

FOSTERING SELF-REGULATION
IN
COMPLEXLY TRAUMATIZED ELEMENTARY SCHOOL CHILDREN
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Dedication

I would like to dedicate this paper to the students whose stories have taught me as I have taught them.

Abstract

Complex trauma is a result of multiple types of severely distressing events that are chronic or repeated in nature and occur over an extended period of time. The events that may lead to complex trauma include, but are not limited to; neglect, chronic verbal, sexual, and emotional abuse, poverty, severe chronic illness, and living in a community with frequent violent crimes or war. Individuals who live under such conditions often experience a sense of horror or helplessness, and that their personal safety or their lives are in danger. Children, especially young ones under the age of five are particularly vulnerable to changes in their neurobiological development as they adapt to the environments in which they live. This often leaves them with hyper-vigilance, anxiety, memory and attention issues, as well as a host of other physical, neurobiological and social-emotional problems that can impede their progress in school. Fortunately, there are many protective factors and some interventions that can reduce the impact of children's chaotic environments. Schools, teachers and school counsellors function as protective factors. This paper will examine how schools, teachers and school counsellors can act as protective factors and foster students' development.

Keywords: complex trauma, protective factors, trauma in the classroom, neurobiology of trauma

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Chapter 1

The Problem

Introduction

Behaviour is purposeful and goal directed (Dinkmeyer, 2006). People behave in a manner that results in achieving certain goals, or meeting particular needs. This is true for young children as well as adults. Though adults are typically more adept than children at identifying and meeting their own needs, children will also attempt to have their needs met. They may not necessarily know what they need or effective ways of having those needs met.

Typically, in healthy environments caregivers are attuned to their children's needs. They will identify their child's needs and respond in a generally consistent and sensitive manner. The child develops a sense of safety, connection and trust that someone will be available when the need arises. They also develop a sense of being worthy of care. When the caregivers comfort or soothe their children, they essentially co-regulate the child's affect or level of arousal. This provides the foundation, or template for the development of children's ability to self-regulate their own affect, level of arousal or attention. With consistent support and repetition, the child internalizes this template, learns to use increasingly complex self-soothing strategies, and develops a tolerance for emotional states (Blaustein & Kinniburgh, 2010, Perry, 2001).

Not all children have a safe, stable and supportive environment. Many children live in stressful, chaotic situations in which many of their physical or emotional needs are not met. In situations of neglect, poverty, family violence or life in unsafe environments such as impoverished neighbourhoods, or areas affected by war, children may not develop the sense of

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safety, connection and trust that is necessary for optimal development. Such children live in atypical circumstances and adapt to suit the environment in which they live. They develop the skills to survive in their chaotic, unsupportive environments, yet lack the skills to function in other environments, such as in a classroom.

In many situations, children are exposed to one or more different types of trauma. Trauma can be explained as a single event or even a series of events, such as motor vehicle accidents or natural disasters that are beyond a child's control and exceed a child's coping mechanisms (Falasca & Caulfield, 1999, Bückner et al., 2012). During the event, a child feels overwhelmed, and is helpless to act on the situation. The degree to which children are affected varies greatly depending on various factors unique to each particular child. These include the traumatic event or series of event, the intensity and duration of the events, the child's age and developmental stage, adaptability, and the child's support system (Falasca & Caulfield, 1999). Risk factors include, but are not limited to low socioeconomic status, parental mental illness, low quality parent-child relationships, family abuse history and dysfunctional family systems (Bückner et al., 2012).

When children are exposed to multiple types of trauma over a sustained period of time, for example neglect and family violence, they may display symptoms of complex trauma. Complex trauma, also known as complex developmental trauma (Pearlman & Courtois, 2005), and the topic of this paper, differs from acute trauma. It involves repeated and chronic exposure to traumatic events, often of an interpersonal nature, such as in the case of family violence. It results, to varying degrees, in diminished attachment, self-regulation, and capacity to relate to others in a healthy manner. Neglect, emotional, physical and sexual abuse, and exposure to domestic violence, especially occurring between the developmentally vulnerable ages of birth

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and five years of age, affect the physiology and structure of brain development. These result in long-term effects on behaviour and functioning of traumatized children (Bath, 2008; Cook et al., 2005; O'Neill, Guenette, & Kitchenham, 2010, Blaustein & Kinniburgh, 2010).

Due to the danger, inconsistency and unpredictability of their environments, children with complex trauma do not develop a sense of safety. They become hypervigilant, perpetually ready for the danger they expect will happen at any given moment, either consciously or subconsciously. They are often easily threatened by situations that do not bother many of their non-traumatized age peers. Because attachment to caregivers is compromised, they are often defensive, perceiving ordinary situations, such as school classrooms or playgrounds as threatening (Blaustein & Kinniburgh, 2010; Cook et al., 2005). The very behaviours that allow them to survive in their neighbourhood or home environment are often at odds with what is expected in a school environment. For example, children with complex trauma histories who are accustomed to a lack of structure and routine face extra challenges when they enter a classroom environment and experience structure, routine and certain behavioural and social expectations for the first time. Their survival behaviours, such as verbal or physical aggression, inability to take turns or delay gratification leaves them vulnerable to social isolation, academic difficulties, and re-victimization.

School is one place where children spend a considerable part of their waking hours on a consistent basis. Because of this, classroom teachers may be some of the few adults other than a child's caregivers who spend a significant amount of time with that child. Thus classroom teachers may be one of the few consistently reliable adults in a child's life. Teachers are in many ways front line workers and are in a unique position to recognize signs of trauma and act in a manner so as to keep children physically safe. They can also function as a protective factor, or

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buffer reducing the impact of trauma on the children they teach. If teachers are given the skills to recognize the signs of trauma and respond effectively through a trauma informed lens, they will be more effective in dealing with the trauma behaviours that may present in the classroom. They are then in a position to recognize their students' strengths and build upon them to help them succeed not only in school, but life as a whole (Bell, Limberg & Robinson, 2013).

This study is particularly important because of the sheer number of children in Canadian schools who are affected by trauma. According to a 2008 Canadian national survey found 85,440 substantiated cases of physical and sexual abuse, neglect, emotional maltreatment or exposure to domestic violence. This means, as of 2008, approximately 1.4 percent of Canadian children have experienced serious maltreatment (Trocme, 2010, as cited in Schwartz et al., 2011, p. 3). The actual number of maltreatment children in Canada may higher due to cases that go unreported, or are less severe.

This paper will examine the effects of complex trauma on elementary school children's development, learning and behaviour, and how they present in an elementary school classroom. It will also examine the ways elementary school counsellors and teachers can help nurture students' self-regulation skills and development in a trauma informed manner. There has been considerable literature on resilience, which is broadly defined as the ability to overcome the effects of traumatic situations (Masten, 2011). The degree to which a child is affected by adverse situations is highly individual. The type of trauma, the duration and intensity of the trauma, the child's support system and the child's own personal resources affect how a child will react, and how the complex trauma symptoms present in the classroom.

The symptoms of complex trauma manifest as observable behaviour (Bell et al., 2013). Behaviour patterns involving difficulties with self-regulating arousal levels, impulse control,

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dysregulation of affect, inability to direct attention, clinginess, social withdrawal, and academic difficulties are just some of those that may appear in the classroom. They are indicators of the presence of complex trauma and a reflection of the degree to which a child is coping with their situation. A child's ability to self-regulate, or modulate their levels of arousal and thus their behaviour is adversely affected by trauma. It is one of the more immediately obvious indicators of trauma and level of coping, and also one that can either help or hinder a child's success in school, socially, academically and emotionally (Bath, 2008, Shanker, 2013).

The focus of this paper is to explain how complex trauma affects students, how it may appear in the classroom, and how schools, teachers and school counsellors can support the development of self-regulation in children affected by complex trauma. In order to properly address the topic of self-regulation, it is important to understand what it is, and what it involves. Self-regulation is complex and involves many behavioural skills that enable a child to function optimally in and out of a school environment. According to Baumeister and Vohs (2011, as cited in Shanker, 2013), it can be described as the ability to:

- attain, maintain, and change one's level of energy to match the demands of a task or situation
- monitor, evaluate, and modify one's emotions
- sustain and shift one's attention when necessary and ignore distractions
- understand both the meaning of a variety of social interactions and how to engage in them in a sustained way
- connect with and care about what others are thinking and feeling – to empathize and act accordingly (p. xii)

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The Effects of Trauma on Child Development

Traumatic events trigger the human body's stress response mechanisms. When this happens repeatedly over an extended period of time, and especially at developmentally vulnerable stages such as infancy and early childhood, when significant neurobiological growth and stabilization occur, namely birth to five years of age, the structure and neurobiology of the brain are altered from a typical course of development (O'Neill et al., 2010). Depending on the type, duration, intensity, and frequency of trauma and adversity, this can have varying detrimental effects on the development of brain structures, and thus the developing child.

According to Teicher et al. (2006 as cited in O'Neill et al., 2010), the stress response causes a release of stress hormones, which in turn enhance the turnover of neurotransmitters. When a child faces, or perceives a threat, cortisol and other hormones are released. The amygdala then sets off the fight, flight, or freeze response. In the short term, this helps the child deal with an emergency. When this occurs repeatedly over the long term, the presence of stress hormones gradually damages the child's developing systems, slowing physical and neurological growth, and suppressing the immune system. The brain areas that are of particular concern in the classroom are those responsible for memory, executive functioning, language processing and higher cognitive functioning. Some of these damaging effects on the child are reversible, if intervention is timely, while others are only partly reversible (Cook et al. 2005, as cited in O'Neill et al., 2010).

Many cognitive functions are use dependent. In order for them to develop adequately, they must be employed repeatedly. Affect regulation, the ability to notice, identify, regulate and communicate one's own emotional state is one such area that needs to be used in order for it to develop (Cook et al., 2005). It requires the development of the frontal cortex, which also

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develops through repeated use. Children who are taught how to self-regulate their emotions will become better at it by self-regulating, or co-regulating with a caregiver repeatedly over time.

Children in abusive and neglectful environments, however, will have impairments in their ability to self-regulate emotions and impulses and thus their ability to regulate affect or to tolerate frustration will also be impaired. As development is cumulative, each period of development building on earlier periods, and setting the stage for future development, any core developmental deficits stemming from trauma and adversity that are not addressed in one developmental period will adversely affect functioning and further development (Blaustein & Kinniburgh, 2010; O'Neill et al., 2005).

Not only does the presence of traumatic events affect neuropsychological development so does the lack of positive stimulation. Sensory and emotional deprivation, which occur especially in neglectful environments have a significant impact on cognitive development. Children from environments lacking in emotional and sensory stimulation tend to lack creativity and flexibility in problem solving, and obtain lower scores on IQ tests than their non-neglected/abused peers. Those who receive insufficient intellectual stimulation, language experience and personal interaction tend to demonstrate receptive and expressive language delays. Deficits in abstract thinking/reasoning, the ability to think in terms of intangible concepts and ideas rather than concrete, here and now physical terms (Abstract thinking, n.d.), and executive functioning skills, both highly necessary in and out of the classroom, are endemic to children who witness family violence. It also involves identifying patterns and relationships between ideas and applying this knowledge to problem solving. Executive functioning refers to the cognitive skills needed to organize and plan, and to “develop working memory and process and integrate new information” (DePrince, Weinzierl, & Coombs, 2009, as cited in Bell et al., 2013, p. 140). Difficulties in

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modulating affect interfere with the ability to assimilate and accommodate new information, which may lead to cognitive disorganization. These deficits interfere with the development of academic skills necessary for school success (O'Neill et al., 2005). A trauma-informed teacher will be aware of these potential deficits and will be better able to address them in the classroom.

Importance of This Study: The Roles of the Teacher and Counsellor

In an elementary classroom complex trauma symptoms present as at-risk or inappropriate behaviours, if they are readily apparent at all. They may also appear as seemingly positive behaviours, at least on the surface. Many behaviours will appear as disobedience or noncompliance, hyperactivity, low cognitive functioning or emotional immaturity. They may also appear as social withdrawal, clinginess, over compliance and perfectionism.

Children with complex trauma are frequently identified as the children who display lower frustration tolerance and persistence, avoiding tasks that are challenging. They are the children who are in a chronic state of emotional arousal. They may be quick to anger, often reacting in a manner that seems out of proportion to a given situation. They are more likely to be referred to special education services or sent to the office for disciplinary action. They may also display somatic symptoms such as stomach aches and headaches. They are more likely to have lower grades and scores on standardized tests, and have higher rates of academic failure (Purvis, K. et al., 2015; Bell et al., 2013). In non-trauma informed classrooms, the maladaptive behaviour exhibited by many traumatized children is often misunderstood, frequently resulting in punishments that serve to worsen rather than improve the behaviour displayed by children from trauma in the classroom (O'Neill et al., 2010; Bath, 2008)

Other traumatized children will avoid attracting attention as much as possible. They may have learned to attract as little notice as possible in order to remain safe in their homes. What

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they learn at home, they will often apply at school. They may be quiet, watchful children who have learned to notice even subtle cues from the adults around them, and adjust their behaviour accordingly. They are often completely unaware that they are doing this. Many children with complex trauma exhibit a combination of tightly controlled and explosive behaviour as they struggle to maintain equilibrium. They may try not to feel very much and then display anger or cry in a manner that appears out of proportion to minor frustrations or slights (Blaustein & Kinniburgh, 2010).

A classroom teacher may be one of the few adults, other than the child's parents to see the child on a consistent basis. A teacher is in a position to notice changes in a child's typical behaviour, and to identify students who may be displaying complex trauma symptoms. Teachers are also in a position to be a part of the healing process. At the very least, a teacher can function as a protective factor, acting as a safe attachment figure that helps to keep the extent of the student's trauma from becoming more severe (Purvis, K. et al., 2015). It is not necessary for the teacher to be certain that trauma has occurred or even know of the events themselves to be able to make necessary referrals and institute the necessary supports in the classroom. Awareness of the symptoms of complex trauma, however, is crucial for the teacher to be able to act in a manner that is of benefit to traumatized children (Bell et al., 2013).

The key to a classroom teacher's effectiveness in assisting children with complex trauma to grow emotionally, cognitively, socially and academically is attachment. Despite the seemingly overwhelming odds against them, children have an incredible capacity to overcome adversity. With the right supports in place, they can develop the capacity to form healthy attachments and relationships, acquire the skills necessary to self-regulate their emotions and behaviour, and to succeed in school and beyond. Because the underlying essence of school life is social and

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emotional, two areas that are particularly difficult for children with complex trauma based attachment issues, in order for children to succeed academically in the classroom, their social and emotional needs must also be met. A trusting relationship with a caring attachment figure, such as a trauma-informed teacher is necessary for this to occur (O'Neill et al., 2010, Lowenthal, 2001, Berson & Baggerly, 2009).

With the support of the school counsellor, the classroom teacher can help the student develop a sense of belonging, a sense of safety, and a sense that they are valued. The counsellor can help the teacher understand how the unregulated fight, flight or freeze reactions of chronically aroused students may appear in the classroom. Together, the teacher and counsellor can plan and implement individualized strategies to support the child in the classroom. Furthermore, the school counsellor and classroom teacher, as part of a School Based Team, or Care Team including the child's parents or caregivers, outside counsellors, social workers and others can help the child heal and develop the necessary competencies for success in and outside of school (Bath, 2008; Bell et al., 2013).

Summary

In healthy family situations, parents are for the most part attuned to their children's physical, emotional, and social needs. The child's needs are met, and the child develops a sense of safety and trust. With the assistance of the parents, children follow a typical pattern of development, developing age typical language and cognitive skills, as well as skills to self-soothe when the child becomes distressed. Children in unsafe environments where their needs are chronically unmet, or where traumatic events such as abuse and family violence occur frequently over a lengthy period of time will have deficits in their development. They develop a pervasive sense

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of being unsafe and become hyper-vigilant for signs of danger. To varying degrees, children will display symptoms of complex trauma.

All children adapt to their environments and employ skills that allow them to survive in their particular situation. What is adaptive in one environment may be maladaptive in another environment. Children living in chaotic and unsafe environments will develop skills that may keep them safe in their home environment, but not be suitable to other environments such as school. This leaves them vulnerable to social, emotional and academic difficulties. The school counsellor and classroom teacher can work together to mitigate the influence of complex trauma by providing a safe, nurturing place in which children with complex trauma can develop the social, emotional and academic skills that allow them to succeed.

Outline of Remaining Work

This chapter has provided an outline of the effects of complex trauma on elementary school children. It included definitions of terms and discuss the purpose of this project. Chapter 2 will review the literature regarding complex trauma and discuss how it affects a child's attachment patterns, cognitive, neurological, social and emotional development and how this in turn affects their functioning and achievement within the elementary school classroom. This chapter will also discuss the protective, or buffering factors that can reduce the impact of complex trauma on children. Finally, chapter 2 will discuss mindfulness and social-emotional learning (SEL), and how this can not only improve a child's functioning at the classroom level, but also positively impact a child's neurobiological development. Chapter 3 will discuss recommendations and strategies that can be used in the classroom and an outline of a potential professional development presentation on recognizing and responding to traumatized children that could

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potentially be used by a school counsellor as part of a Professional Development Day or presented in a staff meeting.

Chapter 2

Literature Review

Introduction: Domains Affected by Trauma

The short and long-term consequences of trauma are complex and multidimensional as are the individual children who experience them. Literature on complex trauma suggests that trauma related impairment in children tends to fall into several interdependent domains of functioning. These domains are interdependent and overlap, with each one strongly influencing the others. These domains are attachment, neurobiology and physical functioning, affect/emotional regulation, dissociation, behavioural regulation, relationships/social competence, academic/cognition, and self-concept (Cook et al.; Kliethermes et al., 2014; Bell et al., 2013, Tishelman et al., 2010).

Tishelman (2010) describes several core issues within each domain. Within the affect/emotional regulation domain are the core issues of; deficits in emotion identification, hyper-vigilance, compromised ability to modulate arousal, extreme mood states and dissociation. The Neurobiology and physical functioning domain, sub domain involves neurobiological changes, disconnection from the body, resulting in lack of physical coordination, and lack of awareness of physical states such as hunger, thirst or fatigue. Physical functioning also involves the physical holding of stress, which other authors account for as somatic complaints. Awareness of oneself in space is also compromised, and trauma-related injuries may also be present. The relationship domain involves the child's self of self, trust and safety, and social skill and competence. The academic/cognitive domain includes information processing, language and learning, executive functioning and personal agency (Tishelman, 2010).

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It is important to note that each individual child, due to their unique circumstances is likely to have different levels of impact across domains. A child will have some domains impacted more deeply, resulting in greater disruption of function. Conversely, some domains may have been spared to some degree, resulting in less disruption of function. Furthermore, the impact across domains may be more pronounced in some situations, and less so in others (Afifi & MacMillan, 2011). Complex trauma affects children's ability to connect with others, to trust and have healthy relationships. It affects children physically, emotionally and cognitively. Children affected by it tend to view the world as a threatening place over which they have little control. As Streek-Fischer and van der Kolk (2000 as cited in Tishelman, 2010) explain, chronic trauma impedes the integration of sensory, emotional and cognitive information into a cohesive framework. This leads to unusual responses to stress that may appear out of context and out of proportion to the actual stressor. The following sections will discuss how the domains are affected, and how such effects influence the others.

Attachment

The formation of healthy attachments is a basic developmental competency necessary for interacting and collaborating with others. In fact, according to Szalavitz & Perry (2010) it is necessary for survival. Historically human beings have survived by being interdependent. Compared to other animals, humans are not particularly strong, fast or in possession of natural defenses to fend off predators. Humans formed cooperative groups to avoid starvation, to keep each other safe from predators and rival human groups, and to raise children. Living communally and cooperatively led to the development of the ability to read others' intentions, to empathize and to form rewarding, nurturing and long-lasting relationships. The ability to trust

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others and form emotional attachments is adaptive and continues to be necessary for human development, survival and wellbeing.

Though humans are born with the genetic capacity to form attachments, this capacity alone is not a guarantee that it will happen. Secure attachments form in safe nurturing and predictable environments in which children experience having their emotional, social and physical needs met. When these needs are met, the neurological systems necessary for forming and maintaining relationships are shaped in an optimal manner. How a child is nurtured also influences the development of the neural systems responsible for self-regulation that is, controlling responses to feelings, thoughts and experiences. Szalavitz and Perry (2010) go further to say that the ability to control how one responds to stressors in a flexible manner is necessary for survival. It is the child's first key relationships that shape the stress response system necessary for this self-regulation to happen.

This is similar to the findings of Schore and Schore (2008), who state that secure attachments provide the foundations of self-regulation in children. Secure attachments are essential to the development of the right brain neurobiological systems responsible for processing emotions, modulating stress and self-regulation. Early life attachment experiences strongly influence the early development of the child's right brain, which as Schore (2003 as cited in Schore & Schore, 2008, p. 10) explain it, is the "neurobiological core of the human unconsciousness". This is the part of the brain responsible for interpreting and responding appropriately to the social cues of other individuals (Schore & Schore, 2008).

For some children, their primary attachment with the caregiver is itself the source of traumatic experiences. Caregivers in maltreating situations are at once the threat and the source of comfort. The caregiver may be unable to adequately meet the child's needs, or may react

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negatively to the child's needs. This will undermine the bond between the child and caregivers and limits the child's ability to form a secure attachment and self-regulate. Unlike securely attached children in non-maltreating families, who are able to effectively make use of their caregivers to help them regulate emotions, maltreated children with insecure attachments are less likely to have a caregiver capable of the consistent, predictable and sensitive interactions necessary for the child to develop strategies for self-regulating emotional arousal. This increases the likelihood that children in maltreatment situations will experience overwhelming levels of emotional arousal, which in turn will lead to difficulties processing and managing negative emotions (Kim-Spoon, Cicchetti & Rogosch, 2013; Bowlby 1969/1982 as cited in Kim-Spoon et al. 2013; Tarullo & Gunnar, 2006).

The inability to self-regulate emotional arousal, along with deficits in adaptive social functioning tends to lead to difficulties with peers. The child has difficulty attuning to the emotional states of others, and often misunderstands or misinterprets social cues. Social isolation, and interpersonal difficulties with caregivers, siblings, peers and teachers can develop. As the relationship between a caregiver and child is reciprocal, the child's lack of self-regulation, along with the caregiver's own deficits in impulse control and emotion regulation leads to further difficulties in caregiver-child interactions. This in turn will lead to further diminished capacity to trust in not only primary relationships, but interpersonal relationships altogether (Courtois & Ford, 2009; Kim-Spoon et al., 2013). In the classroom, this will appear as a child with varying difficulties getting along with and working with others. The child will also have difficulty regulating levels of arousal necessary for attending to and completing classroom tasks.

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Neurobiology and Physical Functioning

Complex trauma affects human beings physically at the neurobiological and bodily levels. According to Tischelman et al. (2010), not only is neurobiology affected, particularly in early childhood when neuroplasticity is greatest, children's ability to function physically at an optimal level is also compromised. Furthermore, the physical effects of complex trauma related stress affect children through somatic symptoms, such as stomach and headaches and through impaired immune system functioning.

Neurobiology

Life experiences shape the neurobiology of the brain throughout an individual's life. Repeated responses to certain life events form and reinforce neural pathways, while other pathways may atrophy from lack of use as in the case of neglect where there is a lack of positive stimulation (Davis et al., 2015). This repetition and reinforcement of neural pathways enable human beings to adapt and function in their environment. In a nurturing environment, the neural systems responsible for relationships and for modulating the stress response are employed more often and therefore reinforced. In a stressful or maltreating environment where children may experience overwhelming levels of emotion other neural systems are employed. One such system is the (hypothalamic pituitary adrenal) HPA axis, and stress hormones are produced to enable the child to respond to a threatening situation (Tarullo, 2006; Davis et al., 2015).

Szalavitz and Perry (2010) state that a child's first key relationship with a caregiver shapes the neurobiology of the stress response system to allow self-regulation. The brain regions involved in relationships are also those that moderate the stress response. In complex trauma, the stress response system develops in a manner that prepares the child to respond to the danger (Gaskill & Perry, 2012). Cook et al. (2010), posit that unlike non-traumatized children, children

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with complex trauma have a greater tendency to reflexively react to stimuli as they appear. This leaves them vulnerable to failing to develop the necessary neurological capacities to regulate emotions. Essentially, children from complex trauma have a stress response system that reacts according to how a situation appears, as opposed to what may actually be occurring.

Carrion and Wong (2011) conducted and summarized the findings of longitudinal studies on the effects of traumatic stress on the hippocampus and the prefrontal cortex (PFC), two brain structures responsible for cognitive functions necessary for success in the classroom. The studies used magnetic resonance imaging (MRI) to investigate changes in hippocampus, PFC and total brain volumes compared to pre-bedtime cortisol levels in children and youth with posttraumatic stress symptoms (PTSS). Cortisol, the human stress hormone is implicated in reduction of brain volume, as it can be neurotoxic if secreted in high levels. Studies in rodents have associated high corticosterone (the animal stress hormone) levels with greater deficits in learning and increased hippocampal cell damage. Cortisol is found in children with Post Traumatic Stress Symptoms (PTSS).

The hippocampus is largely responsible for new learning and formation of memories. Traumatic experiences may render memories difficult to regulate, leading to abnormal memory processing. Individuals may experience overrepresentation of memories in the form of nightmares and intrusive thoughts. They may also experience suppression, such as poor recall and selective amnesia (Carrion & Wong, 2011).

Carrion and Wong (2011) found that children with more severe symptoms and higher baseline pre-bedtime cortisol levels had greater hippocampal volume reductions over time. In another study by the group, children with PTSS showed decreased right hippocampal activation and retrieval accuracy during memory tests. Increased severity of avoidance and emotional

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numbing symptoms were also correlated to reduced left hippocampal activity during memory retrieval tasks.

The PFC is largely responsible for many cognitive tasks necessary for classroom learning. It is essential for directing and maintaining attention, filtering and suppressing information in favour of more relevant information, response inhibition and making response-reward associations (Carrion & Wong, 2011). Children with PTSS and other complex trauma symptoms tend to be easily distracted, and are often impulsive. Executive functioning may also be impaired. Carrion and Wong also found that children with PTSS had smaller total brain volumes, and decreased gray matter in parts of the PFC compared to children in the control group. Carrion and Wong state that there is some question as to whether brain abnormalities in children with PTSS are the pre-existing risk factors or the consequences of traumatic stress.

Davis et al. (2015) write that the amygdala, paired structures in the brain involved in the 'fight, flight or freeze' response to danger is involved in attaching emotional significance to environmental stimuli and assists with triggering the behavioural response to threats. It works with the hippocampus to apply emotional significance into memories to prompt a behaviour response whenever a particular threat reoccurs. The amygdala also helps activate other areas that are part of the stress response.

Roosendaal, McEwen and Chattarj's 2009 article shows similar findings in that the amygdala is essential to regulating the stress response on memory. The stress hormones and the related neurotransmitters help consolidate memory for emotionally charged experiences through activation of the amygdala. This activation strengthens the storage of different kinds of memories, through the amygdala's wide network of connections with other brain areas such as the hippocampus. Though some memories are strengthened by emotional arousal and stress,

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other areas of memory, such as working memory and memory retrieval are impaired by the amygdala and its interactions with other brain areas. This helps explain why it is difficult for an individual to remember certain things, such as phone numbers or door combinations when under stress.

When exposed to the chronic levels of stress that contribute to complex trauma, the amygdala can become dysregulated. This may result in the attribution of emotional significance and a stress response to stimuli that aren't typically considered threatening. For example, neutral facial expressions, or social situations may be perceived by complexly traumatized children as hostile (Pine et al., 2005). The amygdala is also activated by perceived threat, not necessarily actual threat, so when dysregulation occurs the individual may perceive non-threatening stimuli as threats. Case in point; in a study by Dannowski et al. (2012 as cited in Davis et al., 2015) healthy adults with a history of maltreatment as children, the participants showed amygdala hyper-responsiveness to negative facial responses. In a school situation this can be seen in children who become hyper-vigilant, startle easily, fearful, and even aggressive when they encounter seemingly harmless stimuli (Davis, et al., 2015).

The literature cited in this paper would suggest that though the stress response is adaptive in that it allows an individual to survive, it is damaging if it becomes chronically engaged. Especially during critical periods of development, the child's growing brain has considerable neuroplasticity. This can be both adaptive and maladaptive. If the child's survival depends on being ready at any given moment to run, fight or freeze, over repeated exposures to traumatizing situations, the child's brain will develop in a manner to suit that environment. When the child enters a school situation in which emotion regulation, interpersonal skills, and the ability to attend to instructions are important expectations, the child may be ill equipped to meet the

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demands of that environment. On the other hand, this neuroplasticity provides hope for improvement. The presence of one or more supportive adults, having needs met, and intellectual stimulation can help the child's brain develop in a more optimal manner.

Physical Functioning

Tishelman et al. (2010) describe the physical domain as the child's internal physical reaction to stress and the child's resulting physical functioning in the environment. Children from complex trauma often dissociate as the part of the stress response. If they cannot fight, or physically leave a situation, they may freeze or otherwise escape in their mind. This contributes to diminished self-awareness of place and time, and of awareness and regulation of body functions and needs. This will impact how the child interacts with surroundings. The child may be unaware of whether they are too hot or cold, whether they are tired, hungry or need to use the washroom. Enuresis and encopresis can occur. The child may have poor coordination and motor difficulties, affecting performance in sports, and physical education classes. The child may have poor self-care and personal hygiene. Eating difficulties, such as overeating or undereating may also result from impaired self-awareness of body states. This, in turn will affect the child socially.

Chronic stress and complex trauma have detrimental effects on the body and its function. Muscle tension, impaired immune system function and somatic complaints are common in children from complex trauma. The child may hold muscles taut, and experience pain and stiffness as a result. Headaches, stomach aches, nausea and frequent illnesses may impact a child's functioning at school, and may contribute to absenteeism from school. Also, the child may be preoccupied with illnesses, injury or body image, and may express these through artwork, writing, play or other aspects of school functioning (Tischelman et al., 2010).

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Affect/Emotional Regulation

One of the more observable outcomes of complex trauma is the impairment of affect and emotional regulation. Bell et al. (2013) write that traumatized children often experience a considerable amount of emotion though individual children will differ in how they express it. Children with complex trauma have difficulty regulating their levels of emotional arousal in a developmentally appropriate manner and frequently react as would be expected of a younger child. They have considerable difficulty identifying their internal emotional states and in turn have difficulty choosing an appropriate response (Tishelman et al., 2010). This is similar to Vander Kolk's (2005) findings that trauma impedes neurobiological development, and therefore the capacity to integrate sensory, emotional and cognitive information into a 'functional whole' (p. 402). The likelihood of a child having unfocused, disorganized responses to later periods of stress is increased.

Children with complex trauma tend to be hyper-vigilant, constantly on alert to react to real or perceived incoming threats. In addition, they have a bias toward interpreting neutral cues or other information as threatening, and may react strongly as though there is a real threat (Tishelman et al., 2010). Tishelman et al. 2010, write that this negative attention bias may appear in the classroom as difficulty during transition periods, changes to schedule and unstructured time periods. There is considerable ambiguity and unpredictability in these situations, which will be perceived as threatening, thus triggering a reaction. The perception of neutral cues as threatening can also lead to interpersonal conflict with peers and adults. The child's reaction, which may involve withdrawal or aggression may even seem to be unprovoked by those who do not perceive neutral information as threatening. This is further complicated by

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a heightened sensitivity and reactivity to any real or perceived criticism, peer rejection, or failure at tasks both in and out of the classroom (Tishelman et al., 2010).

Children from complex trauma are prone to extreme and often intolerable mood states, especially those in situations where the parents/caregivers are unable to effectively regulate their own affect, or otherwise attune to and co-regulate their child's emotions. Their difficulty regulating affect can increase emotional lability. Their reactions to stressors can be instantaneous as in angry outbursts, or conversely, they may be suppressed until later on. They may experience depression, anxiety, anger and rage. In a school setting, this can present as low motivation to complete tasks, difficulty completing tasks due to emotions, or other distractors affecting the ability to focus, perfectionism, low frustration tolerance or a tendency to give up on tasks quickly. Thinking in absolutes, often known as 'all or nothing' thinking, can further impact their ability to tolerate real or perceived challenges to completing tasks (Tishelman et al., 2010).

Van der Kolk (2005, p. 403) writes that when caregivers are "neglectful, inconsistent, violent, frustrating or intrusive", children often experience intolerable levels of emotional distress and are likely to develop an internalized working model of the external environment being unable to provide relief for such states. The children subsequently lack the sense that they can trust others to help them. Because they lack the ability to regulate their own states, they tend to experience excessive anxiety, anger and a longing for security.

Dissociation

Dissociation is a survival mechanism in inescapable traumatic situations that are too overwhelming to process at a given moment. It involves a discontinuity in one's mental state, a disconnection from one's emotional state, thoughts, memories, and immediate surroundings (Farber, 2008; Grohol, n.d.). Tishelman et al. (2010) write that dissociation can present in the

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classroom as inconsistent academic performance, inability to attend to or understand classroom instruction (e.g. daydreaming), inability to remember or denial of own behaviours that have been observed, withdrawal from social structure or markedly different behaviour and affect at different times and with different people.

Cook et al. (2005) write that complexly traumatized children make use of dissociation, alterations in consciousness, as adaptations to their environment. Children tend to limit their awareness of self and experience, automatize behaviour, compartmentalize painful feelings and memories, and detach from their awareness of emotions and internal states. The child's thoughts and emotions are disconnected, the child may be unaware of physical sensations, and they may engage in behaviour repetitions without consciously choosing to do so, or even being aware of the behaviours.

Both Tishelman et al. (2010) and Cook et al. (2005) describe dissociation as a survival or adaptive mechanism traumatized children will often use subconsciously to function in difficult environments. It becomes maladaptive in school settings. In a school setting, a child experiencing dissociation may appear to be daydreaming (or actually be daydreaming), and may miss valuable instruction and interpersonal experiences. While the child is physically present in the room, the child's attention is elsewhere. A child who is disconnected from body sensations may appear clumsy, and may be unaware of hunger, thirst, tiredness, or whether they need to use the toilet. In an elementary classroom, this can manifest in a child who is upset, but is unable to tell an adult why, or what is needed to resolve such feelings. The lack of awareness of bodily sensations may contribute to encopresis or enuresis, especially in younger children (Tisheleman et al, 2010; Cook et al., 2005).

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Van der Kolk (2005), views dissociation as an attempt to minimize perceived threat and to regulate intense states of emotional distress. In cases where the parent or caregiver is the source of the child's distress, not only are the conditions for high levels of arousal created, but the parent or caregiver is unable to help the child modulate intense arousal. The child is unable to self-regulate levels of arousal, which leads to an inability to process and integrate what is happening in a given situation. The child's sensations, affect and thoughts become dissociated fragments of sensation and memory. This leaves the child unable to understand what is occurring and therefore unable to plan or carry out courses of action. Children in a state of hyper-arousal with no reliable external source of relief learn to ignore what they feel, or what they perceive. Thus when faced with a fearful situation they may go immediately into a fight, flight or freeze mode and not be able to learn from their experience.

Perry et al., (1995, p. 280), describe dissociation as "disengaging from the external environment and turning one's attention inward". The level of dissociation ranges from mild, as in daydreaming or fantasy, to severe, as in loss of consciousness. Traumatized children will display a variety of dissociative responses, such as numbing, over-compliance, avoidance of stressful stimuli, and the restriction of affect. De-realization and depersonalization, are also dissociative strategies children often use. Children may feel as though the events around them are not happening, or that they are watching the events from outside themselves. The dissociative strategies can be adaptive in trauma situations, but may become maladaptive if they are used in relatively routine situations in which many people would not find stressful (Perry et al., 1995).

Behavioural Regulation

Cook et al. (2010, p. 394), write that complexly traumatized children tend to display both "over and under-controlled" behaviour patterns. Over-controlled behaviours may include rigid

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compliance to rules and adult requests, strict adherence to routines and expression of distress with changes to plans, especially those that are unexpected. Under-controlled behaviour patterns include reacting impulsively to stimuli in the environment. Cook et al. (2010) state that over and under controlled behaviours may serve certain functions for complexly traumatized children. They may serve to help children achieve a sense of control over their environment, or to avoid or modulate emotional arousal. Both over-controlled and under-controlled behaviour may include unusual eating patterns, such as hoarding of food.

Cook's findings are similar to Perry's (2013) observation that complexly traumatized children may display atypical eating behaviours. They may hoard food, or eat to excess. Undereating and rumination, the vomiting of food and swallowing problems may also be observed. Perry (2013) also states that complexly traumatized children may use primitive, strange or age inappropriate soothing behaviours. They may rock, bite, cut or scratch themselves, or injure themselves in other ways. These behaviours will escalate when complexly traumatized children experience stress or feel threatened.

Van der Kolk (2005) writes that when the family is the source of trauma, because children depend on and need to identify with their caregivers, they learn to behave in a manner that allows them to survive within their family situation. They may react to their environment with excessive compliance, defiance, or a combination of both. Children who do not have caregivers who can reliably and consistently help the children manage their state of arousal will be left with deficits in emotional regulation. The children will lack a consistent sense of self, and have poor affect and impulse control. Their outward behaviour may be characterized by distrust, suspicion, and aggression.

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Children may also display age inappropriate behaviours, according to Bell et al. (2013), such as thumb sucking past an age where it is typically expected. They may also play in an unusual manner, either re-enacting traumatic events, or restricted and repetitive play, such as repeatedly building with blocks and then knocking them down. Traumatized children may also behave aggressively, or may behave in a manner that draws attention from adults or peers, for example over or under achieving, or disrupting the class. Children may withdraw from others and not play at all, or they may become intrusive.

Relationships and Social Competence

According to Tishelman et al. (2010), the overwhelming experiences of many traumatized children often lead to a disrupted sense of self that affects their interpersonal relationships including those with peers and adults in a school setting. The core areas related to relationship troubles are a child's sense of self, trust and safety, and social skills and competence. The disrupted sense of self contributes to a lack of understanding of one's own internal states. This disrupted sense of awareness can affect a child's ability to understand how one's thinking, feelings, behaviour and physical sensations interact to appropriately self-regulate interpersonal behaviour. In turn, this diminishes a child's ability to understand how one's behaviour affects others, and to feel and respond to others with empathy. The child's ability to effectively and confidently seek out social contact appropriately may also be impacted. The lack of awareness of one's own internal states impacts the child's understanding of the internal states of others.

Many traumatized children, especially those who have had attachment disruptions due to a chronic lack of safety have difficulty forming and maintaining trusting, stable and rewarding interpersonal relationships with peers and adults (Tishelman et al., 2010). Difficulties with trust will often lead to social isolation, as traumatized children may interpret neutral social cues as

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negative. They may respond as though they are threatened and because of their discomfort with emotional closeness, they may inadvertently push away people who may be sources of emotional, social and academic support (Tishelman et al., 2010).

Tishelman et al. (2010) write that children with complex trauma often have underdeveloped social skills. They may lack pragmatic, or social language skills and have difficulty with social problem solving. This may lead to peer rejection, frequent conflict with peers. Some children who lack appropriate social skills, and are withdrawn socially may be vulnerable to being bullied by others, while other children will behave aggressively toward others. Because chronically traumatized children lack trust in the reliability and predictability of others, Van der Kolk (2005) states that they will have difficulties with intimacy in relationships and often become socially isolated.

Shanker (2013) includes another social domain, the prosocial domain that is both affected by trauma and an important part in the development of the ability to self-regulate. This domain is characterized by more outwardly focused interpersonal skills, those that are helpful to others, and increase the likelihood of peer acceptance, friendships and empathy. Like all the other domains, it is closely linked to the involvement of the others (p. xvii). Prosocial behaviours involve the capacity for empathy, that is caring about how others feel and the willingness to help others in need. It also involves the ability to help others deal with their own internal states and to co-regulate or help them soothe or calm themselves. Children with prosocial skills have a sense of honesty, both with others and within themselves. The prosocial domain includes children's ability to put others' needs and interests ahead of their own, and wanting to do the right thing.

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Academics/Cognition

According to Tishelman et al. (2010), complexly traumatized children often have impairments in the areas of information processing, language development, executive functioning, personal agency, and may have comorbid but trauma related learning disorders. These are areas that can adversely affect academic performance and overall achievement. Difficulties with narrative memory for events, accurately understanding, interpreting, sequencing and organizing information are often observed. Cause and effect relationships are often impaired, as is using language to problem solve and communicate effectively. Children with complex trauma often experience auditory processing problems. Because goal directed behaviour and cognitive regulation are impacted by complex trauma, difficulties organizing, starting and completing schoolwork, and developing effective study skills are frequently. In the classroom, this may appear as a student with difficulties with understanding and executing instructions.

This is consistent with Bückner et al. (2012), who conducted a neuropsychological study assessing a wide range of cognitive functions including, but not limited to intellectual functioning, working memory, attention, and executive functioning. They found that children between the ages of four and twelve who were exposed to early traumatic children performed worse on attention, verbal recall, and working memory on the Digits Span subtest of the WISC-III than did age and gender matched children from the control group. They also found that differences in the severity, duration and frequency of trauma could produce more focused cognitive deficits. For example, children who experienced neglect early in life (below four years of age in this study) showed greater deficits in attention than other cognitive areas, though overall cognitive functioning was impacted.

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Smithgall, Cusick, and Griffin (2013) write that traumatized children may lack many cognitive abilities and skills that are necessary for school success. Consistent with other literature, the authors state that traumatized children may have delayed language, language processing difficulties, and impaired concentration. They may therefore have difficulty understanding and responding to classroom instructions. They may lack the ability to solve problems, or understand abstract concepts. Their emotional regulation, and relationship forming difficulties will often impact traumatized children's ability to work effectively in groups. Furthermore, they may have difficulty transitioning from one activity to another, and may have difficulties with organizing materials in a sequential manner. Such difficulties are associated with school disengagement and poor academic performance.

Self-concept

Huitt (2011) defines self-concept as the totality of one's beliefs, attitudes, and opinions of oneself. Essentially, it is everything one knows about oneself. It begins in childhood and develops through the course one's life. It is influenced by one's interactions with other people (Capelatto et al., 2014, p. 332). Van der Kolk (2005) writes that complexly traumatized children tend to lack a consistent sense of self. This means children may not fully understand who they are and thus cannot fully understand who others are. This may lead to children having difficulty understanding personal boundaries, or read the social cues of other children. Furthermore, children from trauma often have difficulty asking others for help when needed. Essentially, they do not believe others will be available or willing to help them. As Van der Kolk (2005, p. 405) writes, other people can be "sources of pleasure or harm", but traumatized children without a consistent self-concept may not see other people as imperfect fellow humans with their own needs and wants. Their lack of understanding of themselves leaves them with impaired personal

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insight into why they feel and act as they do. This coincides with Adeuis (2007), who writes that children from complex trauma often have feelings of guilt and shame, low self-esteem (one's opinion of oneself), and tend to feel they are incapable of effectively responding to and managing in their environment. Many believe their experiences have left them permanently damaged.

Protective/Resilience Factors

Protective factors serve as buffers, diminishing or counteracting the effects of risk factors such as child maltreatment. These factors can reduce the severity of complex trauma symptoms or even prevent their development (DeHart, Sroufe & Cooper, 2004). Afifi and MacMillan (2011) refer to protective factors as those that may protect an individual from impairment associated with adversity. Cook et al. (2010) write that children, even those from similar circumstances, may react differently to situations that can potentially lead to trauma. They may also function better in certain domains, for example academic, but struggle in others. Areas of competence and challenge can also change over time as children face new stressors or developmental challenges.

There are factors that can buffer the impact of difficult environments. These are: the presence of emotionally supportive and competent adults with whom to form healthy attachments, development of cognitive and self-regulation capacities, positive self-concept, and motivation to function optimally in one's environment. As children both influence and are influenced by their environment, a child's temperament can serve as either a protective factor or a risk factor. A child with an easy-going temperament and sociable demeanour will likely have an easier time finding social and emotional support than would a child with a tendency to react negatively (Sroufe et al., 2003; Perry, 2013). Other individual traits that are also protective

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factors are an internal locus of control. The children feel that they have control over their lives and environment. An external locus of control is also helpful in that children understand that bad things don't happen to them because of some failing or defect in themselves. Effective coping strategies to deal with frustration and adversity, talent, creativity and spirituality are also characteristics that can help lessen the impact of trauma on a child's life (Cook et al., 200). Afifi and MacMillan (2011) cite family cohesiveness and life satisfactions as protective factors.

This coincides with Herrman et al. (2011) who argue that personal traits such as openness, optimism, extraversion and agreeableness can be protective factors. They use the term resilience to refer to a child's ability to adapt positively, or recover from adversity. Possession of an internal locus of control, and a sense of mastery and self-efficacy over one's environment and life contribute to resilience against trauma. Also contributing to resilience are higher intellectual functioning, cognitive flexibility and the ability to regulate one's emotions.

Herrman et al. (2011) argue that environmental factors which buffer the effects of trauma are social connection and support, including positive relationships with friends and family, supportive teachers and other adults. Stable relationships with caring, and responsive caregivers, and the absence of maternal depression also contribute to a sense of wellbeing. Many of these factors are lacking in situations where family members are a source of complex trauma. On a larger scale, community supports such as good quality schools, community services, and the availability of athletic and artistic activities also contribute to resilience. Spirituality and a lack of exposure to violence are also protective factors. They go further to say that experiencing and overcoming relatively minor adversity is important to the development of resilience to life's challenges.

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Mindfulness/Social Emotional Learning

Mindfulness as defined by Jon Kabat-Zinn (2003, as cited in Thornley-Hall, p. 5) is “the awareness that emerges though paying attention on purpose, in the present moment and non-judgmentally to the unfolding of experience.” For students at the elementary level, one meaning of mindfulness would be selectively focusing attention, in the present moment, being aware in a non-judgmental manner, of thoughts as they arise, and sensations such as things they see, hear, feel, and smell (Thornley-Hall, 2015). These practices can be effective at an elementary school level as they enhance self-management and help children take an active role in their own development (Semple, Reid, & Miller, 2005 as cited in Rempel, 2012).

In a randomized controlled study by Shonert-Reichl et al. (2015) of a particular mindfulness program called Mind Up found that after a period of four months of mindfulness practices, in combination with Social Emotional Learning (SEL) self-regulation improved in a number of ways for students in the fourth and fifth grades. In contrast to a group of children in a social responsibility program, students in the Mind Up program showed significant improvement in executive functioning (EF), and increased self-reported measures of wellbeing (p. 61). Self and peer reports of prosocial behaviour showed improvement as well. Schonert-Reichl et al. (2015) also found that children who participated in the Mind Up program, outperformed the comparison group in EF tasks such as response inhibition, working memory and cognitive flexibility. This is consistent with mindfulness practice studies in adults, suggesting mindfulness practices contributed to increased inhibitory control, which then leads to improved emotional control and decreased aggression. The authors also suggest that the opportunities to perform acts of kindness that are part of the Mind Up program may also have contributed to the increased pro-social behaviour observed in the study.

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Neuroscience studies on mindfulness have suggested that there are considerable and demonstrable neurological benefits to mindfulness practice as evidenced by fMRIs and other brain scanning techniques (Thornley-Hill, 2015). Weare (2013) states that brain-imaging studies performed on adults have shown that mindfulness practices can produce changes in the structure of the brain and that these changes, though more evident in the long-term also show differences in the short term. For example, in a pre and post analysis of adults participating in eight-week mindfulness courses, Davidson and Lutz (2008 as cited in Weare, 2013) found increased blood-flow to and a thickening of cerebral cortex areas responsible for emotion integration and attention, and decreased density in brain areas associated with stress and anxiety (p. 148).

A neuroimaging study by Luders et al. (2012, as cited in Thornley-Hill 2015) suggested that mindfulness increased information processing speed due to increased ‘cortical gyrification’ (folding), and increased thickness and density of the cerebral cortex (p. 14). Another study showed increased grey matter density in areas of the brain, such as the left hippocampus, associated with learning, memory, and modulation of emotional control where increased through mindfulness (Holzel, Carmody, & Lazar, 2011, as cited in Thornley-Hill, 2015). However, Weare (2013) emphasizes that much of the research on mindfulness has been conducted on adults, and research on children is not yet as extensive. Weare also states that no known adverse effects of mindfulness practice have been documented, and that well-conducted mindfulness training in schools is a low-cost intervention that tends to be well accepted by students and staff.

Summary

The literature reviewed in this chapter has outlined the domains affected by complex trauma. As mentioned in the introduction the domains are interdependent and there is considerable overlap between them. It is difficult to discuss one domain without mentioning another as they

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are so closely linked. For example, the relationship domain is strongly influenced by the behavioural domain, as children's social competence is strongly hindered or helped by the behaviour they display. Their behaviour is strongly influenced by their affective domain and their affective domain is influenced by their interactions with others. Their interactions with others are in turn affected by their affect and behaviour. Each domain has its part to play with regard to the others. It is also important to note that each domain may be affected differently within one child. They may have areas of relative strength and difficulty.

Complex trauma has significant and wide-ranging effects on the complexly traumatized child's entire person. The stress of chronic maltreatment impairs a child's ability to trust the caregiver, which in turn affects the child's ability to attach to that caregiver. Should the caregiver be either physically or emotionally available on a consistent basis, or is unable to help the child co-regulate levels of arousal, the child is often left with overwhelming emotions that are difficult if not impossible to regulate independently. The child does not develop a complete sense of how to regulate emotions, and will therefore have difficulty doing so at an age appropriate manner in the future. These unregulated levels of arousal, and the resulting presence of stress hormones such as cortisol have a neurological impact on the child's developing brain. The development of areas of the brain, such as the hippocampus, which is important for memory, and the prefrontal cortex, which is important for such cognitive tasks as personal organization, attention and goal directed behaviour is impeded.

The very structure of the brain responsible for the tasks of childhood is developed less than optimally, and thus affects the child's ability to carry out these tasks. A child may have deficits in areas of attention, memory, impulse control and executive function. Classroom learning may be impaired, as may be social competence, behaviour regulation and even the child's very sense

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of self. Mindfulness practice is a group of approaches that has empirical evidence to support its efficacy in helping to optimize the development of brain structure, reduction in stress and self-regulation, thereby improving a child's receptivity to social, emotional and academic learning.

Fortunately, there are factors both within the child, the child's family and community that can buffer or reduce the impact of conditions that children would potentially find traumatic. Factors such as community, school and social support, friendship and opportunities to attach to a caring and stable adult can reduce the effects of chronically adverse situations. In light of this, the question arises as to how the school, the teacher, and the school counsellor can function as the necessary protective factors to increase the likelihood of each student achieving success at school. Chapter 3 will discuss various ways that schools can act as a protective factor in students' lives by supporting skill building, prosocial student behaviour and academic success.

Chapter 3

Summary of Findings

As discussed in previous chapters, complex trauma is the result of repetitive or multiple types of trauma over an extended period of time. It ranges in severity from physical and sexual abuse to emotional neglect. Children, even those in the same family, community or other similar situation may all experience the same events, yet be affected differently and to varying degrees. As mentioned before, what is traumatic to one child may not be traumatic to another. The degree of traumatization is determined by internal factors including a child's genetic makeup, and temperament, and by external factors such as the presence of protective or buffering factors such as family support, friendship, and safe, stable attachment figures. It is to be noted that internal factors such as temperament have the capacity to be both risk factors and protective factors.

Complex trauma tends to affect a child's ability to function in many ways, especially socially, emotionally and academically. One of the more observable effects of complex trauma is the diminished capacity of the student to self-regulate their arousal levels, attention and emotions. There is ample evidence through brain-imaging studies that chronic negative stress, is associated with neurological changes in the brain that negatively impact memory, attention, and learning, to name a few. The chronic stress that accompanies complex trauma can have physical effects on the body, such as increased somatic symptoms such as stomach aches and headaches. It can also weaken the immune system.

Fortunately, there are buffering and protective factors that can be implemented at the home, community and school level to help reduce the impact of trauma. There are interventions in the areas of Social Emotional Learning, including mindfulness practice that can not only further buffer the effects of complex trauma, but benefit children from more functional backgrounds.

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These are low-cost ways of improving well-being and academic performance that can be implemented at the classroom level by classroom teachers, and with the assistance of school counsellors.

Supporting Students at the Classroom and Schoolwide Level

As mentioned in the first chapter, the classroom teacher does not necessarily need to know that a student has been affected by trauma to be of considerable assistance (Bell, 2013), though it certainly helps. In fact, many effective classroom teachers already employ many of the strategies that students affected by complex trauma need. While it is necessary to recognize and report suspected abuse or neglect, and to ensure that a student's basic needs such as food and proper clothing are met, the focus of this project is to answer the question as to how schools can support the development of the self-regulation skills needed for a child to develop optimally.

The many domains affected by complex trauma, all of which have an impact on a child's ability to self-regulate emotions, behaviour, attention and arousal levels, would suggest that for schools to support the development of self-regulation, schools need to provide, as much as possible, not just instruction of those needed skills, but also the very environment that would allow such skills to flourish.

Support at the Classroom Level

At a classroom level, children with trauma backgrounds need, for the most part, the same things as children from non-traumatic backgrounds, but with some extra support. They need safety, attachment or connection (with teachers, other school staff and peers), and consistency. Students also need to feel valued and validated (Medina, 2008, as cited in Swick 2013). The connection between student, and teacher can help a student feel safe, connected and more secure. The importance of the student-teacher relationship, especially with regard to the child's mental

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health is difficult to overstate (Bell et al., 2013). Having at least one stable attachment figure or caregiver in a child's life is associated with more positive outcomes (Afifi, 2011). The classroom teacher can be one of many stable attachment figures, if not the only one in a student's life. The teacher can deliberately work to 'pre-emptively' connect with students before problems arise, though Brendtro & Longhurst (2005) caution that this should be accomplished in 'natural, moment to moment interactions' so as not to frighten students who may be wary of emotional intimacy with adults (p. 58). Classroom teachers, with the support of school counsellors, are capable of meeting many of these needs, especially if they receive the necessary knowledge and training needed to view children's behaviours and needs through a trauma informed lens (O'Neill, 2010).

Many children from traumatic backgrounds will often display behaviours, such as physical or verbal aggression, or clinginess that may elicit punishment or serve to further isolate them from the support of peers and adults. This is likely to provoke frustration in teachers and classmates alike. Trauma informed practice empowers teachers, and other school staff to understand why children from trauma behave as they do, and to respond to complexly traumatized students in a manner that serves to calm, rather than escalate levels of arousal and the accompanying behaviours (Brendtro & Longhurst, 2005).

The Classroom Environment

Both the physical and social-emotional classroom environment can be set up to support student needs. All children, especially those with a history of trauma need to feel safe in the classroom (O'Neill et al, 2010; Bath, 2008). Firstly, the teacher, and other adults need to be emotionally stable, predictable, and in control of themselves (Lowenthal, 2001).

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The classroom itself should be as calm as possible, with visual distractions, and the number of transitions between activities reduced. They will benefit from structured, and predictable routines, as these help them understand what is expected of them. Visual schedules can help students mentally prepare for the events of the day, as can informing the class ahead of time if there are to be any changes in the schedule, and why the changes will occur (Wright, 2014). Scheduling time for group and individual play, and modeling prosocial behaviours can be beneficial. It is also helpful to have quiet, or calming places for children to take breaks when needed. Children will benefit from discussing and reviewing rules, expectations, rewards and the reasons for them. These expectations need to be clear, consistent, yet flexible enough to accommodate students' needs. Students may lack understanding cause and effect relationships, such as that between their actions and the reactions of others. They will benefit from opportunities to discuss these either in stories, or in class problem solving sessions. Also effective would be the opportunity for students to see effective problem solving used, and to try it out themselves.

Responding to Behaviour

Responding to student behaviour in a trauma informed manner involves actions to be taken in advance to support positive behaviour, strategies to respond while an inappropriate behaviour is occurring, and problem solving, or making amends after the fact. It also involves acting on opportunities to acknowledge positive behaviours as they arise. Many teachers already use effective strategies to respond to the needs and behaviour of complexly traumatized children. As Brendtro and Longhurst (2005) state, trauma theory explains many childhood emotional and behaviour problems, whether or not the term 'trauma' is actually used. As mentioned in the first

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chapter, behaviour is purposeful and intentional; however, it is not always adaptive, appropriate or even effective across situations.

Children from chaotic backgrounds with inconsistent rules and routines may have difficulty connecting their behaviour to consequences, and may be unaware of how their behaviour affects others (Tishelman, 2010; Lowenthal, 2001). They may also have difficulty adjusting their behaviour to different situations. It is helpful for teachers and other school staff to recognize student behaviours as adaptations to a particular situation, and those behaviours, such as avoiding attention, may be essential to their safety outside of school. Inside a classroom situation, the same behaviour may be maladaptive in that it results in the child receiving less classroom support. If a child's challenging behaviours can be seen as inherent, albeit misplaced strengths a teacher can more effectively redirect their behaviour in a more adaptive manner. If a child is seen as trying to have a need met, if a teacher can recognize that need, it is easier to replace an inappropriate behaviour with one that is adaptive to the classroom, and still meet the child's need.

It is important for a classroom teacher to recognize the behaviours characteristic of complex and acute trauma, and understand that these behaviours are not necessarily under the child's control. The trauma response system determines how the child will react, and the child cannot simply turn it off (Wright, 2014). The resulting behaviours often appear as deliberate attempts to defy adult authority, and in a non-trauma informed situation may prompt punitive measures that serve to escalate an already trying situation. The adult tasked with dealing with the child at this particular moment is caught in a situation in which they can neither reinforce the child's behaviour by giving in, nor can they employ coercive punishments that will only serve to trigger the fight, flight or freeze response (Brendtro & Longhurst, 2005). Children who are hyper-

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vigilant to even subtle signs of anger in others, yet have difficulty with regulating their own arousal levels need adults who are calm, in control of their own emotions and arousal levels, and willing to essentially co-regulate students' emotions with them, all the while setting appropriate limits for behaviour. It is also important for a trauma-informed teacher to recognize that times of conflict are also opportunities to build 'trust, respect and understanding' between a student and teacher, and can be employed as teachable moments.

The Role of the School Counsellor

School counsellors, teachers and other school staff can work closely together as a team to create a supportive environment for students. Both school counsellors and teachers can develop a supportive working relationship between the families of students and the school. Both can help parents or caregivers develop the strategies needed to cope with challenging behaviour at home. They can also cooperate with the child's outside mental health provider to support the therapist's treatment plan (Bell et al., 2013), to discuss strategies, observations and progress and to make any changes to the plan as necessary.

School counsellors can provide support to students, teachers and other school staff, including administrators at various levels. They can assist and advise teachers at a classroom-wide level to support individual students or the class as a whole. Using a Response to Intervention (RTI) type model, school counsellors can help teachers and administrators implement interventions such as positive behaviour support programs at a school wide level. Response to Intervention is a multi-tiered approach, usually three tiers, used by schools involving the early identification of students needing behaviour and/or academic support. Depending on need, students are given increasing levels of support ranging from general assistance at the classroom level to individual or small group support (RTI Action Network,

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n.d.). This could include team teaching or providing direct class-wide instruction of a wide variety of intervention programs such as the FRIENDS program, ‘How Does Your Engine Run’ or the Mind Up program. In elementary school settings such as those in the Chilliwack school district, counsellors may offer short-term individual or group counselling, or they may have regular check-ins with at-risk students.

Counsellors can function as a link between the school, the home and various community agencies, such as the Ministry of Children and Family Development. They can help teachers and caregivers find various resources, such as respite care, or parenting programs outside the school environment. They can conduct functional behaviour assessments to develop an understanding of the motivation behind student behaviours. With the teacher, and ideally the child’s caregivers, they can develop a plan to support positive behaviour in the classroom. The school counsellors can also conduct professional development activities to assist the teacher in developing trauma informed practice, and assisting with any behaviour issues that arise.

Another service that school counsellors can provide is professional development to teachers, administration and other school staff such as Education Assistants. They can provide instruction on trauma-informed practice, on how to recognize complex and acute trauma in the classroom, and strategies to respond to many of the behavioural symptoms that may arise. Appendix A provides an outline of a presentation on trauma that a school counsellor can give to the staff of a school as part of Professional Development Day. It provides an overview of how trauma affects children socially, neurobiologically, and cognitively, and how a classroom teacher, in conjunction with the school counsellor can recognize and support traumatized children in the classroom.

Mindfulness and Social Emotional Learning

Many students, including those from traumatic backgrounds come to school possessing at least some self-regulation skills. That said, many children, whether they come from a traumatic living situation in which many needs go unmet, or whether they come from a supportive home in which most needs are fulfilled, instruction in self-regulation and prosocial skills can be of benefit. According to Shanker (2013), in order for children to develop an optimal level of self-regulation necessary for classroom learning, they need to be in a state of “calm, focused alertness” (p. xiii). There are six elements, abilities and desires necessary for optimal self-regulation to occur:

- When feeling calmly focused and alert, the ability to know that one is calm and alert
- When one is stressed, the ability to recognize what is causing that stress
- The ability to recognize stressors both within and outside the classroom
- The desire to deal with those stressors
- The ability to develop strategies for dealing with those stressors
- The ability to recover efficiently and effectively from dealing with stressors (p. xiii)

These skills can largely be taught in a classroom setting, and there are many programs designed to teach them. Teaching mindfulness to children has gained considerable attention, and is the subject of an increasing number of studies (Davidson & Lutz, 2008 as cited in Weare, 2013). As mentioned in Chapter 2, neuroimaging studies, including those using fMRIs have demonstrated neurobiological changes including increased thickness and density of brain areas associated with attention, emotional integration, learning, memory, self-awareness, compassion and introspection. This is accompanied by a reduced density in those areas associated with stress

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and anxiety (p. 148). The areas that are strengthened (PFC, hippocampus) or diminished (amygdala) are areas that are affected to varying degrees by complex trauma.

One particular program of interest that is used by the Chilliwack School District is the ‘Mind Up’ program by the Hawn Foundation, which combines mindfulness training with “social-emotional learning” (p. 144). This program targets the very domains, including the prosocial domain that are affected by not only complex and acute trauma, but also general anxiety and stress management issues (Schonert-Reichl et al.). This program has three developmentally appropriate levels, Pre-K-2, Grades 3-5, and Grades 6-8. One advantage to this program is that it can be used for a wide variety of students. Because it can be taught to an entire class, it is of particular benefit to those students who may otherwise stand out from the rest of the class because of various learning, emotional and behavioural issues. Mind Up promotes inclusion, and is also cost effective. Students increase their awareness of their own feelings and internal states, they will gain an understanding of the feelings and internal states of others. They will learn metacognition, thinking about their thinking, and strategies, such as breathing exercises, which can increase their ability to regulate levels of arousal and direct attention. This can strengthen areas of functioning that can serve to improve social-emotional, behavioural and academic functioning at school.

Conclusion

Complex trauma is in itself complex not only with regard to the various factors that contribute to its development, but also the various ways in which it manifests. As mentioned before, complex trauma is a reaction to a given set of circumstances and events, and each child due to factors within and outside of themselves will respond differently. Children from the same home may respond to their situations in very different manners, and the various domains

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themselves may be affected to varying degrees within one particular child. Regardless, complex trauma can have far reaching implications that can impair a child's academic, emotional and social success at school.

When teachers, counsellors, administrators and other school staff are able to recognize the signs of complex trauma, and respond to it in a trauma-informed manner, they are better equipped to meet the needs of students. Schools can function as protective factors that can buffer, or reduce the short-term and long-term effects of complex trauma. There are evidence-based programs that can be used in schools that are associated with neurobiological changes, and other improvements in functioning that are perceptible in the short term, and very noticeable in the long term. Mindfulness practice and Social Emotional learning combined in such programs as The Mind Up Curriculum are cost-effective and can be implemented within an entire classroom or school. This can be of benefit to complexly traumatized students, but other children within the school.

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Appendix A

Presentation Outline: Trauma in the Elementary Classroom

Introduction

1. The Underlying Effects of Trauma - The Neurobiology of Trauma:
 - a. The amygdala, the hippocampus, and the prefrontal cortex (PFC)
 - b. The logical brain, the emotional brain, and the survival brain
 - c. Trauma's effects on brain structure; reduced hippocampal and PFC volume
 - d. Other physical effects of trauma
2. Why Does He/she DO That? - Trauma's Effects on Cognition, Social-Emotional Functioning and Behaviour (Self-regulation)
 - a. Cognition – memory, executive functioning, directing attention, abstract vs. concrete thought, problem solving
 - b. Social Skills – reading social cues, hostile attribution, social pragmatics
 - c. Emotions – Regulating levels of arousal, awareness of internal states, motivation to complete tasks
 - d. Behaviours often seen in complexly traumatized children – impulsivity, aggression, attention seeking behaviours etc.
3. Protective Factors
4. Social/Emotional Learning/Mindfulness
5. Strategies to Use in the Classroom
 - a. Congratulations, Teacher, you are likely already using many strategies, now here are some more!

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- b. Create a sense of safety
 - c. Create consistency and predictability
 - i. Consistent routines
 - ii. Visual schedules to ease transitions
 - iii. Limit the number of transitions
 - iv. Provide flexibility and choice where possible
 - v. Buddy system for those who need peer help
6. Social Emotional Learning
- a. Awareness and labelling of one's own internal states
 - b. Recognizing states of others
 - c. Mindfulness as a strategy.
 - i. Awareness of internal states and breathing
 - ii. Developing strategies to remain in the present moment and direct attention effectively
 - iii. Focus on altruism and prosocial behaviours
7. Conclusion