmented' and 'hijacked' due to the debilitating effects of stress and trauma. Educators thought children had many 'gaps' in their learning as a result of war and associated disease and poverty. This paper demonstrates the salient role of educators in the neurological, psychological and sociological rehabilitation of students and provides strong evidence for education being a means of positive change.

Keywords Effects of stress and trauma on learning · Educational rehabilitation · Children's learning · Neurobiology · Social psychology · Teachers

1 Introduction

There is a growing body of evidence documenting the effects of war-related stress and trauma amongst child-victims of war (Betancourt et al. 2009; Derluyn et al. 2004). Much of this evidence has been generated by psychologists and deals with the effects

A. S. Willis (✉) · M. C. Nagel
University of the Sunshine Coast, Sippy Downs, QLD, Australia
e-mail: awillis@usc.edu.au

M. C. Nagel
e-mail: mnagel@usc.edu.au

of post-traumatic stress disorder and the impacts of war and displacement upon the pro-social behaviours of children. Taking current research into consideration, this study investigated the effects of war-related stress and trauma upon children's learning. In this process the salient role that teachers play in helping children overcome these effects became evident. Indeed, the role of the teacher is central to children's learning and neurological development in general. However, it is suggested that teachers play a critical role in neurological and social psychological rehabilitation in children who have suffered the effects of war, displacement, refuge, detention, poverty, disease, and the loss of family members, as education has been identified as a protective factor for reducing the likelihood of high emotional stress (Annan et al. 2006). Psychological rehabilitation is made possible through the creation of safe and supportive environments (Corbin 2008) and direct instruction where people may accommodate new knowledge (Illeris 2009) and reframe their perspective (for example, Sonderegger et al. 2011). Indeed, the creation of rich environments and the passing on of generational knowledge and understanding is in itself a definition of education, akin to definitions provided by Leach and Moon (2008) and Shore (1997). However, educational environments come under threat in times of social and political insecurities (Annan et al. 2006). As a result homes, villages and communities are fractured and the passing on of knowledge and understandings to the younger generations can be severely interrupted. This was particularly evident in the post-war context of Northern Uganda. The findings of this study surrounding the salient role that teachers play in the rehabilitation of children's minds are considered transferable to other contexts that are suffering the effects of war-related stress and trauma.

2 Conflict in Uganda

Over 40 years of consecutive civil wars, from the time of Idi Amin in 1971 to the end of the most recent conflict in 2006 between the Ugandan army and the Lord's Resistance Army (LRA), has brought about dramatic breakdowns in Ugandan society (Mwakikagile 2009; Van Acker 2004). Entire villages, schools, and families were displaced during the recent conflict with the Lord's Resistance Army (LRA) and in many instances formal education ceased (Human Rights Watch 2003). LRA warfare was particularly horrific as children were a central feature in the hostilities. An estimated 30,000 children were abducted and forced to serve as soldiers or sex slaves over a 20-year period (United Nations OCHA/IRIN 2004). During this time the Universal Primary Education programme was launched, which meant that schools in Northern Uganda had to simultaneously manage the effects of war and the introduction of free compulsory schooling for every child. By 2003, 116 of 234 schools had been displaced and only 56 % of primary school aged children were attending school according to the Gulu District Inspector of Schools, James Lomoro (Human Rights Watch 2003).

During the wartime in Uganda, children were not always learning literacy and numeracy skills like their contemporaries in unaffected communities, but they were engaged in learning war tactics and survival skills. Worryingly, a growing body of research has shown that displacement, conflict and/or poverty associated with war affects the psychological development and neurological patterning of a child

(Adjukovic and Adjukovic 1998; Annan et al. 2009; Feurstein et al. 2010). Specifically, studies pertaining to the effects of war upon school-aged children have identified a range of physical and mental health issues ranging from stomach complaints to inattention and anxiety (Betancourt et al. 2009; Dodge 1993; Joshi and O'Donnell 2003; Osofsky 1995; Perry 2001; Stichick 2001). According to Joshi and O'Donnell (2003) the dramatic and ongoing disruptions associated with the type of conflict children have experienced in Northern Uganda negatively impact on a range of psychological, social and physical developmental trajectories during childhood.

In addition, post-traumatic stress disorder and antisocial behaviour feature strongly in youth who have been exposed to war and the stressors associated with conflict (Annan et al. 2009; Corbin 2008; Derluyn et al. 2004). In Northern Uganda such stressors include the high prevalence of HIV/AIDS, the subsequent absence of parents and the associated stresses of child-headed households (Republic of Uganda 2003; United Children's Fund 2012). Moreover, the education of girls is often terminated early as poverty situations encourage the early marriage of girls to attract a bride price, which in turn results in child-mothers and the perpetuation of the cycle of uneducated parents and inadequate childcare (Annan et al. 2008). These problems impact a child's capacity to learn at school and are further compounded by the social stresses of living without adequate parental care, a common malady for children in Northern Uganda. In this sense it is critical to remember that learning is a product of socio-cultural interactions (Bandura 1986; Bronfenbrenner 2005; Bronfenbrenner and Morris 2006; Bruner 1996; Vygotsky 1980, 1986) and contemporary studies in the field of neuroscience have shown that the environment plays a crucial role in all aspects of cognitive, emotional and social development (Mustard 2006; Shonkoff et al. 2009; Shore 1997; Nagel 2012). For these reasons, current research regarding neuroplasticity and cognitive development was pertinent to this study.

3 Neurobiological aspects of learning

Notions of neuroplasticity have a long history; however, it has not been until the late twentieth century that some of the most influential findings related to the plastic nature of the brain had been discovered (Nagel 2014). Generally speaking, neuroplasticity refers to the changes that occur in the organisation of the brain as a result of experience (Diamond and Hopson 1999; Ratey 2001; LeDoux 2002). The vital link between lived experiences and neurobiology was essential in this study as the methodology is based on lived experiences (discussed below). Advances in technology and neuroscientific research have identified that various kinds of stimulation change brain structures and affect the way people think, and that these transformations go on throughout life (Cozolino 2013). Educationalists often describe these transformations as learning (Marton and Booth 1997; Illeris 2009). As such we know that the plastic nature of the brain maintains a lifelong ability to reorganise its neural pathways based on experiences (Medina 2008; Pascual-Leone et al. 2005). Concurrently, we also know that during various stages of development, the brain's neural connectivity and plasticity can suffer deleterious effects in chronically stressful or 'toxic' environments (Fox et al. 2010; Nagel 2012; Shonkoff and Phillips 2000).

The stresses associated with living in a war-torn country significantly affect the neurological development of children's brains and in turn their potential for learning, the organisation of their thoughts and subsequently their behaviours (Annan et al. 2009; Corbin 2008; Derluyn et al. 2004). Research has long established that a child's ability to express feelings in words and other aspects of language development may be impaired by neuroanatomical and neurophysiological changes caused by trauma (Coster et al. 1989; Fox et al. 1988; McFadyen and Kitson 1996). Given that the development and use of language is crucial to the development of understanding (Vygotsky 1980), the short and long term effects of trauma upon learning can be devastating.

4 Social psychological aspects of learning

Historically, learning has often been viewed as a wholly cognitive endeavour. Neuroscience has provided new insights into learning and most importantly new understandings of the role of emotions and social context to all aspects of learning. Some researchers suggest that thinking of the brain as a social organ is integral to learning and supported by thousands of studies noting the influence of relationships on health, neuroplasticity and learning (Cozolino 2013). Numerous studies also note that the environment children grow up within, and the education they receive, will impact on their overall brain development and its associated cognitive and affective schemes and capacities (see, for example, Harmon-Jones and Winkielman 2007; Knudsen 2004; Leach and Moon 2008; Tokuhamas-Espinosa 2011; Ansari 2012).

Learning is constitutional to the human condition and involves an individual's connectivity with others and their environments (Leach and Moon 2008; O'Donoghue and Clarke 2010; Vialle et al. 2005; Vygotsky 1980). Leach and Moon (2008) and O'Donoghue and Clarke (2010) asserted that learning is a social process made up of collective activities, rather than an isolated phenomenon inside a person's head. Leach and Moon (2008) simply stated, "One learner needs another learner" (p. 5). They illustrated this point by discussing cases where pedagogy had moved from didactic teaching, memorisation and fact recollection towards strategies that encouraged questioning, problem solving, developing and communicating ideas, valuing self-confidence and creativity, and reflecting upon the learning process itself. In order for pedagogic changes to take place, views of learning had to shift from the belief that learning occurs 'in the head' to understanding that learning is a 'social' process that occurs through socio-cultural interactions (Bruner 1996, cited in Vialle et al. 2005). In the Northern Ugandan context, learning environments—both at school and at home—were unsettled due to war and displacement, and the normal development trajectories of children were consequently interrupted. Stable home environments are vital for healthy child development (Joshi and O'Donnell 2003), and secure family relationships are critical in a displacement scenario as AdjuKovic and AdjuKovic's research (1998) shows that children who lack family support in refugee situations are at higher risk of developing psychological problems. There is an expansive body of literature noting the deleterious impact of 'toxic' stress on the human brain (Kandel 2001; Lupien et al. 2007; Mustard 2006; Meaney 2010). For example, Klimes-Dougan and Kistner's work (Klimes-Dougan and Kistner 1990) showed that preschool children who suffered

stress-related trauma engaged in aggressive behaviour more frequently than their non-traumatised peers, and were more likely to interpret their peers' behaviours as having hostile intent. Links between childhood trauma, substance abuse and adolescent crime have also been identified (Herrenkohl et al. 1997; Joshi and O'Donnell 2003). Studies specific to the effects of war-related stress on children have noted that cascading events including loss of loved ones, lack of educational structure and drastic changes in daily routine and community values adversely impact upon children's brains and minds (Arroyo and Eth 1996; Joshi and O'Donnell 2003; Pynoos Nader 1993).

5 Context specific effects of war-related stress and trauma on children's education in Northern Uganda

The types of issues resulting from war, stress and trauma alluded to above present immense challenges to the education of Acholi children in Northern Uganda (Derluyn et al. 2004). (The Acholi tribe is the dominant ethnic group of Northern Uganda). Due to decades of armed conflict, empirical research in this region is scarce. Hence, the limited references in this section and the need for further research. We do know that children who have been exposed to war-related traumatic events have an increased risk of developing mental health problems (Betancourt et al. 2009; Joshi and O'Donnell 2003; Stichick 2001). In one study, researchers questioned Acholi people about the most important mental health problems affecting 10–17-year olds in internally displaced people's (IDPs) camps and found that problems included scarcity of physical resources (lack of food, clothing and capacity to pay school fees), insecurities (abductions, rape, fighting, dropping out of school), and subsequent negative dispositions (stubbornness, disobedience, idleness) (Betancourt et al. 2009). Education specific problems found in the Betancourt et al. (2009) study included students losing interest in school, truancy and dropping out (15 % of the sample). Difficulties associated with bad behaviour and rudeness were also evident. According to Betancourt et al. (2009) these particular negative behaviours shared symptoms with operational defiance disorder as described by the DSM IV-TR (Diagnostic and Statistical Manual of Mental Disorders, 4th ed., American Psychiatric Association). Typically, students exhibiting these behaviours would be defiant toward teachers and violate social norms or rules at school.

Fortunately, there is also positive evidence of rehabilitation programmes emerging from Northern Uganda. Building on the work of Betancourt et al. (2009), a wide-scale trauma rehabilitation education programme was implemented amongst the Acholi people in 2006 with significant success (Sonderegger et al. 2011). Symptoms of depression, stress and anxiety reduced significantly and pro-social behaviour improved in the treatment group as a result of this education-based intervention. Sonderegger et al. (2011) discovered the great capacity possessed by the Acholi people to build positive knowledge schemes and move forward after such atrocities. Finnström (2008) also alluded to this capacity in his research in Northern Uganda when he related how life seemed to 'go on' nonetheless. Reports of this kind showcase the rehabilitative powers of education and the adaptability and resilience of children. This was also evident in the findings of this study. In the milieu of literature that reports the detrimental effects of war upon children and their learning, it is encouraging for this project to also find

research that demonstrates the positive effects of psychological and educational interventions in this setting. Education is a vital agent of change in war-torn communities (Dzepina et al. 1992; Joshi and O'Donnell 2003; Sonderegger et al. 2011), and this was particularly evident in this study. When the findings and outcomes of this study are considered in light of the above literature, it is evident that teachers play a critical role in facilitating the neurological rehabilitation of children's brains.

6 Methodology

Seeking to describe the conceptions of learning held by Northern Ugandan teachers demanded the fluid and dynamic nature of a phenomenographic methodology (Marton 1981). Marton (1994) aptly described phenomenography as “the empirical study of the limited number of qualitatively different ways in which various phenomena in, and aspects of, the world around us are experienced, conceptualised, understood, perceived and apprehended” (p. 4425). The defining quality of phenomenography—which differentiates it from its more widely known cousin, phenomenology—is the construction of a mental model that brings together the categories of description and metaphorically illustrates the variation of participants' experiences (Fig. 1). Phenomenography is particularly suited to educational research due to its dependence upon experience and practicality for solving pedagogic problems (Marton 1988; Marton and Booth 1997). It was reflexively chosen as the leading methodology for this study after a pilot interview was undertaken. The researcher came to the conclusion that open-ended questions centring on teachers' experiences would best overcome cultural differences that existed between the researcher and the participants. The dynamics of the researcher's role in the data collection and analysis processes are documented in Willis (2012).

6.1 Fieldwork and procedures

The experiences of teachers in Northern Uganda were described and shared in open-ended interviews, and teachers' conceptions of learning were identified and organised into categories of description for analysis. Nine interviews were conducted with 16 participants from two government schools and two non-government schools. Over five and three quarter hours of interview conversation was digitally recorded for analysis. In addition, one interview was recorded in handwritten notes only as the interviewees exercised their right to decline audio recording. This paper presents data from seven teachers and school leaders. The opening interview questions was, “Can you please tell me your experiences of children and their learning in Northern Uganda?” If teachers were unsure of the question, as being raised in a didactic education system themselves some teachers were afraid to give the wrong answer, the question was reframed: “How do children learn in Northern Uganda?”

During the data analysis phase a code scheme was created to reflect the emerging themes. This scheme was reorganised several times to move away from merely describing the data (Richards 2009) to describing the conceptions. The software NVivoTM was used as a tool to organise the codes and monitor the development of themes. As

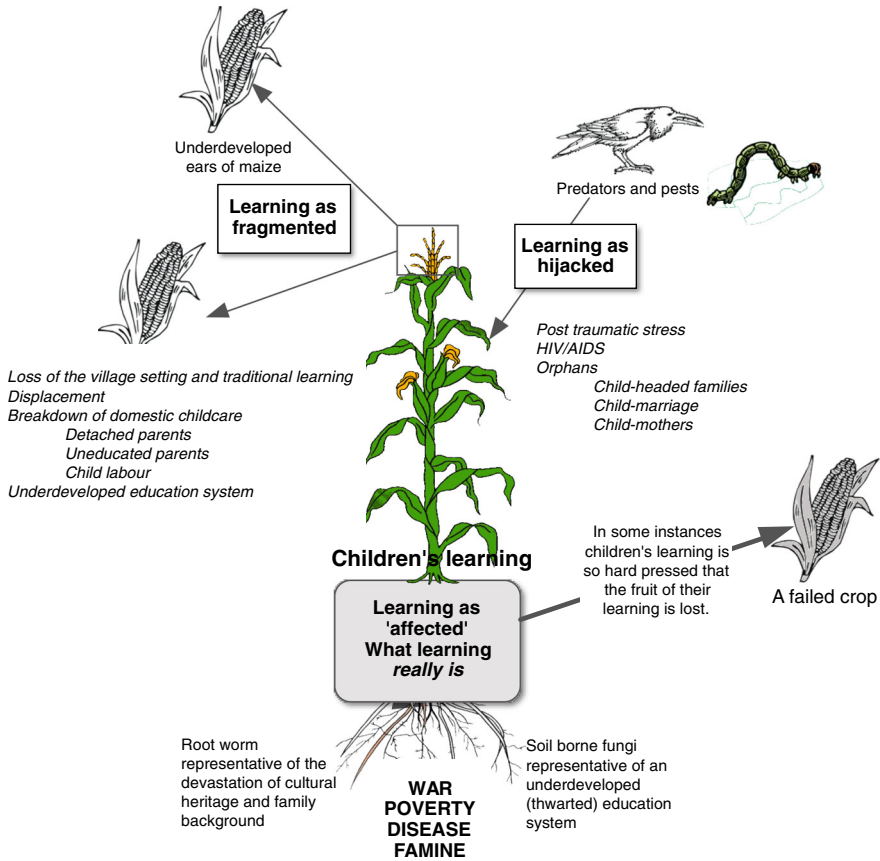


Fig. 1 A metaphoric representation of children’s learning as fragmented and hijacked by stress and trauma in Northern Uganda

this process progressed, it became apparent that six categories of description could accommodate the identified conceptions. These categories described learning as: (1) dependent upon cultural heritage and family background, (2) dependent upon the education system, (3) fragmented, (4) hijacked, (5) a means to “opening the mind”, and (6) a means for community rehabilitation. This paper focuses on the third and fourth categories: learning as fragmented and hijacked. These categories of description were organised into a mental model that used a local metaphor to describe teachers’ conceptions of children’s learning, according to phenomenographic convention, part of which is reproduced in Fig. 1. The efficacy of phenomenography and the advantages of using local metaphors to generate learning theory are discussed at length in Willis (2012).

7 Research findings: descriptions of children’s learning as ‘fragmented’ and ‘hijacked’

This section presents the research findings that are specific to the effects of stress and trauma upon children’s learning. In accordance with phenomenographic tradition, the

teachers' conceptions were organised into categories of description. This paper focuses on the two categories that describe learning as 'fragmented' and 'hijacked'. That is, it was found that children's learning is hijacked by the social and familial insecurities and stresses associated with war, famine, poverty and disease; and fragmented because of physical and environment losses. Of note, where excerpts from the dataset appear below pseudonyms are used to comply with research ethics protocols. Some of the expressions in the excerpts are typical of African English. This paper accommodates these differences and relies on the reader to do likewise, rather than inserting [sic] repeatedly.

7.1 Children's learning as fragmented

It was found that teachers frequently described 'gaps' in children's learning and attributed these to the destruction of the traditional setting and the demise of the education system. Before the times of conflict, teachers explained that children grew up in villages where every adult would take responsibility for teaching the children. Learning was based on oral tradition and it took place around the village fireplace (wang-oo) and during everyday chores. Boys were taught by the men, and girls were taught by the women. Formal education was introduced in Uganda in the late 1880s by voluntary missionary organisations (Syngellakis and Arudo 2006), and Ugandan children were only sent to school once their families had taught them to read. From 1971 to 2006 consecutive armed conflicts destroyed these peaceful settings and many villages and schools were displaced into IDP camps. Children lost their elders to war and disease, were left to fend for themselves, and the survival of their culture came under threat.

7.1.1 *Fragmented home and village environments*

Teachers discussed the loss of traditional learning around the fireplace and how this contributed to 'fragmented' learning. For example:

But we are supposed to start from nothing because the fireplace has been completely destroyed. So people were in the camps for a long period of time and there was no way you could conduct the wang-oo, the fireplace lessons. So it was lost and that left a big gap (Abe).

Abe also made connections between the loss of Acholi culture, the lack of parental education (discussed below), and fragmented childhood learning. Abe was a school leader and in his school home visits were a part of their operations to compensate for this fragmentation of learning.

As this conception reveals, many children in Northern Uganda have not had the opportunity to grow in nurturing or supportive environments. It was found that because the current generation of parents grew up during wartime, many are consequently without healthy or functional references for family or community life. It was also found that many parents had not received a formal education. Their learning was survival-based, and in light of the literature discussed above (Diamond and Hopson

1999; LeDoux 2002; Medina 2008; Pascual-Leone et al. 2005; Rately 2001) their neurobiological programming may now reflect this. Teachers described this cascading multitiered phenomenon as ‘gaps’ in foundational knowledge, ‘gaps’ at home because parents are absent or detached, and ‘gaps’ in moral values. Timothy’s comments on the impacts of the war and displacement upon parents and children encapsulate these findings:

Because those who have lived without valuing their life they are now the majority, and some of them are now parents. Now what do you think that kind of a parent can do when he or she has lived without valuing his or her life? Now they will take the child to live the way he or she has lived, and that is a very big challenge (Timothy).

Although villages are being rebuilt and fireplace learning is being reinstated in some places, Ugandan society has permanently changed. Many people do not know of any other existence than the IDP camps and have chosen to remain there, and many children have been forced to live on the streets as they are without the support of a village or family attachments. Those who do live with family are often left to fend for themselves due to the stresses of poverty. Prudence explained:

And the children are very young, and when they wake up their parents are not there. They just get up in the morning and they know they have to go to school. Sometimes when you ask them they said, “My mamma had ready gone the garden. They left me when I was sleeping.” And the child just gets up from the bed from a sleep, without even taking a shower, without even washing their face. Put on their uniform and go to school because the child wants to learn. But the parents are not encouraging the child. . . the parents get up in the morning and go and do his/her own duty. . . thinking a child is normal. As soon as the child is sick, the parents do not even take concern. The child want to come and learn, so the child will come when sick. And sometimes we find a child lying on the road. From school, you think the child is at home. From home, you think the child is not there so she has gone to school. And yet in the real sense, the child is badly ill. So those are the challenges sometimes we get (Prudence).

It was found that many times children are kept at home to help with subsistence farming (working in the “garden”), as education is often given low priority when weighed against the stresses of poverty and food scarcity.

7.1.2 *Fragmented school environments*

There is much pressure on the education system to fill these gaps in society. Abe explained the compounded effects of low levels of education amongst parents and how schools are playing catch-up:

Because during the war, children were not exposed to [formal education]. . . in fact very few children had the advantage to go to school. That has been a big hindrance to them. . .

We do a lot at school in as far as formal learning is concerned. We try to raise their self-esteem but it is a gap when they go back home. Parents these days don't have that talent to fill in that gap (Abe).

It was found that due to decades of civil conflict, there is a widespread lack of foundational knowledge as the current generation of adults had limited formal education. If they did have access to education, the resources in those environments were few and the quality of their experiences was poor.

Even today, educating children in schools is fraught with challenges. The education system itself struggles to cope with demand. For example, many classes are so congested with students that teachers cannot move from the front to the back of the room. Victor, a school leader at a government school explained:

Schools are not allowed to demand fees from parents. There is a 10,400 Ugandan shillings per term "extra charge" as a contribution towards electricity, sanitation, water and paper. But schools can't use the word "fees" and cannot demand payment (Victor).

In addition, the current generation of teachers has a background of didactic schooling, and many of them have had limited opportunities to explore, investigate or express their ideas. Abe, a school leader at a private school, explained that the only times he wrote his thoughts on paper during his schooling were in exam scenarios. He made connections between these kinds of schooling experiences and the low esteem of his people. With a didactic schooling background and only 2 years of Teachers College training, it was found many teachers exhibited little confidence to take initiative to compensate for inadequate curriculum resources. Three teachers described their fears of teaching incorrect information. When their own gaps in learning are considered together with the gaps they described in most parents' education, it can be understood why they conceive children's learning to be fragmented. These findings are sobering when considered in light of literature that promotes the importance of developing positive climates for learning and brain development (Knudsen 2004; Leach and Moon 2008; Tokuhama-Espinosa 2011; Ansari 2012).

7.2 Children's learning as hijacked

In addition to being fragmented, children's learning in Northern Uganda is often blatantly hijacked by the distractions that come with the stresses of being orphaned, having to fend for themselves and raise their younger siblings, or watch their parents and other loved ones die of HIV/AIDS. It was found that the stresses that hijack children's energy (that would otherwise be used for growth, development and learning) are both psychological and circumstantial.

7.2.1 Hijacked by stress and trauma

Many of these children live with the effects of war-related post-traumatic stress and depression (Sonderegger et al. 2011). Many children have memories of witnessing

killings or being forced to kill. These stresses act like predators to learning, exacerbating the ‘gaps’ in understandings and skills. Abe explained:

You might be in a situation where a child—because the rebels came and abducted the parent of the child while the child was in that house. They probably burnt everything and left the child there in the compound. Probably they killed the parents and left. That is already violence—the child’s mind is affected and the child is traumatised (Abe).

Clearly, trauma trumps learning (Arroyo and Eth 1996; Joshi and O’Donnell 2003; Kandel 2001; Lupien et al. 2007; Mustard 2006; Meaney 2010; Pynoos Nader 1993) and this study shows that stress and trauma create ‘gaps’ in children’s knowledge schemas.

7.2.2 Hijacked by circumstance

It was found that learning can also be hijacked by circumstance. Teachers described the dualism that is created in children’s thinking because of what they have been exposed to or what they have to cope with, for example living without adult supervision in a child-headed family:

You find that many of the children we are teaching are traumatised because of what they’ve seen. And others who are left come from child-headed families. So this will hinder education and learning, in the sense that the child will be coming to school but need to think about what needs doing at home—double minded (John).

This expression of children being “double minded” aptly describes the conception of learning as hijacked as it highlights the competition between survival related stressors and learning activities. Mark also viewed children’s learning as hijacked by violence-related trauma:

So it does become a problem whereby each and every family violence has touched. At least one person. Everybody has seen somewhere this problem. Children have seen maybe their aunty, maybe their uncle, maybe their nephew, at least one of them. And now the child does not have an attentive guide. See once the parents are not there at all, it is up to the child what to do. . . (Mark).

It is sobering to think that violence has touched every family and to consider the ramifications for children’s learning and development. Clearly, violence hijacks children’s attention and focus.

In other instances children’s attention is hijacked by a priority to survive, especially if they have been orphaned or they are the oldest surviving member of their family and now have to care for their younger siblings or cousins. Teachers associated these phenomena of orphaned children and child-headed families with the atrocities of war and the subsequent spread of disease. The following story embodied the tragedy of this situation:

You find the child is not properly cared for. Education becomes totally nonsense to them. For example, today we had to send for two kids who [were absent] and we said, ‘What is wrong?’ They said, ‘My dad is not there. They have not bought me any scholastic materials. And my mum is admitted with [HIV]. So I am living with my eldest sister.’ And that girl is in P3-5 and is taking care of this situation (Prudence).

It could be said that many of these children have lost their childhood.

The learning of girls is often hijacked by their circumstance—being female in poverty. One interviewee explained that it is common to find only 10 girls in P7 classes (approximately 12 years of age). Comparatively, there might be 50 girls enrolled in younger classes. Early marriage and subsequent teen pregnancies perpetuate the problem of uneducated parents. Gender equity issues for girls were identified by a government White Paper in 1992 and included: traditional divisions of domestic labour; early marriages; psychological and physiological changes that “deter them from competing effectively with boys”; social and cultural practices where parents prefer the education of their sons; and social problems that are compounded by inadequate safe and secure accommodation, including “vulnerability to sexual harassment and pregnancy” (Republic of Uganda 1992, p. 163). The data collected in this study demonstrates that these challenges still prevail. Namusisi (2010) argued that Ugandan education favoured boys and victimised girls, because of the gender-biased language used in classrooms. These data are significant in view of Wane’s (2009) claims about the correlations between the education of girls and the improvement of community health. Clearly, circumstance can hijack education.

8 Research outcome

According to phenomenographic tradition, a metaphoric mental model (Marton 1981, 1994) was developed to describe teachers’ conceptions of children’s learning (Willis 2012). Taken together, the conceptions of learning as ‘fragmented’ and ‘hijacked’ could be likened to a maize plant that is suffering stunted growth due to pests and predators. Consequently, the fruit of learning is underdeveloped, like a cob of maize that is missing kernels, as depicted in Fig. 1. This figure shows that the very roots of learning (which were identified as cultural heritage and the education system in the first two categories of description) have been destroyed by the effects of war, poverty and disease. As a result, children’s learning has many ‘gaps’. (An agrarian metaphor was chosen to complement the cultural knowledge of Northern Uganda).

9 Discussion: the emerging role of education in neurobiological, psychological and sociological rehabilitation

A synthesis of the research findings concerning teachers’ conceptions of children’s learning as ‘fragmented’ and ‘hijacked’ with the literature reviewed above, makes salient the rehabilitative potential of education and the critical role that teachers play in this process. Literature that correlates the role of the teacher with neurological

rehabilitation is scarce, particularly in contexts of war. Most literature in these areas deals with psychological or aid and development issues. However, this study shows that education has the capacity to help children make positive neural connections and reframe their experiences. It can be seen that teachers have the potential to act as vital agents of change in the rehabilitation of young minds. Further, they are instrumental in restoring healthy social norms in communities as they bring structure to children's routines, teach them healthy living habits, and provide educational experiences to help them understand their environment.

Taking into consideration the neurobiological research presented above ([Adjukovic and Adjukovic 1998](#); [Dodge 1993](#); [Joshi and O'Donnell 2003](#); [Osofsky 1995](#); [Perry 2001](#)), evidence suggests that teachers in Northern Uganda are playing an imperative role in helping to re-programme the plasticity of children's brains by demonstrating healthy living and learning behaviours. Neurological rehabilitation involves the psychological re-programming of both thoughts and behaviours. This may include remediating potentially poor patterns for living passed on from uneducated or detached parents. Teachers have the potential to model safe and functional relationships, organise secure and stimulating learning environments, and facilitate quality learning experiences. In this way, teachers are helping children to lay down neural pathways and form knowledge schemes that are functional and productive.

One particular area where teachers instrumentally assist with functional neural programming is in the teaching of literacy. By offering schemas of language for the construction of knowledge and understandings, teachers assist children to make sense of their experiences and thereby manage their emotions. Language is a cornerstone of learning ([Vygotsky cited in Van der Veer 2007](#)), as it helps a learner to make sense of their experiences. Through learning experiences and reflection, a teacher may help a child strengthen his capacity to construct his own meaning by providing 'building blocks' of knowledge and offering systems of language to organise understandings ([Fox et al. 2010](#); [Marton and Booth 1997](#)). This process of making meaning can modify cognitive structures and therefore assist in the psychological and sociological rehabilitation of children who have suffered the effects of trauma ([Fox et al. 2010](#); [Sonderregger et al. 2011](#)). Through the construction of knowledge schemes, students are better positioned to develop a capacity to view situations more circumspectly.

9.1 Limitations of the study

The findings of this study are limited to the Gulu district in Northern Uganda and although anecdotal conversations with educationalists and academics indicated the findings of this study may apply beyond this context, further research needs to be conducted to test these possibilities. Another notable limitation is the cross-cultural nature of the study, as an Australian researcher conducted the interviews with Ugandan teachers and school leaders. Although many strategies were put in place to manage cultural differences ([Willis 2012](#)), the 'etic' or 'outsider' ethnographic dynamic must be acknowledged ([Richards and Morse 2007](#)). Nevertheless, [Richards and Morse \(2007\)](#) would argue an 'etic' or 'outsider' dynamic positively positions a study for a rich yield of data.

10 Conclusions

Empowered teachers and quality student–teacher relationships are critical if positive change is to occur. As this study suggests, an educated, discerning and reflexive teacher may be the vital catalyst that sparks engagement in a stressed or traumatised learner. According to the experiences shared by the educationalists in this study, for many children their teachers are their only consistent reference for healthy living and learning habits. In light of this, the gravity of Alice’s and Timothy’s comments from the dataset becomes apparent. When asked how she overcame the challenges of trauma and stress amongst her students in a post war environment, Alice replied, *Love. It overcomes the barriers and brings them close. And then they learn. Love helps facilitate learning.* Timothy also explained, *We are handling the whole humanity. We handle the spiritual, the social, the moral, the emotional. Because we train them to learn how to care for one another.*

Therefore, the data show that teachers are also builders of esteem, security, and health. It is apparent that they often play vital roles in community rehabilitation, as other significant adults may be otherwise absent. Abe’s comments articulated the sobriety of the role of the teacher in Northern Uganda:

The child will never learn anything from you unless the child believes that you love him or her... Most of their experiences have so affected them from the war period in their lives. The war affected them psychologically. And so you have to begin with love, because this child has lost the parents and you as a teacher or a counsellor become, replace the child’s parents. And until you can fill that job even the knowledge you are trying to impart to the child may not have the positive impact that you want (Abe).

Considering the evidence presented in this paper, it could be said that education is akin to intervention in scenarios where stress and trauma have adversely affected learning. Experience is central to the social, psychological and neurological development of a learner, and teachers play a leading role in this regard, especially in situations where cultural heritage and family structures have broken down. There is a strong remnant of hope amongst the Acholi people that was clearly evident in this study. The resilience of the Acholi people after so many years of instability is remarkable, and considering the evidence and literature presented above the conclusion can be drawn that positive change is possible. Nevertheless, there is still much work to be done. The need for investments of intellectual capital back into the region’s social fabric and economy are apparent. Teachers with greater breadth of experience have more complex schemas of knowledge and understanding, and accompanying systems of language, to make sense of and communicate their own experiences and the experiences of their students, as shown by this study.

The findings concerning the pivotal role of educationalists and the need for investing into their intellectual capital are considered to be transferable. It must be remembered that the current generation of teachers in Northern Uganda likely have ‘gaps’ in their own learning. This may also be the case in many other war-affected contexts. Notwithstanding this, teachers who reflect upon their practice and the learning of their

students (Ghaye et al. 2011) are more positively positioned to facilitate neurological rehabilitation and development in their students.

References

- Adjukovic, M., & Adjukovic, D. (1998). Impact of displacement on the psychological well being of refugee children. *International Review of Psychiatry*, *10*, 186–195. doi:10.1080/09540269874763.
- Annan, J., Blattman, C., Carlson, K., & Mazurana, D. (2008). *The state of female youth in Northern Uganda: Findings from the survey of war-affected youth phase II*. Medford, MA: Feinstein International Center, Tufts University.
- Annan, J., Blattman, C., & Horton, R. (2006). *The state of youth and youth protection in northern Uganda: Findings from the survey of war affected youth*. Kampala, Uganda: UNICEF.
- Annan, J., Brier, M., & Aryemo, F. (2009). From “Rebel” to “Returnee”: Daily life and reintegration for young soldiers in Northern Uganda. *Journal of Adolescent Research*, *24*(6), 639–667. doi:10.1177/0743558409350499.
- Ansari, D. (2012). Culture and education: New frontiers in brain plasticity. *Trends in Cognitive Sciences*, *16*(2), 93–95. doi:10.1016/j.tics.2011.11.016.
- Arroyo, W., & Eth, S. (1996). Traumatic stress reactions and posttraumatic stress disorder (PTSD). In R. Apfel, & B. Simon (Eds.), *Minefields in the heart: The mental health of children in war and communal violence*. New Haven, CT: Yale University Press. ISBN: 9780300065701.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Betancourt, T. S., Speelman, L., Onyango, G. & Bolton, P. (2009). A qualitative study of mental health problems among children displaced by war in Northern Uganda. *Transcultural Psychiatry*, *46*(2), 238–256. Sage. doi:10.1177/1363461509105815.
- Bronfenbrenner, U. (2005). *Making human beings human: Bioecological perspectives on human development*. Thousand Oaks, CA: Sage. ISBN: 9780761927129.
- Bronfenbrenner, U. & Morris, P. A. (2006). The ecology of developmental processes. In W. Damon & R. Lerner (Eds.), *Handbook of child psychology* (6th edn, pp. 793–829). New York: Wiley. ISBN: 0471756040, 9780471756040.
- Bruner, J. S. (1966). *Toward a theory of instruction*. London: Belknap/Harvard. ISBN: 9780674897014.
- Corbin, J. (2008). Returning home: Resettlement of formerly abducted children in Northern Uganda. *Disasters*, *32*, 316–335. doi:10.1111/j.1467-7717.2008.01042.x.
- Coster, W. J., Gersten, M. S., Beeghly, M., & Cicchetti, D. (1989). Communicative functioning in maltreated toddlers. *Developmental Psychology*, *25*, 777–793.
- Cozolino, L. (2013). *The social neuroscience of education: Optimising learning and attachment in the classroom*. New York: W.W. Norton.
- Derluyn, E., Broekaert, E., Schuyten, G., & De Temmerman, E. (2004). Post-traumatic stress in former Ugandan child soldiers. *The Lancet*, *363*(9412), 861–863. doi:10.1016/S0140-6736(04)16213-2.
- Diamond, M., & Hopson, J. (1999). *Magic trees of the mind: How to nurture your child's intelligence, creativity, and healthy emotions from birth through adolescence*. New York: Penguin Putnam. ISBN: 1101127430, 9781101127438.
- Dodge, K. A. (1993). Social-cognitive mechanisms in the development of conduct disorder and depression. *Annual Review of Psychology*, *44*, 559–584.
- Dzepina, M., Prebeg, Z., Juresa, V., Bogdan-Matjan, K., Brkljacic, D., & Erdelj-Stivicic, B. (1992). Suffering of croatian school children during war. *Croatian Medical Journal, War Supplement*, *33*, 40–44.
- Feurstein, R., Feurestein, R. S., & Falik, L. H. (2010). *Beyond smarter: Mediated learning and the brain's capacity for change*. New York: Teacher's College Press. ISBN-13: 978-0807751183.
- Finnström, S. (2008). *Living with bad surroundings: War, history and everyday moments in Northern Uganda*. USA: Duke University Press.
- Fox, L., Long, S. H., & Anglois, A. (1988). Patterns of language comprehension deficit in abused and neglected children. *Journal of Speech and Hearing Disorders*, *53*, 239–244.
- Fox, S. E., Levitt, P., & Nelson, C. A. (2010). How the timing and quality of early experiences influence the development of brain architecture. *Child Development*, *81*(1), 28–40. doi:10.1111/j.1467-8624.2009.01378.x.

- Ghaye, T. (2011). *Teaching and learning through reflective practice: A practical guide for positive action*. Oxon and New York: Routledge, Chapman & Hall. ISBN: 0415570956, 978-0415570954.
- Harmon-Jones, E., & Winkielman, P. (Eds.) (2007). *Social neuroscience: Integrating biological, and psychological explanations of social behaviour*. New York: The Guilford Press. ISBN: 9781593854041, 1593854048.
- Herrenkohl, R. C., Egolf, B. P., & Herrenkohl, E. C. (1997). Preschool antecedents of adolescent assaultive behavior: A longitudinal study. *American Journal of Orthopsychiatry*, 67(3), 422–432. doi:10.1037/h0080244.
- Human Rights Watch. (2003). *Abducted and abused: Renewed conflict in Northern Uganda*. Washington DC: Author. <http://www.hrw.org/reports/2003/07/14/abducted-and-abused>. Accessed on 23 June 2014.
- Illeris, K. (Ed.). (2009). *Contemporary theories of learning: Learning theorists ... in their own words*. Oxon, London: Routledge.
- Joshi, P. T., & O'Donnell, D. A. (2003). Consequences of child exposure to war and terrorism. *Clinical Child and Family Psychology Review*, 6(4), 275–292. doi:10.1023/B:CCFP.0000006294.88201.68.
- Kandel, E. W. (2001). The molecular biology of memory storage: A dialogue between genes and synapses. *Science*, 294, 1030–1038. doi:10.1126/science.1067020.
- Klimes-Dougan, B., & Kistner, J. (1990). Physically abused preschoolers' responses to peers' distress. *Developmental Psychology*, 26, 599–602. doi:10.1037/0012-1649.26.4.599.
- Knudsen, E. I. (2004). Sensitive periods in the development of the brain and behavior. *Journal of Cognitive Neuroscience*, 16(8), 1412–1425. doi:10.1162/0898929042304796.
- Leach, J., & Moon, B. (2008). *The power of pedagogy*. London: Sage. ISBN: 1412907225, 9781412907224.
- LeDoux, J. (2002). *The synaptic self: How our brains become who we are*. New York: Penguin Books. ISBN: 0142001783, 978-0142001783.
- Lupien, S. J., Maheu, F., Tu, M., Fiocco, A., & Schramek, T. E. (2007). The effects of stress and stress hormones on human cognition: Implications for the field of brain and cognition. *Brain and Cognition*, 65(3), 209–237. doi:10.1016/j.bandc.2007.02.007.
- Marton, F. (1981). Phenomenography—describing conceptions of the world around us. *Instructional Science*, 10, 177–200. doi:10.1007/BF00132516.
- Marton, F. (1988). Phenomenography: A research approach to investigating different understandings of reality. In R. R. Sherman, & B. W. Webb (Eds.), *Qualitative research in education: Focus and methods* (pp. 144–161). Oxon and New York: Routledge Falmer. ISBN: 1850003807, 9781850003809.
- Marton, F. (1994). Phenomenography. In T. Husen, & T. N. Postlethwaite (Eds.), *International encyclopedia of education* 8, 2nd edn. London: Pergamon. ISBN: 0080410464, 978-0080410463.
- Marton, F., & Booth, S. (1997). *Learning and awareness*. Mahwah, New Jersey: Lawrence Erlbaum Associates Publishers. ISBN: 0805824553, 9780805824551.
- McFadyen, R. G., & Kitson, W. J. H. (1996). Language comprehension and expression among adolescents who have experienced childhood physical abuse. *Journal of Child Psychology and Psychiatry*, 37, 551–562.
- Meaney, M. J. (2010). Epigenetics and the biological definition of gene and environment interactions. *Child Development*, 81(1), 41–79. doi:10.1111/j.1467-8624.2009.01381.x.
- Medina, J. (2008). *Brain rules: 12 Principles for surviving and thriving at work, home and school*. North Carlton, Victoria: Scribe Publications. ISBN: 0979777704, 9780979777707.
- Mustard, J. (2006). Experience-based brain development: Scientific underpinning of the importance of early child development in a global world. *Paediatric Child Health*, 11(9), 571–572. PMID: PMC2528649.
- Mwakikagile, G. (2009). *Ethnicity and national identity in Uganda: The Land and its people*. Tanzania: New Africa Press. ISBN: 9987930875, 9789987930876.
- Nagel, M. C. (2012). *In the beginning: The brain, early development and learning*. Camberwell, Victoria: Australian Council for Educational Research (ACER). ISBN: 9781742860329.
- Nagel, M. C. (2014). *In the Middle: The adolescent brain, behaviour and learning*. Camberwell, Victoria: Australian Council for Educational Research (ACER). ISBN: 9781742861487.
- Namusisi, S. (2010). *Socio-cultural school based determinants of girl child education*. Germany: Lap Lambert Academic Publishing. ISBN-13: 9783838381862.
- O'Donoghue, T., & Clarke, S. (2010). *Leading learning: Processes, themes and issues in international contexts*. Abingdon: Routledge.
- Osofsky, J. (1995). The effects of exposure to violence on young children. *American Psychologist*, 50, 782–788.

- Pascual-Leone, A., Amedi, A., Fregni, F., & Merabet, L. B. (2005). The plastic human brain cortex. *Annual Review of Neuroscience*, 28, 377–401. doi:10.1146/annurev.neuro.27.070203.144216.
- Perry, B. D. (2001). The neurodevelopmental impact of violence in childhood. In D. Schetky & E. Benedek (Eds.), *Textbook of child and adolescent forensic psychiatry* (pp. 221–238). Washington, DC: American Psychiatric Press. <http://projectabcla.org/dl/NeurodevelImpact.pdf>. Accessed 23 June 2014.
- Pynoos, R., & Nader, K. (1993). Issues in the treatment of posttraumatic stress in children and adolescents. In J. Wilson & B. Raphael (Eds.), *International handbook of traumatic stress syndromes*. New York: Plenum.
- Ratey, J. J. (2001). *A user's guide to the brain: Perception, attention and the four theatres of the brain*. New York: Vintage Books. ISBN: 0375701079, 978-0375701078.
- Republic of Uganda. (1992). Government White Paper, April, 1992. *Education for national integration and development*. Kampala: Republic of Uganda.
- Republic of Uganda. (2003). *Post-conflict reconstruction: The case of Northern Uganda: Discussion paper 9 (draft)*, April 2003. Ministry of finance, planning and economic development; Office of the Prime Minister; Office of the President.
- Richards, L. (2009). *Handling qualitative data: A practical guide* (2nd edn). London: Sage. ISBN: 1446242900, 9781446242902.
- Richards, L., & Morse, J. M. (2007). *Read me first for a user's guide to qualitative methods* (2nd ed.). London, CA: Sage.
- Shonkoff, J. P., Boyce, W. T., & McEwen, B. S. (2009). Neuroscience, molecular biology and the childhood roots of health disparities: Building a new framework for health promotion and disease prevention. *Journal of the American Medical Association*, 301(21), 2252–2259. doi:10.1001/jama.2009.754.
- Shonkoff, J. P. & Phillips, D. A. (Eds.) (2000). *From neurons to neighborhoods: The science of early childhood development*. Washington, D. National Academy Press. ISBN: 0309504880.
- Shore, R. (1997). *Rethinking the brain: New insights into early development*. New York: Families and Work Institute. ISBN: 188832404X, 9781888324044.
- Sonderegger, R., Rombouts, S., Ocen, B. C., & McKeever, R. S. (2011). Trauma rehabilitation for war-affected persons in northern Uganda: A pilot evaluation of the EMPOWER programme. *British Journal of Clinical Psychology*, 50(3), 234–249. doi:10.1348/014466510X511637.
- Stichick, T. (2001). The psychosocial impact of armed conflict on children: Rethinking traditional paradigms in research and intervention. *Child and Adolescent Psychiatric Clinics*, 10(4), 797–814.
- Syngellakis, K., & Arudo, E. (2006). *Uganda education sector policy overview paper*. IT Power UK.
- Tokuhama-Espinosa, T. (2011). *Mind, brain, and education science: A comprehensive guide to the new brain-based teaching*. New York: W.W. Norton. ISBN: 978-0393706079, 0393706079.
- United Children's Fund. (2012). *HIV/AIDS programs*. <http://www.unchildren.org/programs/hiv-aids-programs/>. Accessed 25 Mar 2012.
- United Nations OCHA/IRIN (Office of Coordination of Humanitarian Affairs/Integrated Regional Information Networks). (2004). *When the sun goes down we start to worry: An account of life in Northern Uganda*. Nairobi: Author. <http://www.irinnews.org/pdf/in-depth/when-the-sun-sets-revised-edition.pdf>. Accessed 23 June 2014.
- Van Acker, F. (2004). Uganda and the Lord's Resistance Army: The new order no one ordered. *African Affairs*, 103(412), 335–357. London: Royal African Society. doi:10.1093/afraf/adh044.
- Van der Veer, R. (2007). *Lev Vygotsky*. New York, NY: Continuum International Publishing Group. ISBN 978-0826484093.
- Vialle, W., Lysaght, P., & Verenikina, I. (2005). *Psychology for educators*. Southbank, Victoria: Thomson Social Science Press.
- Vygotsky, L. S. (1980). *Mind in society: The development of higher psychological processes* (trans: Cole, M.). Cambridge, MA: Harvard University Press. ISBN: 0674076699, 9780674076693.
- Vygotsky, L. S. (1986). *Thought and language* (trans: Kozulin, A.). Cambridge, MA: MIT Press. ISBN: 026251771X, 9780262517713.
- Wane, N. (2009). Sexual violence and HIV/AIDS risks in Kenyan and Ugandan schools: Social implications for educational policy development. *Journal of Contemporary Issues in Education*, 4(1), 71–91. ISSN: 1718-4770.
- Willis, A. (2012). Teachers' conceptions of children's learning in Northern Uganda: A phenomenographic study in a post-war context. Doctoral thesis. <http://research.usc.edu.au/vital/access/manager/Repository/usc:8999>. Accessed 13 July 2014.

Alison S. Willis (PhD, MEd, BEd) is affiliated with the University of the Sunshine Coast as a researcher and sessional lecturer. Her research interests include education in developing contexts, the interconnections between the social, psychological and neurobiological aspects of learning, and professional learning.

Michael C. Nagel (PhD, MEd, BEd) is an Associate Professor in the School of Education at the University of the Sunshine Coast. His teaching and research interests intersect educational psychology and human development with a particular focus on neurological development in children and adolescents.