



ABORIGINAL PEOPLES AND  
HISTORIC TRAUMA:

*The processes of intergenerational transmission*


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NATIONAL COLLABORATING CENTRE  
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SETTING THE CONTEXT



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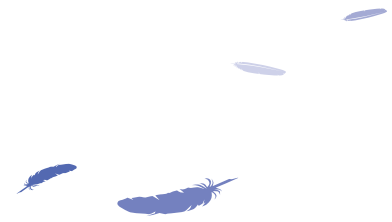
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*The residential school era left ongoing and devastating impacts on the health and well-being of individuals, families, and communities.*



# 1.0 INTRODUCTION



The current reconciliation process in Canada involving Aboriginal<sup>1</sup> residential school survivors, their families, the Canadian government, and the churches is finally promoting awareness in Canadian society about the emotional costs Aboriginal families and communities have endured spanning a period of five generations. Residential schools were designed to assimilate Aboriginal people into the dominant society through the forced removal of children from their families, communities and culture, and education oriented towards the dominant society's values, skills, culture, religion and language (LaFrance & Collins, 2003). The residential school era left ongoing and devastating impacts on the health and well-being of individuals, families, and communities. Residential schools eroded and undermined all aspects of well-being for Aboriginal peoples through disruption of the structure, cohesion and quality of family life; loss of cultural identity; diminished parenting skills; and low self-esteem and self-concept problems (LaFrance & Collins, 2003; Rice & Snyder, 2008). These traumatic impacts have been felt not only by those with direct experience with residential schools –

they have also been transmitted to subsequent generations through various psychological, physiological and social processes. The schools left an historical and emotional legacy of shame, loss, and self-hatred that is the root cause of addiction and many of the associated social problems facing Aboriginal communities today (Ross, 1996).

Given the impacts this legacy of shame, loss, and self-hatred has had on the health and well-being of Aboriginal people, it is imperative that effective and culturally appropriate strategies be developed to interrupt the intergenerational transmission of this trauma so that individuals, families and communities can begin to heal. This requires a better understanding of the processes by which trauma can be transmitted through generations. This is the first of two papers focused on the intergenerational transmission of trauma and will examine the various processes by which trauma can be transmitted through the generations.

This paper begins by providing an overview of the existing knowledge of trauma, how it is defined, and how it must be conceptualized

within the context of Aboriginal people in Canada. This will be followed by a brief discussion about the characteristics and patterns of behaviour that are typical in Aboriginal families living with intergenerational trauma. The paper then examines the psychological, physiological and social processes by which trauma can be transmitted. The paper highlights the interconnectedness of these processes in transmitting trauma through the generations and calls for holistic healing strategies that are implemented not only within the health domain but in other domains as well. The second paper in this series<sup>2</sup> explores the potential for healing strategies within the education domain, utilizing a case study of Blue Quills First Nations College (BQFNC) programs aimed at disrupting the intergenerational transmission of trauma within families who are the descendants of survivors of Canada's residential school system.

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<sup>1</sup> The Aboriginal peoples of Canada are defined, by Statistics Canada, as “persons who reported identifying with at least one Aboriginal group, that is, North American Indian, Métis or Inuit [Eskimo], and/or those who reported being a Treaty Indian or a Registered Indian as defined by the *Indian Act* of Canada, and/or who were members of an Indian Band or First Nation.” For the purposes of this report, “Aboriginal peoples” refers to these three population groups: First Nations, Métis and Inuit, which is inclusive of those who are non-status Indians but who self-identify as First Nations or Inuit.

<sup>2</sup> Please see the complementary report in this series *Addressing the healing of Aboriginal adults and families within a community-owned college model*.



# 2.0 UNDERSTANDING TRAUMA THEORY AS IT RELATES TO ABORIGINAL PEOPLES IN CANADA



For Aboriginal peoples, centuries of colonial policies and practices aimed at suppressing and undermining cultural identity while simultaneously assimilating children into Euro-Western culture through the residential school system have led to severe trauma that is being passed through the generations (Ross, 1996). The many injustices and forms of oppression imposed by the Canadian government, especially the imposition of the residential school system, were explicitly intended to eradicate Aboriginal peoples “until there is not a single Indian in Canada that has not been absorbed into the body politic” (Duncan Campbell Scott, Deputy Minister of Indian Affairs, 1920 as cited in Troniak, 2011, p. 1). The trauma experienced as a result of the residential school experience has built upon trauma from earlier forms of injustice and oppression, and continues to be built upon by contemporary forms such that the trauma is cumulative, with oppression and abuse becoming internalized, leading to a sense of shame and hopelessness that is transmitted

and built upon through the generations (Duran, 2006). Over an extended period of time, the effects of this trauma can reverberate throughout an entire population, resulting in a legacy of physical, psychological, and economic disparities that persist across generations (Sotero, 2006). Not only are individuals and families affected, but their communities are affected as well, resulting in responses such as social malaise, weakened social structures and high rates of suicide that become second-order effects (Evans-Campbell, 2008, p. 327).

This chronic exposure to trauma has manifested in individual symptoms such as anxiety, depression, grief, addictions, and self-destructive behaviours within generations of Aboriginal people (Bombay, Matheson, & Anisman, 2009). Addressing intergenerational trauma has been an ongoing challenge for mental health professionals. A part of the problem is a failure to understand the connection between historical and contemporary

trauma in Aboriginal populations. This results in treatment approaches that tend to be pathologizing. They are directed at ameliorating the symptoms of the victims and so revolve around attempts to control the social world of the perpetrator (including incarceration) in order to minimize opportunities for acting out (Duran, 2006). Not surprisingly, these approaches have not been very effective to date. Understanding how trauma theory relates to Aboriginal peoples is necessary if we are to devise treatment approaches that are better suited to the unique context in which trauma is experienced by Aboriginal individuals, families and communities. This section will provide an overview of trauma theory as it relates to Aboriginal populations.

Western psychological frameworks posited for understanding the constellation of symptoms resulting from prolonged and repeated social and/or interpersonal trauma revolve around diagnoses of post-traumatic

stress disorder (PTSD) and complex post-traumatic stress disorder<sup>3</sup> (CPTSD). PTSD is triggered by extreme stressors that have the capacity to provoke fear, helplessness or horror in response to the threat of injury or death (Yehuda, 2002). Symptoms typically include re-experiencing of the event (e.g. flashbacks, distressing images, nightmares), avoidance of reminders of the event, and hyperarousal (which can be manifested in physiological conditions such as insomnia, irritability, impaired concentration, hypervigilance, and increased startle reactions) (Yehuda, 2002). PTSD stressors can be categorized as acute or chronic, with the latter associated with significantly higher levels of avoidance, numbing, trying to forget, and regressive behaviours (Evans-Campbell, 2008).

A diagnosis of PTSD is generally considered inadequate in the context of the type of intergenerational trauma experienced by Aboriginal peoples for a number of reasons. Bryant-Davis (2007) considers the diagnosis to be “unnecessarily narrow and disregards the severity of such stressors as nonphysical violation experiences of sexual harassment, partner/spousal abuse, and racist incidents” (p. 137). Menzies (2010) argues that the Diagnostic and Statistical Manual (DSM) diagnosis of PTSD ignores the role of culture and intergenerational or community trauma, and “does not connect the individual’s experience to broader, systemic conditions that perpetuate and exacerbate the individual’s experience” (p. 68). Yellow Horse Brave Heart (2003) and Gone (2013) both consider diagnoses of PTSD to be too limited to capture the complex, collective and massive cumulative trauma across generations that Aboriginal peoples have experienced. Evans-Campbell (2008) adds that PTSD diagnostic categories

fail to give insight into the relationship between historical and contemporary trauma, and tend to focus primarily on negative outcomes rather than on ways in which people can maintain wellness after trauma. As a result, a PTSD diagnosis will tend to lead to victim blaming and pathologizing (Bryant-Davis, 2007; Gone, 2013).

CPTSD emerged as a framework for addressing the more complex effects arising from chronic exposure to trauma which PTSD failed to adequately capture. This framework was developed in the early 1990s by Judith Herman in response to calls for an “expanded concept of PTSD that takes into account the observations [of the effects of] severe, prolonged, and/or massive psychological and physical traumata” (Herman, 1992, p. 379). Some of the effects associated with CPTSD include: alterations in affect regulation (e.g. self-injury and extremely inhibited sexuality); alterations in consciousness (e.g. amnesia, reliving experiences or ruminative preoccupation); alterations in self-perception (e.g. sense of helplessness and self-blame); alterations in perception of the perpetrator (e.g. rationalization of the perpetrators’ behaviors); alteration in relations with others (e.g. isolation, withdrawal, repeated search for a rescuer, and repeated failures of self-protection); and alterations in systems of meaning (e.g. loss of faith) (Herman, 1992). These alterations occur because during periods of stress, hormones are secreted through the activation of the hypothalamic-pituitary-adrenocortical (HPA) axis that “facilitate(s) cognitive, metabolic, immunologic, and behavioral adaptations that maximize the chances of survival” (Miller, Chen, & Zhou, 2007, p. 36).

In her landmark paper on CPTSD, Herman (1992) notes that “prolonged, repeated trauma can occur only where

the victim is in a state of captivity, unable to flee, and under the control of the perpetrator” (p. 391). In these cases, the relationship between victim and perpetrator is based on coercive control, regardless of whether this state of captivity is primarily resulting from physical force or by a combination of physical, economic, social, and psychological forces. The experiences of Aboriginal peoples in Canada, who have been subjected to generations of abuses through colonialism and who continue to live with conditions of disadvantage resulting from these colonial policies, would certainly fit this criteria of coercive control. Aboriginal peoples, particularly First Nations, encounter “high levels of adverse childhood experiences such as abuse, neglect and household substance abuse; ... they are more likely to encounter stressful experiences in adulthood, including poverty and unemployment, violence, homicide, assault, and witnessing traumatic events; ... [and] are faced with high rates of discrimination” (Bombay et al., 2009, p. 7). Responses to these types of trauma may include substance abuse (to numb the pain), and other types of self-destructive behaviors, suicidal thoughts and gestures, depression, anxiety, low self-esteem, anger, and difficulty recognizing and expressing emotions (Yellow Horse Brave Heart, 2003).

Other frameworks have also emerged for understanding the intergenerational transmission of trauma for Aboriginal peoples. Bryant-Davis (2007) utilizes the term ‘race-based traumatic stress’ to describe an “emotional injury motivated by hate or fear of a person or group of people as a result of their race” (p. 135). While ‘race-based traumatic stress’ is similar to other types of trauma, it is unique in that it provides a “more precise description of the psychological consequences of interpersonal or

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<sup>3</sup> Note that complex post-traumatic stress disorder has not been included in the Diagnostic and Statistical Manual of Psychological Disorders.



institutional traumas motivated by the devaluing of one's race" (Bryant-Davis, 2007, p. 137). She adds that race-based violations can add, and in some cases multiply, the traumatic stress of other stressors like living with violence, abuse, and disadvantage. For Aboriginal peoples, who often live at the margins of society, the effects of racism and oppression continue to be acutely felt in multiple settings, including federal government policy, health services delivery, educational systems, the justice system and in daily life (Loppie, Reading, & de Leeuw, 2014).

One framework which has considerably wider appeal in the context of Aboriginal peoples is that of 'historic trauma,' which, as Evans-Campbell (2008) notes, captures an important part of individual and communal experiences with trauma that other models miss.

This framework emerged from a need to address the accumulation of traumatic experiences that compound disability and dysfunction over time (Gone, 2013). The framework has been applied to Holocaust survivors and their descendants, as well as in other contexts. The first to apply it to Indigenous peoples was Marie Yellow Horse Brave Heart, followed by Eduardo and Bonnie Duran, who labeled the concept as 'soul wound' (Gone, 2013, p. 4). Key features that conceptually distinguish historic trauma (HT) from PTSD include:

1. HT is described as being more complex in its antecedents, evolution and outcomes.
2. HT is described as a collective phenomenon rather than an individual one, in that trauma is shared by members of an identifiable group who have experienced it over the generations; it thus incorporates the psychological and social aspects of historical oppression rather than just the psychological and biological aspects.

3. HT is described as cumulative in its impacts over time.
4. HT is described as intergenerational in its impacts, with descendants themselves being more susceptible to pathological dysfunction (Gone, 2013, p. 5).

The HT framework encompasses the need to understand the historical context underpinning this type of trauma (Yellow Horse Brave Heart, 2003). In the case of many Aboriginal people, past historic traumas have created conditions of disadvantage (ie. lower levels of income and education, poorer quality of housing, reduced access to resources, erosion of cultural identity and pride in self, among others), which result in social problems that perpetuate traumas for subsequent generations.

Evans-Campbell and Walters (2006) build further on the historic trauma literature by exploring the interaction of HT and current traumas, which they term the 'Colonial Trauma Response.' They argue that contemporary traumas such as ongoing racism and discrimination are contemporary stresses that perpetuate colonialism, and are just another example of injustices experienced by Aboriginal peoples through the generations. These stresses build on previously existing trauma and are intimately connected to the Colonial Trauma Response.

There is also an Indigenous perspective that argues that the HT framework is too pan-Aboriginal since it minimizes the residential school experience as just one of many historic experiences shared by Aboriginal peoples that have contributed to their social and mental health issues (Robertson, 2006). Proponents of this perspective believe that the Residential School Syndrome (RSS) framework is far better for understanding the myriad of social and mental health issues facing so

many Aboriginal people today. RSS is a subtype of PTSD characterized by intense feelings of anger and fear, and the tendency to abuse alcohol and drugs (Corrado & Cohen, 2003). Brasfield (2001) developed criteria for RSS that include experiencing recurrent distressing dreams of residential schools, acting or feeling as though the events in residential schools are re-occurring, and experiencing intense distress when exposed to stimuli that symbolize residential schools (as cited in Robertson, 2006). While these symptoms follow the American Psychological Association's definition of PTSD, they differ in that under Brasfield's criteria, it is not necessary for the individual to have directly experienced traumatizing events as a result of the residential school experience; the trauma is able to be passed on to others who are closely related or involved with that individual, allowing for the possibility of future generations to become victims of RSS. As argued by Robertson (2006), the logic of the RSS framework stems from evidence that there are some differences in the nature and severity of the trauma experienced by Aboriginal people with direct residential school experience compared with those who do not have this direct experience. Diagnoses of PTSD, for example, are shown to be relatively low in Waldram's (2004) study of the general Aboriginal population in the United States, yet in the Canadian context, other studies find substantial rates of PTSD among survivors of residential schools (Corrado & Cohen, 2003; Söchting, Corrado, Cohen, Ley, & Brasfield, 2007). More research comparing mental health diagnoses between residential school survivors and the general Aboriginal population would provide better insight into the underlying causes of mental health issues in this population.



ABUSE OF POWER

TRAUMATIC BONDING

CYCLES OF RE-ENACTMENT

ANXIETY

## 2.1 Characteristics and patterns of behavior commonly found in trauma victims that can contribute to the intergenerational transmission of trauma

In considering how trauma can be transmitted through the generations, it is imperative that we remember that there are a multitude of factors, both personal and societal, that can impact the degree to which individuals are able to cope with exposure to trauma. While some individuals have tremendous capacity to thrive in the face of adversity, others are less able to do so (Bonanno, 2004). A wide range of outcomes may result from how individuals cope with traumatic experiences (Agaibi & Wilson, 2005), including, as commonly observed in trauma victims, the development of certain personality traits and patterns of family interactions which can impact the development of offspring and potentially contribute to the transmission of trauma from one generation to next (Fossum & Mason, 1986). In families where there is a strong history of abuse, as with many residential school survivors and their families, this abuse can manifest as shame which can become entrenched through repetitive patterns of behavior

that can contribute to the perpetuation of a shame-bound regime, including:

- being in control of all behaviors and interactions;
- demanding perfection (always being “right” and doing things “right”);
- blaming others or yourself if something does not go as planned;
- denying feelings (particularly those like loneliness and grief);
- having the expectation of unreliability in relationships;
- not speaking openly about shameful or compulsive behavior;
- not bringing closure or completeness to transactions; and,
- denying, disqualifying or disguising behavior that is disrespectful, abusive or shameful. (Fossum & Mason, 1986, p. 87)

These patterns of behaviour can create such a highly toxic emotional atmosphere that it inhibits, “the growth of a self-accepting outlook” (Fossum & Mason, 1986, p. 87). Adults exposed as children to shame-bound systems created by the eight patterns described above can develop a range of characteristics and behaviours, including learned helplessness, anxiety, depression, traumatic bonding, high risk behaviors, emotional numbness, desire to self-medicate, distorted

reasoning, loss of trust and faith, development of rigid psychological defenses, emotional constriction, hypervigilance, disorganized inner world, loss of ability to accept support, fused feelings, loss of the ability to modulate feelings, emotional triggering, loss of spontaneity, cycles of reenactment, and survivor guilt (Dayton, 2000). As it is beyond the scope of this paper to examine the role that each of these characteristics can play in perpetuating the intergenerational transmission of trauma, five that are particularly influential will be described in more detail. These include traumatic bonding, cycles of re-enactment, anxiety, hypervigilance, and depression.

One of the most profound manifestations of Historic Trauma for Aboriginal families is the high rates of family violence and abuse in the home (NWAC, 2009; Scrim, 2013). One of the characteristics that underlies the perpetuation of this violence and abuse is traumatic bonding. Traumatic bonding refers to relationships based on terror and abuse of power (Bloom, 1999). In these relationships, victims develop strong attachments to their abusers, seeing them not only as the source of pain and terror, but also as the source of relief from that pain (Dutton & Painter, 1981; Bloom, 1999). Traumatic bonding becomes a survival strategy for victims who then organize



## HYPER-VIGILANCE

their lives around pleasing their abusers as a way of seeking nurturance and sustenance (Levendosky & Graham-Bermann, 2000). The traumatic bond is reinforced by patterns of intense emotional engagement that prefaces periods of violence followed by the peace of surrender and reconciliation afterwards (van der Kolk, 1989). Because victims have a tendency to dissociate emotionally from the violent incident, they often do not remember it until it “comes back in full force during renewed situations of terror ... [interfering] with good judgment about the relationship and [allowing] longing for love and reconciliation to overcome realistic fears” (van der Kolk, 1989, p. 7). In such relationships, victims learn they have no control and develop coping mechanisms that include self-blame, numbing (by means of emotional withdrawal or substance use), and physical violence (van der Kolk, 1989). These coping mechanisms set the stage for cycles of trauma re-enactment by either the victim or victimizer (Ibid.).

Trauma re-enactment is defined by Miller (2002) as a “pattern of addictive behavior developed to cope with the legacy of trauma” (p. 163). This pattern causes “survivors of childhood trauma

## DEPRESSION

to engage in self-harmful behaviours,” including seeking out and staying in traumatic bonding relationships (Ibid.). One explanation for trauma re-enactment is that a “helplessness syndrome” develops from prolonged exposure to trauma, resulting in behavioral and physiological changes that leave victims unable to identify and learn positive strategies for dealing with and escaping from the trauma (van der Kolk, 1989, Biological Responses to Traumatization, para. 2). This can leave individuals vulnerable to harming either themselves or others (Levendosky & Graham-Bermann, 2000). The association between traumatic bonding and re-enactment reinforces their roles in the intergenerational transmission of trauma because victims grow up seeking abusive relationships or becoming abusers themselves in a repeating cycle of violence and trauma.

Anxiety is another prevalent characteristic found in family environments with first-hand or intergenerational experiences of trauma. Like traumatic bonding, it too can become perpetuated through the generations. The ability to self-soothe and self-regulate is one of the earliest developmental skills children learn,

## FAMILY VIOLENCE

but it is compromised in environments where caregivers experience chronic stress and anxiety and are unable to be consistently and emotionally present for their children (Dayton, 2000).<sup>4</sup> Dayton notes, “parents who are fraught with anxiety themselves or lost in an addiction are not able to soothe themselves, much less their children. In fact, addiction often starts off as an attempt to self-soothe, to reduce anxiety” (p. 136). Children who grow up in these settings are often unable to cope well with stress and anxiety themselves.

Associated with a chronic state of anxiety is a tendency to become hyper-vigilant (Dayton, 2000). Even though life may be proceeding smoothly, trauma victims “may scan the environment trying to anticipate anything that might blow up so they can protect themselves” (Ibid., p. 146). This constant state of alertness might be one explanation for the exaggerated startle response that is so common in victims of trauma (Ibid.). This state of “continuous alertness” also explains why adults with a childhood history of trauma easily escalate from a state of annoyance/irritation to a state of anger, creating a family environment of perpetual anxiety (Ibid.).

## TOXIC EMOTIONS

<sup>4</sup> These traits are developed through physiological processes that have been described later in this paper.

It is generally well recognized that stress and acute challenges are risk factors for depression (Heim, Newport, Mletzko, Miller, & Nemeroff, 2008). However, there is also strong evidence that adverse childhood experiences such as abuse or neglect dramatically increase the risk of developing depression later in life through various neuroendocrine and neuroanatomical changes that affect an individual's response to stress (Heim et al., 2008). Through epigenetic processes, these changes can be passed to offspring, affecting their responses to stress and leaving them vulnerable to depression. Studies have found that infants of clinically depressed mothers have markedly reduced capacity to experience joy and excitement, especially if the maternal depression lasts beyond the first year (Siegel, 2012).

These five examples of behaviours and patterns of family interaction highlight how social processes interact with physiological and psychological ones to create conditions within families that can perpetuate the intergenerational transmission of trauma. They also highlight the complex nature of the trauma many Aboriginal people are living with, manifested as a deep-seated shame and sense of hopelessness. Finding effective solutions for interrupting the transmission of this trauma will be a challenge, and will need to consider the various pathways by which trauma can be transmitted from one generation to the next.

## 2.2 The pathways by which trauma can be transmitted through the generations

The personality traits and patterns of family interactions that are often found in Aboriginal families experiencing intergenerational trauma can have an impact on infant and child development.

Research has shown that “neglected children are more likely to show a progressive decline in cognitive functioning over time, more delayed language development, less competent social and academic functioning, and are at increased risk of developing childhood aggression” (Strathearn, 2011, p. 1054). They have greater difficulty in bonding with others and are more likely to develop negative coping strategies. These impacts set the stage for addiction, mental health issues and family dysfunction in later life, and contribute to the perpetuation of socio-economic inequities that contribute to poorer health and well-being. This section will explore three primary pathways by which trauma can be passed through the generations: psychological, physiological (biological/epigenetic), and social.

### Psychological processes

This section describes the potential impacts of chronic stress and anxiety on brain development and the psychological processes of thinking, motivation learning, memory, sensation, perception and emotion. It begins by providing an overview of the human brain and how it functions. Next the reader is introduced to a basic understanding of how stressful environmental/relational factors in childhood can undermine brain development from the moment of conception and predispose an individual to addiction later in life, ensuring the transmission of chronic anxiety, stress and trauma to the next generation.

Humans have three distinct sections of the brain, each speaking its own language: the reptilian brain (brain stem),<sup>5</sup> the limbic system (midbrain), and the neocortex (forebrain) (Levine & Kline, 2006). The neocortex is responsible for language, perception, abstraction, and planning. This part

of the brain helps us to reflect and respond appropriately rather than react impulsively; it also helps us to problem-solve, plan for the future, and engage in complex rational thinking skills. The language of this thinking brain is words. The limbic system is responsible for emotions, motivations, sense of smell, and long-term memory. It speaks the language of emotions such as anger, joy, and anxiety. The brain stem is the oldest of the three parts of the brain and is responsible for human survival by regulating heart rate, blood pressure, body temperature and respiration. The language of this part of the brain is the language of sensations ranging from:

...pressure or temperature changes in the skin to vibrations, ‘butterflies’, muscular tension, constriction or spaciousness, trembling or tingling, and heat. This language .... acts on our behalf when in danger or when we meet a change in the environment. (Levine & Kline, 2008, p. 19)

As these brain systems develop sequentially – from brain stem to cortex – the healthy development of the thinking brain is totally dependent on the healthy development of the brain stem and the emotional brain (Perry, 2009). Therefore, given that the brain stem and midbrain take shape prior to the cortical brain during fetal development, chronic maternal stress during pregnancy compromises the healthy development of these brain systems, thus having an adverse impact on all other regions of the brain (Perry, 2009).

According to Maté (2008), brain development during pregnancy and childhood “is the single most important biological factor” (p. 180) in predisposing an individual to addiction in later life. During the crucial developmental period between

<sup>5</sup> The name “reptilian brain” in humans is derived from beliefs at one time that the forebrains of reptiles and birds were dominated by the same structures (Levine & Kline, 2006).

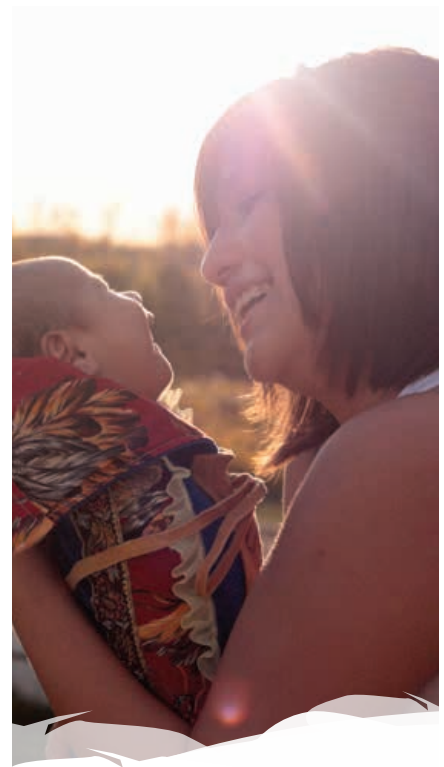
conception to early childhood, optimal brain development is dependent on environmental stimulation. Thus for example, if a baby born with perfectly good eyes is cared for in every way but isolated in a dark room over a period of five years, her/his neural visual circuit would waste away, resulting in blindness. This is because the neuronal components responsible for vision were deprived of essential stimulation – light waves (Ibid., p. 184). This concept of appropriate stimulation is also applicable to the circuits that process emotions and govern behavior (Maté, 2008). When infants and children are deprived of an enriched emotionally nurturing environment, physiological changes occur within multiple brain circuits and systems that can impair brain function, which in turn affect health and quality of life throughout the lifespan (Anda et al., 2006, p. 175). Many of the same hormones that are released during periods of chronic stress and anxiety have a negative impact on the development of a healthy maternal-child relationship, which is a central to breaking the cycle of intergenerational trauma. These hormones also have an impact on a child's ability to learn and to develop good self-regulation skills.

Numerous studies have shown the association between secure infant attachment and children's health and well-being. Attachment is defined as “emotional bonds that serve a biological function, especially for infants and young children ... that protect [them] when they are too small to protect themselves, by keeping them close to their caregivers” (Hardy, 2013, p. 1). Attachment reduces infants' and children's stress levels, thereby reducing the release of stress hormones that are detrimental to early brain development (Schore, 2002; Anda et al., 2006). In the absence of strong attachment relationships, children can grow to become adults who lack the ability to develop strong and healthy attachments with their own children. However, research has shown that

*Numerous studies have shown the association between secure infant attachment and children's health and well-being.*

there are inconsistencies of attachment security across cultures and that the cultural context must be considered in the psychology of attachment (Neckoway, Brownlee, & Castellan, 2007; Rothbaum, Weisz, Pott, Miyake, & Morelli, 2000). In Aboriginal cultures, where extended family connections, clans and kinship systems are often equally important in child-rearing, it is imperative that the attachment theory model be broadened to encompass the shared parenting that is more typical in this cultural context.

According to Siegel (2012), secure attachment bonds confer a form of emotional resilience to infants that is critical to the development of their well-being. The foundation of secure attachment is the degree to which parents are sensitive or attuned to an infant's emotional state. Attunement is especially critical to the developmental stage of self-regulation which occurs between six to eight months (Levine & Kline, 2006). Self-regulation can be defined as “those behaviors, skills and strategies, whether conscious or unconscious, automatic or effortful, that serve to modulate, inhibit, or enhance emotional experiences and expressions” (Calkins & Leerkes, 2011, p. 355). When an emotionally attentive and nurturing adult is present, endorphins are released that enable emotional bonding between parent and child (Maté, 2008). With repeated positive experiences between parent and child, the child learns to expect that the parent will meet his/her emotional needs, and this



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predictable and consistent fulfillment of needs is internalized by the child, thus guiding his/her thoughts, feelings and behaviors in close relationships (Bowlby, 1988 as cited in Mikulincer, Shaver, & Pereg, 2003, p. 78). Children with secure attachments develop good self-regulation through a sense of trust, enabling them to respond to life's challenges and stresses with positive emotional responses and better coping and problem-solving strategies (Calkins & Leerkes, 2011).

In contrast, children lacking parental attunement in their early years develop poor self-regulation; they are more likely to seek self-protective strategies and negative coping mechanisms like addiction as they mature (Lengua & Long, 2002; Hildyard & Wolfe, 2002). This can have considerable impacts later on an individual's ability to maintain healthy relationships with others and cope with life's challenges. Maté (2008) notes that attunement is often lacking in parents who are overwhelmed with

*Children who have experienced chronic childhood trauma often lack the capacity for emotional self-regulation*  
(Cicchetti & Toth, 1995).

daily stresses like addiction, poverty, and spousal abuse because coping with these daily stresses means they cannot “be present emotionally in such a way that the infant or child feels understood, accepted and mirrored” (p. 238). Maté (2008) argues that poor parenting styles are then biologically transmitted from one generation to the next through the programming in the infants’ brain circuitry.<sup>6</sup>

Chronic traumatic childhood experiences also manifest in a “multitude of psychological, somatic, and behavioral problems that range from learning disabilities to aggression against self and others” (van der Kolk, 2003, p. 297). Children who have experienced chronic childhood trauma often lack the capacity for emotional self-regulation (Cicchetti & Toth, 1995), resulting in high levels of emotional reactivity that can lead to depression, poor school performance, impulsivity and criminal behavior as they mature (van der Kolk, 2003, p. 299). Chronically traumatized children also have a tendency to become hyper-vigilant; that is they develop an intense hyperactivity to what they perceive as being a threat, leading them to over-respond to minor stressors (Ibid.). They have difficulty in reading social cues and adapting their behaviours to appropriate social responses (Weinberg & Tronick, 1998), and are also prone to



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engage in destructive acting out against themselves and others (Felitti et al., 1998).

Chronic traumatic childhood experiences can also result in developmental delays, including cognitive, language, motor and socialization skills (Culp, Richardson, & Heide, 1987). Chronic stress can lead to damage to important areas of the hippocampus involved in learning and memory (Uno, Tarara, Else, Suleman, & Sapolsky, 1989). A number of studies involving animals and humans have highlighted associations between childhood adversity and cognitive deficits, with deficits persisting through adulthood (Majer, Nater, Lin, Capuron, & Reeves, 2010). However, while the evidence linking trauma with lower levels of intelligence or memory and learning deficits is not entirely conclusive and further human research is required, there is nevertheless a body of literature that supports the relationship between childhood trauma exposure and the development of cognitive dysfunction in children and poor academic achievement (Majer et al., 2010). Together with

behavioural problems, these impacts can create challenges for students in learning settings. They may have difficulty getting along with their peers and retaining knowledge, and they may exhibit truant, delinquent, and disruptive behaviours (Bower & Sivers, 1998). Poor academic success, in turn, plays itself out “into the possibility of a long litany of disastrous sequelae for the child and his or her social environment” (Cicchetti & Toth, 1995 as cited in Bower & Sivers, 1998, p. 628).

#### Physiological processes

Physiological processes are primarily the biological and epigenetic explanations for intergenerational trauma, which some argue tend to focus on faulty genes or broken brains (Gone, 2013). These types of explanations focus on the role that childhood abuse and neglect have in compromising neural structure and function, thus rendering an individual susceptible not only to later cognitive deficits and psychiatric illnesses, but also altering genes in ways that can be perpetuated intergenerationally (Roth, Lubin, Funk, & Sweatt, 2009). Neural structure and function are

<sup>6</sup> The physiological processes that impact brain development will be discussed in greater detail in the next section.

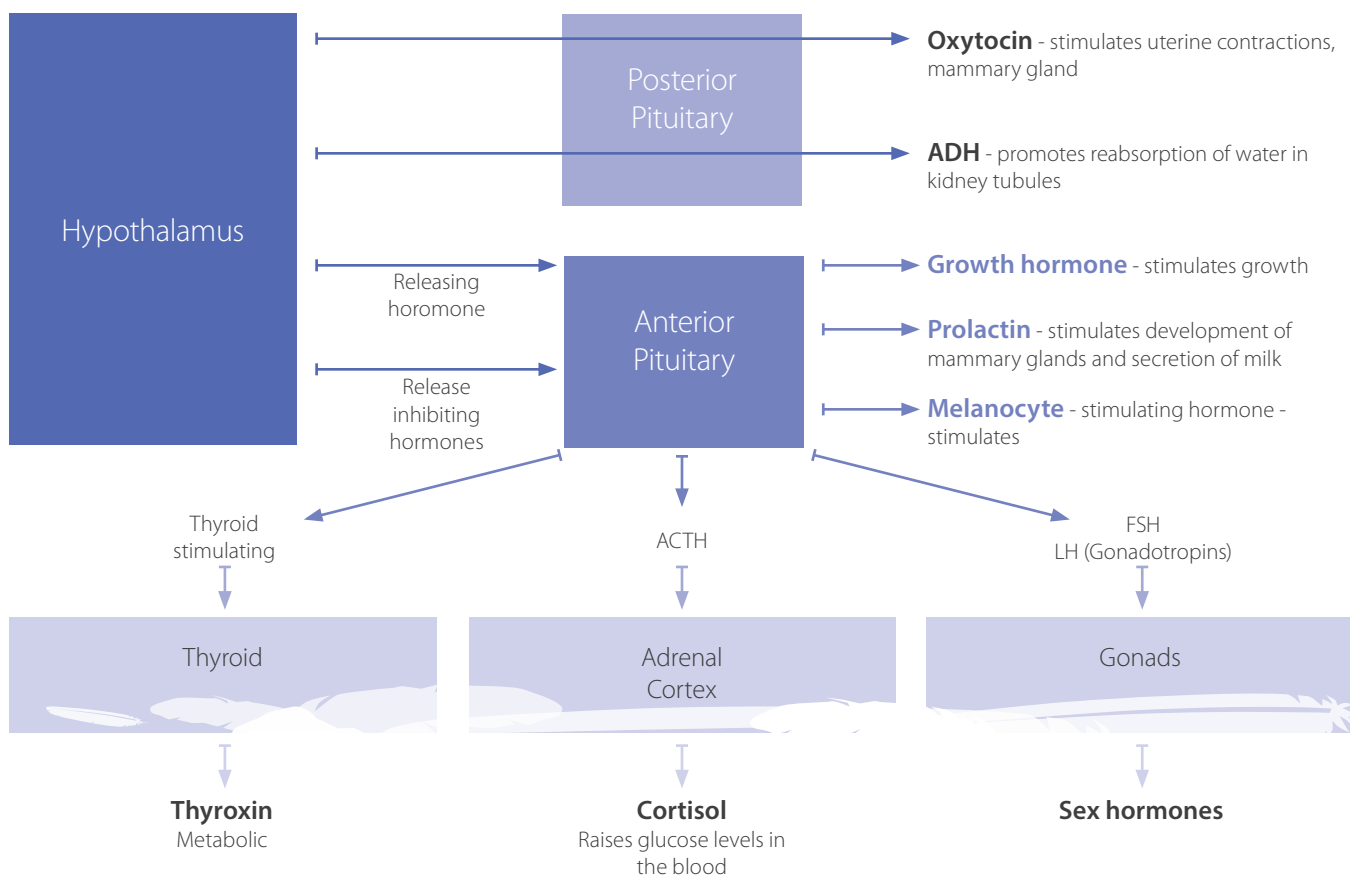
compromised primarily through the release of specific hormones in the neuroendocrine system in response to physical and psychological stressors. The endocrine system works in conjunction with the nervous system to regulate bodily functions (see Figure 1). It does so by secreting hormones that act as messengers into the body's fluids to initiate responses in particular target cells to produce particular responses (Gregory, n.d.). This system is regulated by the hypothalamus, a part of the brain designed to maintain homeostasis, or the maintenance of constant internal conditions (e.g., heart rate, body temperature, water balance, etc.). In the endocrine system, there are several neurochemicals that impact the development of a healthy fetus

and inhibit the fostering of healthy maternal-child relationships. These impacts predispose neglected infants to behavioural challenges, less ability to cope with stress, and addiction as they mature, thus ensuring the transmission of trauma, addiction, and chronic anxiety to the next generation.

Cortisol is a hormone released from the adrenal gland during periods of stress. It plays an important role in a number of physiological systems including the central nervous system (where it is involved in learning, memory and emotion); the metabolic system (where it regulates glucose storage and utilization); and the immune system (where it plays a role in regulating inflammation)(Miller et al., 2007;

Dickerson & Kemeny, 2004). The levels of cortisol secreted in response to stress may be abnormally elevated or reduced depending upon features of the stressor or characteristics of the person coping with it (Miller et al., 2007). Nevertheless, both prolonged elevated or reduced levels of cortisol can contribute to poor health, including “heart disease, high blood pressure, stroke, diabetes, and exacerbation of immunologically-related illnesses and neurodegenerative disorders”, as well as mental health disorders such as depression, Post-Traumatic Stress Disorder (PTSD) and substance abuse (Anisman et al., 2008 & Kessler, 1997, as cited in Bombay et al., 2009, p. 8).

FIGURE 1: THE PRODUCTION AND RELEASE OF HORMONES



Source: Adapted from Gregory, n.d., Sect. 6



In 2007, Miller, Chen, and Zhou undertook a meta-analysis of research findings on chronic stress and hypothalamic-pituitary-adrenocortical axis (HPA)<sup>7</sup> outcomes to identify under what stress conditions cortisol levels are abnormally elevated or reduced. They found that when chronic stress first begins, there is an initial activation of the HPA axis resulting in elevated concentrations of cortisol, but over time, cortisol secretion rebounds to below normal. Cortisol secretion becomes elevated in response to physical stresses that pose a threat to survival, social stressors (threats to the social self), and in situations likely to elicit shame (e.g. sexual abuse); while cortisol secretion is likely to be reduced in situations evoking loss (e.g. death of a spouse). They also found there is an inverse relationship between cortisol output and the ability of an individual to control his/her situation, which can lead to the emergence of withdrawal and disengagement behaviours.

Early life stressful events, by virtue of their effects on neuroendocrine functioning (elevated cortisol) and genetic processes (ie. transcriptional processes) can affect the development of fetal brains and permanently affect

neurochemical functioning (Bombay et al., 2009). During pregnancy, stress experienced by the mother contributes to elevated levels of cortisol in the infant, which can damage the dopamine circuits, shrink the hippocampus – a brain structure vitally important to memory and the processing of emotions – and undermine brain development in other ways (Maté, 2008). In some studies, the offspring of these chronically anxious mothers were plagued with problems such as ADHD, chronic anxiety and fearfulness (Ibid.).

The release of oxytocin and vasopressin during a mother's nurturing of her baby also contributes to the development of healthy maternal-child relationships by strengthening (or weakening) the secure attachment bond between infant and caregiver(s) (Michalska et al., 2014; Gordon, Zagoory-Sharon, Leckman, & Feldman, 2010; Doidge, 2007). This nurturing confers "a sense of security and protection that makes social interactions rewarding" for infants (Wisner Fries, Ziegler, Kurian, Jacoris, & Pollak, 2005, p. 17237). A growing body of literature has emerged which associates a failure to receive "species-typical care" to disruptions in the normal development of the

oxytocin and arginine vasopressine systems in young children; this has implications not only on their ability to bond, but also for how they are able to react to stress and regulate their behaviours as they mature (Wisner Fries et al., 2005; see also Doidge, 2007; Boccia & Pedersen, 2001; Meaney, 2001; Champagne, Diorio, Sharma, & Meaney, 2001; Francis, Young, Meaney, & Insel, 2002). Wisner Fries et al. (2005) also found that the effects of early neglect persisted for some time even after children are moved into a stable, enriched and nurturing family environment. This finding is echoed by Doidge (2007) who found children in orphanages had low oxytocin levels for several years after adoption into loving families, which may explain why children in these situations may have difficulties bonding.

Serotonin, a mood stabilizer that helps slow down the neural pathways when individuals are in a state of agitation, is another neurochemical that affects the quality of the maternal-child relationship (Truman, 2004). In effect, serotonin is the body's natural 'brake system' which slows down the arousal process and gives the prefrontal cortex a chance to reflect. Truman (2004)

<sup>7</sup> The HPA axis, also referred to as the limbic-hypothalamic-pituitary-adrenal axis (LHPA), is a "complex set of direct influences and feedback interactions among the hypothalamus", the pituitary gland, and the adrenal glands. These interactions "constitute a major part of the neuroendocrine system that controls reactions to stress and regulates many body processes, including digestion, the immune system, mood and emotions, sexuality and energy storage and expenditure" (Wikipedia, 2013a, para. 1)



highlights research that identifies abnormally low serotonin levels as a major contributing factor in aggressive behavior, and links low levels of serotonin producing gene with the severe maltreatment of children. These findings are supported by laboratory experiments of monkeys separated from their mothers and raised by their peers that had lower life-long levels of serotonin. Lacking nature's 'braking system', they were more aggressive in their 'teen' years and also drank excessive amounts of alcohol when given the opportunity (Maté, 2008, p. 190).

Dopamine can also play a role in the intergenerational transmission of trauma. Dopamine is a neurotransmitter released by nerve fibres in the dopamine circuits, located in the limbic system of the brain (Maté, 2008). It is the source of our "joie de vivre", triggering passion, excitement and a will to act, explore, and quite simply live (Volkow, as quoted in Truman, 2004). Strathearn (2011) highlights evidence that early developmental stimulation has an impact on the dopaminergic system. These impacts include "reduced dopamine transporter binding in the [ventral striatum<sup>8</sup>], elevated baseline dopamine levels and increased dopamine release in response to acute stress in adulthood" (Strathearn, 2011, p. 1058). The reduced effectiveness of binding in the dopaminergic system is associated with "several forms of (mal-) adjustment in both childhood and

adulthood, such as aggression and other externalizing problems in children" (Bakermans-Kranenburg & van Ijzendoorn, 2006, p. 406). Dopamine plays a role in cognitive and emotional processes as well (Strathearn, 2011). As a result, poor maternal caregiving quality can result in disorganized attachment<sup>9</sup> in offspring, characterized by the lack of coherent strategies for dealing with stresses<sup>10</sup> (Cicchetti, Rogosch, & Toth, 2011), resulting in poor maternal care behavior in adulthood (Strathearn, 2011). In addition, the dopaminergic system also plays a role in developing addictions. Studies in rats experiencing prolonged maternal separation and isolation showed "enhanced sensitivity to psychostimulants such as cocaine, which activate dopaminergic neurons, which may lead to increased vulnerability to addiction" (Meaney et al., 2002 as cited in Strathearn, 2011, p. 1058). When dopamine function is decreased, sensitivity to non-drug-related stimuli is decreased and disruptions in frontal inhibition result, contributing to compulsive drug intake and impaired inhibitory control (Volkow, Fowler, Wang, & Swanson, 2004).

There is also increasing evidence that early life trauma can result in changes in gene activity or expression through epigenetic modifications (Roth et al., 2009; Lipton, 2002; Malaspina et al., 2008; Perry, 2008). Lipton (2002), a pioneer in the field of pre- and peri-natal development, argues that children's

future well-being begins in the womb when the pre-natal brain is stimulated by the environmental experiences of the mother. Due to maternal stress, embryonic cells shift into a protective mode, thwarting healthy gene expression and undermining the healthy development of the fetus. This view – that environmental experiences in utero play a crucial role in gene expression, a process referred to as epigenetic modification – is supported by several studies. For example, in a study using a rat model of infant maltreatment by a caregiver, Roth et al. (2009) found that early life trauma altered the expression of the brain-derived neurotrophic factor (BDNF) gene. This gene is active in the hippocampus, cortex and basal forebrain, areas of the brain that are vital to adult cognition and emotional health. In addition, they also observed this same altered BDNF DNA methylation<sup>11</sup> in offspring of females that had previously experienced maltreatment, highlighting that an epigenetic molecular mechanism underlies "lifelong and transgenerational perpetuation of changes in gene expression and behavior incited by early abuse and neglect" (p. 760). Therefore, early childhood experiences provide a "learning environment that serves to program the quality of maternal behavior that will be displayed toward the next generation" (p. 761).

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<sup>8</sup> The ventral striatum is part of the limbic system of the brain that is an essential "component of the neural circuitry underlying reward processing" (Caseras, Lawrence, Murphy, Wise, & Phillips, 2013, p. 533).

<sup>9</sup> Disorganized attachment is characterized by a lack of clear attachment behavior, with children seeming to be both comforted and frightened by their caregivers. Their actions and responses to caregivers are therefore confused, and include a mix of behaviors including avoidance or resistance (*Psychology, About.com*, 2014)

<sup>10</sup> While the association between harsh and insensitive parenting with the development of children's aggressive and antisocial behaviors has been well documented, the relationship between maternal care, the dopaminergic system, and behavioural impacts is more complex. Recently, studies have shown that it is the 7-repeat DRD4 polymorphism in particular which is associated with lower reception effectiveness (Bakermans-Kranenburg & van Ijzendoorn, 2006; 2007). Children with the presence of 7-repeat DRD4 allele are most susceptible to behavioural problems and this susceptibility is also affected by gene-environment co-action (Ibid.).

<sup>11</sup> DNA methylation is a "biochemical process involving the addition of a methyl group to the cytosine or adenine DNA nucleotides. [It] stably alters the expression of genes in cells" as they divide (*Wikipedia*, 2013b, para. 1). It is one of the methods used to regulate the expression of the genes, and the resulting change is normally permanent.

## Social processes

This brings us to the final primary pathway for the intergenerational transmission of trauma discussed in this paper – through social processes. Aboriginal peoples have had vast social, environmental, cultural and political changes imposed on them by settler populations, and have endured widespread discrimination and incredible levels of trauma and losses. These conditions have taken their toll on the health and well-being of large numbers of Aboriginal people (Tait, 2003), including ongoing social and economic marginalization and varying levels of acculturative stress reflected in poorer mental health, “feelings of marginality and alienation, heightened psychosomatic symptom level, and identity confusion” (Berry, Kim, Minde, & Mok, 1987, p. 492). While some individuals possess a wide range of coping strategies in the face

of stress and adversity, allowing them to lead reasonably healthy lives or even flourish, others have been less able to do so and have turned to negative coping strategies and behaviours. Children learn these strategies and behaviours, including substance abuse and violence, as well as impaired parenting and attachment styles (Bombay et al., 2009; Yellow Horse Brave Heart, 2003), from their caregivers and others in the community and carry them into adulthood. In this way, they may be contributing to the ongoing transmission of trauma through the generations.

The residential schools were devastating for individuals, families and communities, leaving enduring intergenerational impacts on the health and well-being of subsequent generations of Aboriginal people (RCAP, 1996). Before the introduction of residential schools, traditional First

Nations communities were structured around not only the nuclear family, but the extended family as well (Haig-Brown, 1988). By removing child-rearing from the community and placing it into the hands of church and government, the residential schools contributed to the fracturing of family relationships and community cohesion (Tait, 2003). As noted by Dieter (1999), the residential school experience extends through four or five generations for the majority of First Nations peoples in Canada.

The first residential schools for Aboriginal people date back to the 1850s (AANDC, 2014). However, after the federal government’s acceptance of the Davin Report of 1879, federally-funded, church-run residential schools were established across the country as a means of Christianizing and assimilating Aboriginal peoples by shaping and molding those individuals



with the most malleable identities – the children (Tait, 2003). Initially, compulsory attendance provisions were limited; however, in 1920 these provisions were extended to include all First Nations students aged 7-15, with provisions being added to establish truant officer positions with the authority to enter homes, forcibly seize children, and prescribe penalties to ‘Indian’ parents who refused to comply with these provisions (Claes & Clifton, 1998; Miller, 1996). The scale and scope of residential school attendance were expanded further in 1930 with the extension of compulsory attendance to age 16, and during the 1940s-50s when Inuit children started to be transported to residential schools (Ibid). Though compulsory attendance was often difficult to enforce, the number of Aboriginal students attending residential schools increased in accordance with new compulsory attendance provisions. At the peak of the residential school

system, 75% of First Nations children between the ages of 6 and 15 attended these schools (Armitage, 1995; Claes & Clifton, 1998).

Despite the provision for compulsory attendance, education in residential schools was generally considered inadequate, with most Aboriginal students leaving residential school poorly equipped for occupations beyond menial labour (Tait, 2003). The school curriculum typically consisted of half a day dedicated to acquiring a basic knowledge of reading, writing and arithmetic, and a half a day spent in labour (Miller, 1996). The standards of education were significantly lower than for non-Aboriginal children, schools were generally underfunded, and teachers were often poorly qualified (Miller, 1996; Haig-Brown, 1988; Fournier & Crey; 1997; Tait, 2003). Not surprisingly, it was estimated that between 1890 and 1950, “approximately

sixty per cent of residential school students failed to advance beyond grade three” (Tait, 2003, p. 65). The failure of residential schools to provide adequate education contributed to a legacy of poverty and ongoing social and economic marginalization within Aboriginal communities. Low socio-economic status has been associated with alcohol abuse (Brody, 1977; Smart & Ogborn, 1986; Whitehead & Hayes, 1988) and family dysfunction, which in turn has intergenerational impacts (as cited in Tait, 2003).

The philosophy behind residential schools and the environment in which students were raised resulted in intergenerational impacts to health and social issues in many Aboriginal communities. The schools aimed to instill non-Aboriginal values in children and suppress all expressions of Aboriginal culture and individuality (Law Commission of Canada, 2000).



Students were forbidden to speak their languages and their culture was denigrated or ignored. They were often exposed to excessive discipline and punishment aimed at causing pain and humiliation, and to physical, emotional and/or sexual abuses (Tait, 2003). These conditions contributed to a rejection of all things Aboriginal by younger generations (Ing, 1991), the creation of a rift between children and their parents and elders (McLeod, 1988), the internalizing of a sense of inferiority and shame, feelings of powerlessness, and the loss of structure and cohesion within families and communities (Tait, 2003). Denied access to families and the emotional support they can provide, many students developed low self-esteem and self-concept problems, self-destructive behaviours, anxiety, depression, difficulty trusting others, anger and hostility, and substance use disorders (Langeland & Hartgers, 1998 as cited in Tait, 2003, p. 40). Once they returned to their communities, they were unable to function in healthy adult relationships or effectively care for their own children (RCAP, 1996). The residential school experience left enduring intergenerational impacts related to substance abuse (especially alcohol), child abuse, mental health problems, and family dysfunction that have extended into subsequent generations of Aboriginal people (RCAP, 1996).

Yellow Horse Brave Heart (2003) argues that traumatic experiences such as those associated with residential schooling negatively impacted the “protective factors against substance abuse, such as parental competence, parental emotional availability and support, and parental involvement with a child’s schooling” (p. 9). The residential school experience interrupted the intergenerational transmission of healthy child-rearing practices and instilled new negative behaviours and patterns of family interactions that negatively impacted infant and child development (Evans-Campbell, 2008;

Fossum & Mason, 1986). It also sent the message that the government did not view Aboriginal families as an appropriate place to raise Aboriginal children, a message that was reinforced by the continued over-representation of children removed from the home in contemporary society due to parental neglect (Evans-Campbell, 2008). This message was often internalized by parents and children, leaving them doubting themselves, their own culture and their traditional ways of parenting (Evans-Campbell, 2008).

Bombay et al. (2009) present a potential model by which trauma can be transmitted intergenerationally through social processes. The model focuses on adverse childhood experiences of the first generation (abuse, neglect, poor parenting, household dysfunction) which result in the development of poor appraisals of self, negative cognitive style, and negative coping strategies. These in turn lead to increased stress experiences, poor mental health and increased reactivity to stressors, resulting in parenting deficits. This exposes the next generation to adverse childhood experiences so that they too develop negative cognitive styles that might carry into adulthood, thus perpetuating the cycle of trauma. Not only do children learn vicariously from their parents and caregivers, but adverse conditions in the household also contribute to an elevated risk of other types of stressors being encountered. For example, childhood abuse may negatively impact school performance, the ability to form and maintain close relationships, and decision-making processes, all of which can lead to increased risk of stressor experiences in adulthood (Bombay et al., 2009, p. 19). Parental behaviours play an important role in building self-esteem, self-efficacy, and self-reliance; these traits buffer against negative consequences of stressful experiences and serve to facilitate the development of skills that enable effective coping (Ibid., p. 20).

*It is difficult for individuals to break the cycle of intergenerational trauma in an environment that views dysfunction as the norm, and where strong role models and community support are lacking.*

The social processes involved in the intergenerational transmission of trauma, however, are not isolated within families, but extend to the communities in which Aboriginal people live. The processes of colonization, including the residential school system and child welfare policies that result in a disproportionate number of Aboriginal children being removed from their homes as a result of caregiver neglect, fostered conditions of disadvantage (including poverty, lower levels of education, inadequate housing and crowding, discrimination, detached parenting, poor role models, loss of cultural identity). These conditions compound the stress experienced by individuals and the perpetuation of negative coping strategies and continued trauma that are felt acutely not only within the household, but in the community as well (Gone, 2013; Bombay et al., 2009). In fact, Bombay et al. (2009) argue that the focus on individual effects of trauma often results in collective effects being overlooked. These collective effects are equally as important for understanding the intergenerational transmission of trauma. The effects of collective trauma, including a “decline in traditional social relations within the family and community, decline in subsistence production and distribution activities, and perceived increase in the amount of, and problems associated with, drinking, drug abuse and domestic violence,” have modified social dynamics, processes, structures and functioning (Bombay et al., 2009,

p. 23). Evans-Campbell (2008) adds that the loss of many children at once during the residential school era had considerable implications on emotional suffering, loss of human capacity, and the loss of the community’s ability to safeguard its language and culture, which in turn contributed to community level responses such as social malaise, weakened social structures and high rates of suicide that become second-order effects. While some Aboriginal communities have strong protective factors (see for example the work of Chandler & Lalonde, 1998) and few of the social, legal and health problems that act as stressors that can contribute to the perpetuation of trauma within families and communities, others are plagued with a host of social issues that have become the norm. As noted by Whitehead and Hayes (1998), alcohol abuse is not only linked to mental health issues and psychological distress, but also to social problems like low socio-economic status and in response to the social norms in particular places. Alcohol abuse, in turn, is associated with higher incidences of violence, crime, suicide and incarceration (Kirmayer, et al., 1992; Hiller, Knight, & Simpson, 1999; Peters, Greenbaum, Edens, Carter, & Ortiz, 1998; Grobsmith, 2008). It is difficult for individuals to break the cycle of intergenerational trauma in an environment that views dysfunction as the norm, and where strong role models and community support are lacking.



*...interrupting the intergenerational transmission of trauma will require approaches aimed not only at treating the symptoms of this trauma, but will require the healing and rebuilding of individuals, families and communities. A central component of this will be re-establishing pride and sense of individual and collective identity through 'culture as treatment' activities (Gone, 2013).*

## 3.0 CONCLUSION



Understanding the nature of trauma for Aboriginal survivors of the residential school system and their descendants, and the pathways by which this trauma has been transmitted from one generation to the next, are critical aspects of devising more effective strategies for addressing the health and well-being of Aboriginal people. This understanding must go beyond Western conceptions of trauma to include the collective and massive cumulative trauma experienced by generations of Aboriginal families, and the relationship between contemporary and historical manifestations of trauma. It also requires a deeper understanding of each of the primary pathways through which this trauma can be transmitted, and the ways in which they interact with each other.

Given the complexity of Historic Trauma for Aboriginal peoples, it is clear that disrupting the intergenerational transmission of trauma will require holistic and multi-faceted approaches to improving health and well-being. The deep shame that is felt by many Aboriginal people is rooted first and foremost in the processes of colonialism, which denigrated Aboriginal culture and values leaving many with a poor sense of self-worth. The effects of this are acutely felt by individuals, families, communities and nations, and play out through all facets of life. As a result, interrupting the intergenerational transmission of trauma will require approaches aimed not only at treating the symptoms of this trauma, but will require the healing and rebuilding of individuals, families and communities. A central component of this will be re-establishing pride and sense of individual and collective identity through 'culture as treatment' activities (Gone, 2013). These approaches must involve not only the health domain, but other domains like education as well.







# REFERENCES



- Aboriginal Affairs and Northern Development Canada. [AANDC] (2014). *Residential schools*. Ottawa, ON: Author. Retrieved November 15, 2011 from <https://www.aadnc-aandc.gc.ca/eng/1302882353814/1302882592498>
- Agaibi, C.E., & Wilson, J.P. (2005). Trauma, PTSD, and resilience: A review of the literature. *Trauma, Violence, & Abuse*, 6: 195. DOI: 10.1177/1524838005277438
- Anda, R.F., Felitti, V.J., Bremner, J.D., Walker, J.D., Whitfield, C., Perry, B.D. et al. (2006). The enduring effects of abuse and related adverse experiences in childhood: A convergence of evidence from neurobiology and epidemiology. *European Archives of Psychiatry and Clinical Neuroscience*, 256: 174-186.
- Anisman, H., Merali, Z., & Hayley, S. (2008). Depressive disorders: Contribution of cytokines and other growth factors. In M. Herzén & A.M. Gross (Eds.), *Handbook of Clinical Psychology* (pp. 779-809). New York: Wiley.
- Armitage, A. (1995). *Comparing the policy of Aboriginal assimilation: Australia, Canada, New Zealand*. Vancouver, BC: University of British Columbia Press.
- Bakermans-Kranenburg, M.J., & van Ijzendoorn, M.H. (2006). Gene-environment interaction of the dopamine D4 receptor (DRD4) and observed maternal insensitivity predicting externalizing behavior in preschoolers. *Developmental Psychobiology*, 48: 406-409.
- Bakermans-Kranenburg, M.J., & van Ijzendoorn, M.H. (2007). Research review: Genetic vulnerability or differential susceptibility in child development: The case of attachment. *Journal of Child Psychology and Psychiatry*, 48(12) 1160-1173.
- Berry, J.W., Kim, U., Minde, T., & Mok, D. (1987). Comparative studies of acculturative stress. *International Migration Review*, 21(3): 491-511.
- Bloom, S.L. (1999). *Trauma theory abbreviated*. Philadelphia, PA: CommunityWorks, from the Final Action Plan: A Coordinated Community-Based Response to Family Violence, Attorney General of Pennsylvania's Family Violence Task Force. Retrieved March 25, 2013 from <http://iheartenglish.pbworks.com/f/Trauma+Theory+Explained+14+pages.pdf>
- Boccia, M.L., & Pedersen, C.A. (2001). Brief vs. long maternal separations in infancy: Contrasting relationships with adult maternal behavior and lactation levels of aggression and anxiety. *Psychoneuroendocrinology*, 26(7): 657-72.
- Bombay, A., Matheson, K., & Anisman, H. (2009). Intergenerational trauma: Convergence of multiple processes among First Nations peoples in Canada. *Journal of Aboriginal Health*, November: 6-47.
- Bonanno, G.A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist*, 59(1): 20-28.

- Bower, G.H., & Sivers, H. (1998). Cognitive impact of traumatic events. *Development and Psychopathology*, 10: 625-653.
- Bowlby, J. (1988). *A secure base: Clinical applications of attachment theory*. London: Routledge.
- Brassfield, C.R. (2001). Residential school syndrome. *B.C. Medical Journal*, 43(2): 78-81.
- Brody, H. (1977). Alcohol, change and the industrial frontier. *Etudes/Inuit/Studies*, 1(2): 31-47.
- Bryant-Davis, T. (2007). Healing requires recognition: The case for race-based traumatic stress. *The Counseling Psychologist*, 35: 135. DOI: 10.1177/0011000006295152
- Calkins, S.D., & Leerkes, E.M. (2011). Early attachment processes and the development of emotional self-regulation. In K.D. Vohs & R.F. Baumeister (Eds.), *Handbook of self-regulation (2nd edition): Research, theory, and applications* (pp. 355-373). New York: Guilford Press.
- Caseras, X., Lawrence, N.S., Murphy, K., Wise, R.G., & Phillips, M.L. (2013). Ventral striatum activity in response to reward: Differences between Bipolar I and II disorders. *American Journal of Psychiatry*, 170: 533-541.
- Champagne, F., Diorio, J., Sharma, S., & Meaney, M.J. (2001). Naturally occurring variations in maternal behavior in the rat are associated with differences in estrogen-inducible central oxytocin receptors. *Proceedings of the National Academy of Sciences*, 98: 12736-41.
- Chandler, M., & Lalonde, C. (1998). Cultural continuity as a hedge against suicide in Canada's First Nations. *Transcultural Psychiatry*, 35(2): 191-219.
- Cicchetti, D., Rogosch, F.A., & Toth, S.L. (2011). The effects of child maltreatment and polymorphisms of the serotonin transporter and dopamine D4 receptor genes on infant attachment and intervention efficacy. *Development and Psychopathology*, 23: 357-372.
- Cicchetti, D., & Toth, S. (1995). A developmental psychopathology perspective on child abuse and neglect. *Journal of the American Academy of Child and Adolescent Psychiatry*, 34: 541-65.
- Claes, R., & Clifton, D. (1998). *Needs and expectations of redress of victims of abuse*. Ottawa, ON: Law Commission of Canada. Retrieved November 4, 2014 from <http://dalspace.library.dal.ca/bitstream/handle/10222/10440/Sage%20Research%20Redress%20EN.pdf?sequence=1>
- Corrado, R.R., & Cohen, I.M. (2003). *Mental health profiles of a sample of British Columbia's survivors of the Canadian residential school system*. Ottawa, ON: Aboriginal Healing Foundation.
- Culp, R., Richardson, M., & Heide, J. (1987). Differential developmental progress of maltreated children in day treatment. *Social Work*, 32: 497-9.
- Dayton, T. (2000). *Trauma and addiction: Ending the cycle of pain through emotional literacy*. Deerfield Beach, FL: Health Communications Inc.
- Deiter, C. (1999). *From our mothers' arms: The intergenerational impact of residential schools in Saskatchewan*. Toronto, ON: United Church Publishing House.
- Dickerson, S.S., & Kemeny, M.E. (2004). Acute stressors and cortisol responses: A theoretical integration and synthesis of laboratory research. *Psychological Bulletin*, 130(3): 355-391.
- Doidge, N. (2007). *The brain that changes itself*. London, GB: Penguin Books.
- Duran, E. (2006). *Healing the soul wound: Counseling with American Indians and other Native peoples*. New York: Teachers College Press, Columbia University.
- Dutton, D.G., & Painter, S.L. (1981). Traumatic bonding: The development of emotional attachments in battered women and other relationships of intermittent abuse. *Victimology: An International Journal*, 1(4): 139-155.
- Evans-Campbell, T. (2008). Historical trauma in American Indian/Native Alaskan communities: A multilevel framework for exploring impacts on individuals, families, and communities. *Journal of Interpersonal Violence*, 23: 316. DOI: 10.1177/0886260507312290
- Evans-Campbell, T., & Walters, K.L. (2006). Indigenist practice competencies in child welfare practice: A decolonization framework to address family violence and substance abuse among First Nations peoples. In R. Fong, R. McRoy, & C. Ortiz Hendricks (Eds.), *Intersecting child welfare, substance abuse, and family violence: Culturally competent approaches* (pp. 266-290). Washington, DC: CSWE Press.
- Felitti, V., Anda, R., Nordenberg, D., Williamson, D., Spitz, A., Edwards, V. et al. (1998). Relationship of childhood abuse to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. *American Journal of Preventive Medicine*, 14: 245-58.
- Fossum, M.A., & Mason, M.J. (1986). *Facing shame: Families in recovery*. New York, NY: Norton.
- Fournier, S., & Crey, E. (1997). *Stolen from our embrace: The abduction of First Nations children and the restoration of Aboriginal communities*. Toronto, ON: Douglas and McIntyre.
- Francis, D.D., Young, L.J., Meaney, M.J., & Insel, T.R. (2002). Naturally occurring differences in maternal care are associated with the expression of oxytocin and vasopressin (V1a) receptors: Gender differences. *Journal of Neuroendocrinology*, 14(5): 349-53.
- Gone, J.P. (2013). Redressing First Nations historical trauma: Theorizing mechanisms for indigenous culture as mental health treatment. *Transcultural Psychiatry*, 0(0): 1-24. DOI: 10.1177/1363461513487669
- Gordon, I., Zagoory-Sharon, O., Leckman, J.F., & Feldman, R. (2010). Oxytocin and the development of parenting in humans. *Biological Psychiatry*, 68(4) 377-82.
- Gregory, M. (n.d.). Endocrine system. *General Biology 2 (Bio 102) notes*. Plattsburgh, NY: State University of New York – Clinton Community College. <http://faculty.clintoncc.suny.edu/faculty/michael.gregory/files/bio%20102/bio%20102%20lectures/endocrine%20system/endocrin.htm>
- Grobsmith, E.S. (2008). The relationship between substance abuse and crime among Native American inmates in the Nebraska Department of Corrections. *Human Organization*, 48(4): 285-98.



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- Haig-Brown, C. (1988). *Resistance and renewal: Surviving the Indian residential school*. Vancouver, BC: Tillicum Library.
- Hardy, C. (2013). *Caregiver-infant attachment for Aboriginal families*. Prince George, BC: National Collaborating Centre for Aboriginal Health.
- Heim, C., Newport, D.J., Mletzko, T., Miller, A.H., & Nemeroff, C.B. (2008). The link between childhood trauma and depression: Insights from HPA axis studies in humans. *Psychoneuroendocrinology*, 33: 693-710.
- Herman, J.L. (1992). Complex PTSD: A syndrome in survivors of prolonged and repeated trauma. *Journal of Traumatic Stress*, 5(3): 377-389.
- Hildyard, K.L., & Wolfe, D.A. (2002). Child neglect: Developmental issues and outcomes. *Child Abuse & Neglect*, 26(6/7): 679-695.
- Hiller, M.L., Knight, K., & Simpson, D.D. (1999). Prison-based substance abuse treatment, residential aftercare and recidivism. *Addiction*, 94: 833-842. doi: 10.1046/j.1360-0443.1999.9468337.x
- Ing, N.R. (1991). The effects of residential schools on Native child-rearing practices. *Canadian Journal of Native Education*, 18(Supplement): 67-116.
- Kessler, R.C. (1997). The effects of stressful life events on depression. *Annual Review of Psychology*, 48: 191-214.
- Kirmayer, L.J., Hayton, B., Malus, M., Jimenez, V., Dufour, R., Quesney, C. et al. (1992). *Suicide in Canadian Aboriginal populations: Emerging trends in research and intervention*. Montreal, QC: Culture and Mental Health Research Unit.
- LaFrance, J., & Collins, D. (2003). Residential schools and Aboriginal parenting: Voices of parents. *Native Social Work Journal*, 4(1): 104-125.
- Langeland, W., & Hartgers, C. (1998). Child sexual and physical abuse and alcoholism: A review. *Journal of Studies on Alcohol*, 59(3): 336-48.
- Law Commission of Canada. (2000). *Institutional child abuse-restoring dignity: Responding to child abuse in Canadian institutions*. Ottawa, ON: Minister of Public Works and Government Services.
- Lengua, L.J., & Long, A.C. (2002). The role of emotionality and self-regulation in the appraisal-coping process: Tests of direct and moderating effects. *Journal of Applied Development Psychology*, 23(4): 471-493.
- Levendosky, A.A., & Graham-Bermann, S.A. (2000). Trauma and parenting in battered women. *Journal of Aggression, Maltreatment & Trauma*, 3(1): 25-35.
- Levine, P.A., & Kline, M. (2006). *Trauma through a child's eyes*. Berkeley, CA: North Atlantic Books.
- Levine, P.A., & Kline, M. (2008). *Trauma proofing your kids*. Berkeley, CA: North Atlantic Books.
- Lipton, B.H. (2002). *Nature, nurture and the power of love: The biology of conscious parenting*. Video produced by Jenny Myers Productions. Retrieved October 13 from www.spirit.2000.com
- Loppie, S., Reading, C., & de Leeuw, S. (2014). *Aboriginal experiences with racism and its impacts*. Prince George, BC: National Collaborating Centre for Aboriginal Health.
- Majer, M., Nater, U.M., Lin, J.-M.S., Cuperon, L., & Reeves, W.C. (2010). Association of childhood trauma with cognitive function in healthy adults: A pilot study. *BMC Neurology*, 10 61.
- Malaspina, D., Corcoran, C., Kleinhaus, K.R., Perrin, M.C., Fennig, S., Nahon, D. et al. (2008). Acute maternal stress in pregnancy and schizophrenia in offspring: A cohort prospective study. *BMC Psychiatry*, 8(special section): 1-9.
- Maté, G. (2008). *In the realm of hungry ghosts: Close encounters with addictions*. Toronto, ON: Alfred Knopf.
- McLeod, N. (1988). Coming home through stories. *International Journal of Canadian Studies*, 18: 51-66.

- Meaney, M.J. (2001). Maternal care, gene expression, and the transmission of individual differences in stress reactivity across generations. *Annual Review of Neuroscience*, 24, 1161-92.
- Meaney, M.J., Brake, W., & Gratton, A. (2002). Environmental regulation of the development of mesolimbic dopamine systems: A neurobiological mechanism for vulnerability to drug abuse? *Psychoneuroendocrinology*, 27(1-2): 127-38.
- Menzies, P. (2010). Intergenerational trauma from a mental health perspective. *Native Social Work Journal*, 7: 63-85.
- Michalska, K., Decety, J., Liu, C., Chen, Q., Martz, M.E., Jacob, S. et al. (2014). Genetic imaging of the association of oxytocin receptor gene (OXTR) polymorphisms with positive maternal parenting. *Frontiers in Behavioral Neuroscience*, DOI 10.3389/fnbeh.2014.00021
- Mikulincer, M., Shaver, P.R., & Pereg, D. (2003). Attachment theory and affect regulation: The dynamics, development, and cognitive consequences of attachment-related strategies. *Motivation and Emotion*, 27(2): 77-102.
- Miller, D. (2002). Addictions and trauma recovery: An integrated approach. *Psychiatric Quarterly*, 37(2): 157-170.
- Miller, G.E., Chen, E., & Zhou, E.S. (2007). If it goes up, must it come down? Chronic stress and the hypothalamic-pituitary-adrenocortical axis in humans. *Psychological Bulletin*, 133(1): 25-45.
- Miller, J.R. (1996). *Shingwauk's vision: A history of native residential schools*. Toronto, ON: University of Toronto Press.
- Native Women's Association of Canada [NWAC]. (2009). *Violence against Aboriginal women in Canada. Backgrounder*. Ottawa, ON: NWAC. Retrieved August 7, 2009 from <http://www.nwac-hq.org/en/documents/Backgrounder-Violence.pdf>
- Neckoway, R., Brownlee, K., & Castellan, B. (2007). Is attachment theory consistent with Aboriginal parenting realities? *First Peoples Child & Family Review*, 3(2): 65-74.
- Perry, B.D. (Speaker) (2008). *First Impressions... exposure to violence and a child's developing brain*. Sacramento, CA: Video produced by Iron Mountain Films for the California Attorney General's Office. Retrieved January 22, 2012 from [www.safestate.org](http://www.safestate.org)
- Perry, B.D. (2009). Examining child maltreatment through a neurodevelopmental lens: Clinical applications of the neurosequential model of therapeutics. *Journal of Loss and Trauma*, 14:240-255.
- Peters, R.H., Greenbaum, P.E., Edens, J.F., Carter, C.R., & Ortiz, M.M. (1998). Prevalence of DSM-IV substance abuse and dependence disorders among prison inmates. *The American Journal of Drug and Alcohol Abuse*, 24(4): 573-87.
- Psychology - About.com. (2014). Disorganized attachment. Retrieved March 14, 2014 from [http://psychology.about.com/od/loveandattraction/ss/attachmentstyle\\_7.htm](http://psychology.about.com/od/loveandattraction/ss/attachmentstyle_7.htm)
- Rice, B., & Snyder, A. (2008). Reconciliation in the context of a settler society: Healing the legacy of colonialism in Canada. In M.B. Castellano, L. Archibald, & M. DeGagné (Eds.), *From truth to reconciliation: Transforming the legacy of residential schools* (pp. 43-63). Ottawa, ON: Aboriginal Healing Foundation.
- Robertson, L.H. (2006). The residential school experience: Syndrome or historic trauma. *Pimatisiwin: A Journal of Aboriginal and Indigenous Community Health*, 4(1): 1-28.



- Ross, R. (1996). *Returning to the teachings: Exploring Aboriginal justice*. Toronto, ON: Penguin Canada.
- Roth, T.L., Lubin, F.D., Funk, A.J., & Sweatt, J.D. (2009). Lasting epigenetic influence of early-life adversity on the BDNF gene. *Biological Psychiatry*, 65: 760-769.
- Rothbaum, F., Weisz, J., Pott, M., Miyake, K., & Morelli, G. (2000). Attachment and culture: Security in the United States and Japan. *American Psychologist*, 55(10): 1093-1104.
- Royal Commission on Aboriginal Peoples. (1996). *Report of the Royal Commission on Aboriginal Peoples- Vol. 1: Looking forward, looking back*. Ottawa, ON: Ministry of Supply and Services Canada. Retrieved November 14, 2014 from <http://caid.ca/RepRoyCommAborigPple.html>
- Schore, A.N. (2002). Dysregulation of the right brain: A fundamental mechanism of traumatic attachment and the psychopathogenesis of posttraumatic stress disorder. *Australian and New Zealand Journal of Psychiatry*, 36: 9-30.
- Scrim, K. (2013). Aboriginal victimization in Canada: A summary of the literature. *Victims of Crime Research Digest*, 3. Retrieved March 6, 2014 from <http://www.justice.gc.ca/eng/tp-pr/cj-jp/victim/rd3-rr3/p3.html>
- Siegel, D.J. (2012). *The developing mind: How relationship and the brain interact to shape who we are*. New York: Guilford Press.
- Smart, R.G., & Ogborne, A.C. (1986). *Northern spirits: Drinking in Canada then and now*. Toronto, ON: Addiction Research Foundation.
- Söchting, I., Corrado, R., Cohen, I.M., Ley, R.G., & Brasfield, C. (2007). Traumatic pasts in Canadian Aboriginal people: Further support for a complex trauma conceptualization. *BC Medical Journal*, 49(6): 320-326.
- Sotero, M. (2006). A conceptual model of historical trauma: Implication for public health practice and research. *Journal of Health Disparities Research and Practice*, 1(1): 93-108.
- Strathearn, L. (2011). Maternal neglect: Oxytocin, dopamine and the neurobiology of attachment. *Journal of Neuroendocrinology*, 23: 1054-1065.
- Tait, C.L. (2003). *Fetal Alcohol Syndrome among Aboriginal people in Canada: Review and analysis of the intergenerational links to residential schools*. Ottawa, ON: Aboriginal Healing Foundation. Retrieved November 12, 2014 from <http://www.ahf.ca/downloads/fetal-alcohol-syndrome.pdf>
- Troniak, S. (2011). *Addressing the legacy of residential schools*. Ottawa, ON: Social Affairs Division, Parliamentary Information and Research Service, Library of Parliament Publication No. 2011-76-E.
- Truman, W. (Producer and Director) (2004). *The emotional brain: anger*. In *Passion and Fury* (television series). Canadian Broadcasting Association and the Australian Broadcasting Association.
- Uno, H., Tarara, R., Else, J.G., Suleman, M.A., & Sapolsky, R.M. (1989). Hippocampal damage associated with prolonged and fatal stress in primates. *Journal of Neurosciences*, 9: 1705-11.
- Van der Kolk, B.A. (1989). The compulsion to repeat the trauma: Re-enactment, revictimization, and masochism. *Psychiatric Clinics of North American*, 12(2): 389-411.

- Van der Kolk, B.A. (2003). The neurobiology of childhood trauma and abuse. *Child & Adolescent Psychiatric Clinics of North America*, 12: 293-317.
- Volkow, N.D., Fowler, J.S., Wang, G.-J., & Swanson, J.M. (2004). Dopamine in drug abuse and addiction: Results from imaging studies and treatment implications. *Molecular Psychiatry*, 9: 557-569.
- Waldram, J.B. (2004). *Revenge of the Windigo: The construction of the mind and mental health of North American Aboriginal peoples*. Toronto, ON: University of Toronto Press.
- Weinberg, M., & Tronick, E. (1998). The impact of maternal psychiatric illness on infant development. *Journal of Clinical Psychiatry*, 59: 53-61.
- Whitehead, P.C., & Hayes, M.J. (1988). *The insanity of alcohol: Social problems in Canadian First Nations communities*. Toronto, ON: Canadian Scholar's Press Inc.
- Wikipedia (2013a). Hypothalamic-Pituitary-adrenal axis, [http://en.wikipedia.org/wiki/Hypothalamic%E2%80%93pituitary%E2%80%93adrenal\\_axis](http://en.wikipedia.org/wiki/Hypothalamic%E2%80%93pituitary%E2%80%93adrenal_axis)
- Wikipedia (2013b). DNA methylation, [http://en.wikipedia.org/wiki/DNA\\_methylation](http://en.wikipedia.org/wiki/DNA_methylation)
- Wikipedia (2014). Somatization Disorder. [http://en.wikipedia.org/wiki/Somatization\\_disorder](http://en.wikipedia.org/wiki/Somatization_disorder)
- Wisner Fries, A.B., Ziegler, T.E., Kurian, J.R., Jacoris, S., & Pollak, S.D. (2005). Early experience in humans is associated with changes in neuropeptides critical for regulating social behavior. *Proceedings of the National Academy of Sciences*, 102(47) 17237-17240.
- Yehuda, R. (2002). Current concepts: Post traumatic stress disorder. *The New England Journal of Medicine*, 346(2): 108-114.
- Yellow Horse Brave Heart, M. (2003). The historical trauma response among natives and its relationship with substance abuse: A Lakota illustration. *Journal of Psychoactive Drugs*, 35(1): 7-13.

