Fostering Long-Term Resilience: Neurological Framework for Culturally Sustaining Literacy in Indigenous Youth

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Abstract

Adverse Childhood Experiences (ACEs) have reached epidemic proportions, contributing to record-high rates of adolescent anxiety, depression, and suicide, particularly within Montana. This literature review investigates the intersection of lived, intergenerational, and historical trauma among Montana's Indigenous youth and the specific ways these stressors biologically impede the cognitive functions necessary for literacy skills. Beyond identifying neurological barriers, the review further explores pathways of resiliency for Positive Childhood Experiences (PCEs) as a counterbalance to toxic stress. By evaluating trauma-informed and culturally sustaining pedagogies, such as transmediation and Universal Design for Learning (UDL), this review advocates for a transition from a deficit-based model toward a strength-based framework. Conclusively, this approach seeks to bridge the gap between neurological recovery and literacy success for Indigenous learners.

Keywords: *trauma-informed practices, Native American students, Resilience*

Adverse Childhood Experiences: A National and State Crisis

Current data indicates a rising prevalence of trauma among today's youth, reaching what many health officials describe as epidemic proportions (Centers for Disease Control and Prevention [CDC], 2021). These traumatic experiences frequently result in elevated Adverse Childhood Experiences (ACEs) scores, which the American Psychological Association (2021) notes can lead to long-term psychological impairment, including high rates of anxiety, depression, and suicide. Although this crisis affects our nation, higher rates of trauma and related stress are reported from Indigenous adolescents in Montana (Montana Office of Public Instruction [OPI], n.d.-c).

As a middle school educator on the south side of Billings where there is a large population of Indigenous students, the degree of trauma my students endure and how it impacts them is important to me. In an effort to better support my students, I am committed to bridging the gap between trauma and achievement. Guided by these disparities and the specific needs of Montana's Indigenous youth, this review seeks to answer the following question: in what ways do the physiological responses to Adverse Childhood Experiences (ACEs) and the prevalence of historical, intergenerational, and lived trauma among Montana's middle school students, particularly Indigenous youth, impact literacy acquisition and cognitive processing in adolescent learners? To address this issue, the review first investigates the neurological impact of historical, intergenerational and lived trauma. Next, it analyzes the impact of how trauma responses manifest into physiological changes that interfere with the brain, specifically, literacy development. The discussion concludes by identifying research-based pathways toward resiliency, literacy success, and state-wide initiatives designed to support Montana teens.

Trauma is a complex reality identified not only by an event, but by the perception of the individuals in response to an event and how they process the event based upon their support system (Lacona and Johnson, 2018; Margolin & Gordis, 2000).

To quantify this crisis, researchers and physicians utilize the ACEs framework. According to the 2024 National Survey of Children's Health, ACEs serve as the primary measurement tool for trauma. According to Ernest et al. (2022),

> trauma is an emotional response to a terrible event, series of events, or set of circumstances experienced by an individual as physically or emotionally harmful or life-threatening and has lasting adverse effects on the individual's functioning and mental, physical, social, emotional, or spiritual well-being (p. 8).

Alhowaymel et al. (2003) classify common adversities with which trauma is affiliated like household dysfunction such as parental separation or divorce, exposure to mental or chronic health challenges, substance abuse or domestic or neighborhood violence, and experiencing economic hardship. Many times these adverse conditions coexist with childhood abuse including psychological, emotional, physical, and sexual abuse; household dysfunction; criminal behavior; physical or emotional neglect; and having an incarcerated household member (Alhowaymel et al., 2023).

According to the Health and Resources and Services Administration (HRSA), one in five teens has experienced three or more adverse childhood experiences (2024). The HRSA further reports an increased likelihood of an anxiety diagnosis as the national average for youth anxiety is 11%; the rate drops to 3.5% for those with no recorded ACEs, yet increases sixfold for those with three or more. Similarly, the national depression rate is approximately 4% for all children; it climbs to 8.4% for teens with three or more ACEs (HRSA, 2024). These statistics demonstrate

how multiple stressors can impact teen health (Alhowaymel et al., 2023). Furthermore, females are recorded to have higher ACE scores, correlating to a greater prevalence of mental health challenges (Wong, 2024). In addition, the prevalence of these stressors in rural settings is echoed by Iniguez and Stankowski (2017) who found that rural populations face unique environmental barriers that intensify the long-term health impacts of ACEs.

Youth with increased ACE scores often experience physiological difficulties including sleep disturbances, hormone dysregulation, and chronic illness. Socially, these teens are more likely to struggle with peer relationships or to be involved in bullying. Academically, this often manifests as decreased school engagement and a disconnect with school work or the motivation to succeed (HRSA, 2024; Alhowaymel et al., 2023).

According to the survey conducted by Montana Office of Public Instruction (OPI), trauma is deeply rooted in Montana's history and geography and is considered a public health crisis (2025). Evidence from the Montana Youth Risk Behavior Survey (YRBS) and the National Survey of Children's Health (NSCH), Montana students consistently report higher rates of trauma and related distress than their peers in other parts of the nation (OPI, 2025). For instance, the national average of teens feeling sad or hopeless was 40% compared to Montana's 43.3%. Montana also ranks in the top three states for suicide rates among teens. Furthermore, 26.1% of Montana teens report exposure to traumatic events, which is significantly higher than the national average of 18-20%. Exposure to traumatic events can profoundly affect an adolescent's physical and emotional development (Wong et al, 2024).

The Convergence of Historical, Generational, and Lived Trauma

Historical trauma is defined as a "collective emotional and psychological injury that is existent throughout the adult life span and across generations" (Brave Heart, 2003, p.7). Unlike

isolated traumatic events, it is a communal event characterized by a history of genocide, forced displacement, or systemic destruction of a culture. This concept was originally introduced by Maria Yellow Horse Brave Heart in her study focusing on the mental health of the Indigenous population, specifically pertaining to the Lakota people, based upon the continuous psychological distress that transcends individual experience (2003).

The manifestation of historical trauma is defined as Historical Trauma Response (HTR) (Brave Heart, 2003). While clinical similarities between HTR and Post-Traumatic Stress Disorder (PTSD) exist, historical trauma is distinct in nature as a result of its inherited and collective burden. The symptoms of HTR often include persistent anxiety and depression, a fixation on historical losses of ancestors, and diminished self-esteem rooted in internalized oppression. Internalization occurs when a dominant culture sets forth to dehumanize a marginalized group. That dehumanization is absorbed by an individual from that marginalized culture transpiring to a pervasive sense of victimization and survivor's guilt (2003).

A common coping mechanism among marginalized populations is turning to substance abuse as a way of numbing the pain of historical trauma. This process often increases a secondary layer of crisis that can manifest as violence, chronic health problems, and accidents, all of which increase the probability of the next generation encountering HTR (2003).

A pivotal example of this cycle is found in the history of Wounded Knee Massacre in 1890, where nearly 300 Lakota people were killed including unarmed women, children, and elders (Brave Heart, 2003). As a result of this systemic attempt to assimilate the Lakota tribe, trauma was shared by the community. Due to traditional mourning ceremonies and rituals being outlawed, trauma became embedded in their identity. Therefore, grief became "frozen" and HTR was transmitted across generations (2003).

This transmission of historical trauma is also evident in Montana as a result of being a major hub for federal boarding schools. The locations of these institutions were at Fort Shaw, Saint Labre Indian Catholic Mission, Fort Peck, Fort Belknap, Browning, and Crow Agency. These schools operated under the philosophy of Captain Richard Pratt, founder of the Carlisle Indian School, whose goal was the assimilation of Indian culture. His motto from a famous 1892 speech was, "Kill the Indian, save the man" (OPI, n.d.-a).

The government mandated the forced removal of Indigenous children from their families at age five and they were sent to a federal boarding school. If families refused, then food rations were cut. Upon arrival at the boarding school, the process of Indigenous identity erasure began: children's hair was cut short, a cultural ritual used only to demonstrate mourning, tribal clothes and jewelry were removed, and family names were replaced with English ones. Speaking in a native language resulted in severe punishment ranging from having mouths washed out with soap to beatings and solitary confinement. Decades after boarding schools closed, survivors have testified that physical and sexual abuse were common practices within the boarding school system (OPI, n.d.-a).

According to Montana elders, the boarding school experience created a profound parenting gap (OPI, n.d.-a). Due to an entire generation of Indigenous children being raised in military-style dorms, any form of nurturing was nonexistent in their lives. Children were denied the foundational experience of having their emotional needs met. This void transitioned historical trauma into intergenerational trauma as the lack of a nurturing environment was passed from parent to child (Brave Heart, 2003). It is noted by OPI that many tribal leaders directly link modern crises, including high rates of substance abuse and suicide, to these schools as the root cause (n.d.-a).

Expanding on Brave Heart's framework, researcher Amy Bombay and colleagues (2014) illustrated how this trauma moves beyond behavior and into biology. Through a large-scale quantitative analysis of over 400 descendants of the Canadian Indian Residential School system, a direct parallel to the U.S. boarding schools in Montana, Bombay found that trauma leaves a physiological imprint. The study revealed that offspring of survivors exhibited significantly higher levels of depressive symptoms and suicide attempts compared to those whose ancestors did not attend.

These findings highlight a biological cycle of trauma. Survivors often possessed an altered hypothalamic-pituitary-adrenal (HPA) axis, the system responsible for regulating stress, immunity, and mood. This biological alteration meant that the body's stress response remained permanently turned on, affecting how these survivors parented their own children. When both parents were survivors, the resulting environment often entailed significantly higher psychological distress for the next generation. Bombay's research statistically found a cumulative effect of suicidal ideation (2014). Ultimately, both historical and intergenerational trauma persist in Montana as a direct impact of government policies that systematically stripped Indigenous people of their land, culture, language, and youth (Yehuda & Lehrner, 2018).

In their exploration of Indigenous mental health, Cole et al. (2025) expand upon the biological effect identified by Bombay, not as a series of isolated incidents, but as a continuous cycle consisting of historical, intergenerational, and lived trauma. At the root of this complex continuum is historical trauma, a distal stressor originating from systemic events such as the boarding school era. During this period, Indigenous ancestors were subjected to "lived trauma" through horrific abuse and forced cultural erasure. This historical wounding does not remain in

the past; rather, it moves through intergenerational trauma, which serves as the primary pathway affecting later generations.

This transmission occurs when a survivor in a caregiving role carries an HTR. Such trauma manifests as chronic illness from internalized stress, depression, or substance misuse as a means of coping with deep-seated psychological wounds. Consequently, the home environment may be characterized by instability, including parental separation, domestic violence, or difficulty meeting a child's basic needs (Brave Heart, 2003). These environmental factors directly contribute to Montana Indigenous youth frequently reporting higher ACEs than their peers nationwide (OPI, n.d.-c).

Ultimately, these historical and family layers combine in lived trauma, defined by Cole and colleagues as the immediate, present-day stressors causing distress. For an Indigenous adolescent, lived trauma is represented by the proximal stressors they face daily such as contemporary racism, social exclusion based on cultural origin, and the immediate impact of witnessing a caregiver’s ongoing struggle with mental health or addiction. By viewing these three forms of trauma as an interconnected cycle, the research highlights how an adolescent's current "lived" distress is rarely an isolated event, but rather a compilation of historical wounding and a disruption of the family system.

Neurobiological Impacts of Trauma on the Developing Brain

The human brain operates through established neural pathways that facilitate communication between the central nervous system and the body. According to Perry (2019), the brain is organized and develops systematically following a bottom-up developmental path. This process begins with the brainstem which controls the automatic functions, moves to the limbic system that is in charge of an individual’s emotions, and finally reaches the neocortex area where

abstract thought and literacy functions occur. In children and adolescents, traumatic experiences can fundamentally alter neural circuits of the developing brain as a result of chronic stress specifically in relation to the amygdala and thinning of the prefrontal cortex (Margolin & Gordis, 2000; Perry, 2019; Teicher & Burger, 2021). When these pathways are chronically activated, neurons may become hypersensitized leading to heightened physiological reactivity (Margolin & Gordis, 2000). Furthermore, sustained exposure to trauma can result in abnormal neurodevelopment characterized by the overstimulation of specific brain regions (2000).

The brain from gestation through middle childhood is particularly vulnerable to environmental stressors that can induce structural and functional abnormalities. The amygdala, often referred to as the brain's alarm system, is primarily affected. When trauma compromises this region, individuals frequently struggle with emotional regulation. The brain prioritizes survival over cognitive processing creating a cross-wiring effect between the fear and logic centers. To explain this in more detail, when students are functioning in survival mode, their neural activity mostly occurs in the brainstem area to automatically take over for survival. The brain conserves energy by shutting off areas of the prefrontal cortex which limits higher-order processing capabilities. When a child enters survival mode, the student is not biologically capable of processing the multi-faceted tasks required for reading and writing due to the neocortex area of the brain being deactivated (Perry, 2019).

This neurological shift often results in collateral damage to executive functioning. For a traumatized student, maintaining a state of calm requires excessive metabolic and emotional energy which subsequently depletes the resources available for working memory and sustained focus. Consequently, this state of chronic dysregulation is often displayed as cognitive

exhaustion and behavioral outbursts. The incessant release of cortisol also plays a role in the emotional instability (Margolin & Gordis, 2000).

Furthermore, elevated ACE scores are correlated with structural changes in the brain's white and gray matter which can compromise both immediate stress modulation and long-term adaptive functioning (Teicher & Samson, 2016). Specifically, trauma often deteriorates the functionality of the neural pathways leading to the prefrontal cortex as well as the inferior fronto-occipital fasciculus (IFOF). The pruning of the dendritic branches actually thins gray matter and results in a decrease of the amount of neural connections available for the tasks of working memory and impulse control (2016).

In addition, the IFOF serves as a critical bridge connecting the brain's visual processing regions to the frontal lobe. When this pathway is structurally impaired by trauma, the brain struggles to distinguish between current visual stimuli and stored traumatic memories. This neurological disruption provides a biological framework for understanding the mechanics of flashbacks as the brain fails to properly categorize past visual data and instead perceives it as a present threat (Teicher & Samson, 2016).

Neurobiological Impediments to Literacy Acquisition

The neurobiological changes caused by trauma do not just represent damage; they represent a fundamental shift in how the brain's framework is utilized. In typical development, the brain distributes its neural capacity to the task of integrating visual stimuli with linguistic meaning. However, when the amygdala is chronically hyper-activated, the brain's resources are shifted toward threat detection rather than cognitive development (Zhu et al., 2022). The Inferior Fronto-Occipital Fasciculus (IFOF), whose job is to provide a critical neural pathway for translating written text into mental imagery, becomes cluttered by the interference of traumatic memories.

This disturbance is rooted in the physical impairment of the white matter. Trauma negatively impacts myelination, which is the fatty insulation that ensures rapid neural communication. Studies using neuroimaging have displayed reduced durability in the IFOF (Teicher & Samson, 2016). When these roadways are structurally compromised, the speed is significantly decreased in relation to how the brain integrates visual text with linguistic meaning. As the brain prioritizes these defensive pathways, it restricts the energy required for decoding, comprehension, and fluency (Iacona & Johnson, 2018; Zhu et al., 2022).

This rechanneling of energy has profound implications for the hippocampus and the prefrontal cortex. The hippocampus manages verbal memory and exhibits peak sensitivity to cortisol during adolescence (Kira et al., 2012). As a result, chronic trauma-induced reductions in hippocampal volume are associated with smaller mental vocabularies and a reduced ability to process new linguistic information (Zhu et al., 2022). Crucially, this is a physiological impediment rather than a lack of intelligence. Simultaneously, the prefrontal cortex, which manages executive function and text decoding, becomes underactive as the brain prioritizes survival over logic (Perry, 2019; Zhu et al., 2022).

The specific literacy deficit often depends on the developmental stage at the onset of trauma. For younger children, they typically experience impediment with the basic mechanics of reading. Adolescents often struggle with higher-order thinking skills like synthesizing information from a variety of sources and understanding metaphors and themes. Furthermore, Koss et al. (2021) demonstrated that childhood maltreatment specifically disrupts the development of the brain's language network providing a direct link between early adversity and later linguistic struggles. When the brain is forced to stretch beyond literal meaning, the reduced connectivity caused by being overloaded often results in complete mental shutdown or writing paralysis (Kira et al.,

2012). Furthermore, dissociation can cause a student to appear to have forgotten a lesson overnight; in reality, a cortisol spike has blocked the memory, or a trauma trigger, like a specific noise, has replayed and replaced the teacher's voice in their working memory (2012).

In Montana, the literacy gap among Indigenous youth is not a learning failure, but a neurological consequence of the "frozen grief" identified by Brave Heart (2003). The systemic trauma of the boarding school era has transitioned into a physiological barrier where the brain must choose survival over literacy. This transition aligns with Perry's (2019) neurosequential model which claims the brain prioritizes lower-level survival functions over higher-level tasks when a student functions in a chronic state of threat. Recent data from the Montana Office of Public Instruction (OPI, 2025; 2026) supports this theory, indicating that Indigenous youth experience disproportionate rates of persistent sadness and hopelessness.

This emotional state is the clinical representation of a hyper-activated amygdala. When the brain is locked in this state of survival, the impact on literacy is measurable: students struggling with high levels of Adverse Childhood Experiences (ACEs) show a marked decline in academic engagement and working memory (OPI, 2026). In this context, the literacy gap is not a reflection of cognitive ability, but a biological response to an environment in which the brain must prioritize immediate safety over the complex neural integration required for comprehension.

Pathways to Resiliency

The focus is shifting toward resiliency, specifically focusing on how Positive Childhood Experiences (PCEs) can serve as a powerful counterbalance to the impact of Adverse Childhood Experiences (ACEs). Research indicates that a higher accumulation of these positive markers significantly reduces the risk of depression and poor mental health later in life (Sege & Harper, 2017). A study by Bethell et al., (2019) demonstrated a positive correlation between having six

to seven PCEs associated with a 72% lower likelihood of experiencing depression in adulthood even with increased levels of childhood adversity.

According to the Office of Public Instruction (OPI, 2023), resilience is built through seven specific buffers that lessen the effects of trauma. A foundational piece of a PCE is the security of having a family member stand beside them during a difficult period paired with the safety of feeling protected by an adult within the home. This sense of security extends into the broader community through active participation in local traditions and a genuine sense of belonging within the school environment. Furthermore, the influence of social circles and mentorship cannot be overstated; feeling supported by peers and having at least one non-parent adult take a sincere interest in their well-being are vital ingredients in fostering long-term emotional stability (OPI, 2023).

Montana has addressed the urgency of adolescent mental health through a variety of state-led initiatives that bridge the gap between clinical screening and community support. In the digital realm, Project YES (2025) functions as a safeguard, offering independent single-session therapy interventions for youth empowerment and support designed for adolescents ages 11-17. Project YES allows teens to engage in emotional expression within a private, evidence-based environment with a primary focus on supporting them in managing and reducing stress and anxiety. According to Schleider & Weisz (2017) these brief and targeted Single-Session Interventions (SSIs) are effective at decreasing hopelessness and self-hatred. Of the Montana youth population, 43% have reported continuous feelings of sadness. This technological outreach is needed to support Montanian adolescents and is complemented by home supports such as Parenting MT (2025) and Elevate Montana (2026). These programs move beyond traditional parenting advice to provide culturally sensitive, corrective frameworks for Indigenous and rural

families. By prioritizing the modeling of appropriate apologies and the establishment of safe household boundaries, these toolkits empower parents to function as primary protective buffers, effectively repairing the relational fractures often caused by toxic stress.

The state's strategy further extends into the structural and social environments in which adolescents spend the majority of their time. Within the educational system, the Montana Behavioral Initiative (MBI) and peer-facilitated groups like The Hope Squad work to establish a sense of belonging and safety. While MBI promotes universal environmental expectations to ensure students feel secure in all school areas, The Hope Squad fosters peer mental health advocacy, bridging the communication gap between struggling students and professional resources. Furthermore, the STARS Act (2025) and the integration of cultural traditions, such as 4-H and tribal ceremonies, help to ensure that resilience is a social practice. By connecting youth with work-based mentors and community traditions, Montana's framework provides adolescents with a sense of purpose and a genuine interest from non-parent adults which are essential protective factors to lasting health and professional success.

Discussion: A Way Forward

Cultivating Literacy through Transmediation and Community

The foundation of successful literacy outcomes for Indigenous students requires a fundamental shift from a deficit-based model to one of cultural abundance. Guiberson and Vining (2023) claim that literacy achieves its greatest potential when it is responsive to a student's sociocultural background. This shift is not only pedagogical, but requires moving away from Western logocentric biases toward a framework that honors oral and visual traditions. A critical mechanism in this transition is transmediation, a process of translating knowledge across diverse cultural backgrounds for a deeper level of comprehension. By moving knowledge across modes such as from oral storytelling to digital media, educators can dismantle the text-only bias

of traditional Western schooling (Huang, 2024). This shift toward honoring visual traditions is supported by Beatty and Hernandez (2020) who argue for a socially responsible pedagogy that integrates art and informational literacy to empower marginalized voices. An example of this is replacing a standardized quiz with a podcast which supports students in utilizing a tool to display comprehension that also incorporates oral traditions.

Furthermore, this move toward multimodal expression is rooted in what Watts-Taffe (2022) describes as fertile ground in which Universal Design for Learning (UDL) intersects with Culturally Relevant Pedagogy (CRP). Rather than treating these frameworks as separate initiatives, integrating them through multimodal literacies provides a more prominent benefit. The combination of UDL and CRP establishes the scaffolding needed for equal access while implementing a sense of connection and identity necessary for Indigenous academic perseverance. Transmediation serves as the bridge that connects the accessibility of UDL with the cultural responsiveness of CRP creating a classroom environment in which diversity is inherent.

The literature conceptualizes literacy as a social practice rather than an isolated cognitive skill. By implementing opportunistic platforms which incorporate social media, family narratives, and community signage, educators allow the classroom to mirror the student's lived reality (Watts-Taffe, 2022). This home-school continuum is fundamentally strengthened when literacy is viewed as a collective endeavor rather than a competitive, independent pursuit. For instance, Guiberson and Vining (2023) suggest that when school-based literacy structures mirror Indigenous narrative paradigms such as circular storytelling or talk story sessions, student comprehension scores increase significantly.

However, fostering this connection requires a critical examination of the systemic barriers inherent in traditional literacy models. An analysis must question the validity of standardized testing which frequently measures an Indigenous student's mastery of Western cultural norms rather than their actualized literacy potential (Huang, 2024). To counter this, it is imperative that instruction adopts an expansion of skills over their replacement. This technique ensures that the acquisition of English does not function as a means for native language displacement, but rather as an expansion of the student's linguistic possibilities.

Practical success in this broadening model is often found in the current teaching of phonemic sounds in both the native language and English. When this phonological awareness is paired with interactive reading sessions led by community elders, it leverages the student's existing storytelling strengths to bridge the gap into academic English (Guiberson & Vining, 2023). McIntosh et al. (2011) reinforce this approach, noting that culturally responsive speech interventions significantly improve outcomes for Indigenous students when they support the student's heritage. Ultimately, the literature suggests that true literacy success is defined by a relationship between the school, the home, and the community (Huang, 2024; Watts-Taffe, 2022). By prioritizing prior knowledge identified by Huang (2024) as the strongest predictor of academic succes and integrating community-led initiatives like elder-involved camps, educators can move toward a model of literacy that is both academically rigorous and culturally sustaining (Beatty & Hernandez, 2020; McIntosh et al., 2011).

Limitations and Research Gaps: The Need for a Lifespan Perspective

While the current literature provides a solid framework for understanding the immediate neurobiological impact of ACEs, a significant gap exists regarding the longitudinal trajectory of Indigenous literacy across the lifespan. Most studies offer a snapshot of time in which adolescent

distress is prevalent, but have not sufficiently examined how trauma-informed, culturally sustaining pedagogies like transmediation and elder-led literacy workshops alter the long-term biological and professional outcomes of Indigenous survivors into adulthood.

Furthermore, as Koss et al. (2021) note, while we understand that trauma disrupts the development of the brain's language network in childhood, a small amount of data tracks how these neural connections adapt or recover over time. This lack of lifespan research makes it difficult to measure the delayed reaction to historical trauma in which literacy deficits may not fully show until the cognitive demands of higher education, the workforce, or the daily demands of life increase.

Additionally, while Iniguez and Stankowski (2017) emphasize that different environmental stressors may be encountered in rural populations like Montana, these specific experiences are often underrepresented in national data. To display this transition, research must shift toward measuring the future viability of Positive Childhood Experiences (PCEs) and Indigenous-specific interventions such as those advocated by McIntosh et al. (2011) across the entire educational and vocational lifespan.

Conclusion

The collected literature indicates that numerous stressors and trauma exposure contribute to Adverse Childhood Experiences (ACEs) which alter the developing brain and its functions. For Indigenous adolescents, the connected cycle of intergenerational, historical, and lived trauma contributes to elevated ACE scores experienced in Montana. This increased trauma exposure neurologically impedes the developing brain by limiting access to various parts resulting from all of its energy being spent scanning for danger. In addition, the pathways have been sensitized in this manner from overexposure to trauma. Specifically, the energy, focus, and connections

needed for literacy development are impeded. Although the biological impact of trauma is significant, research supports resiliency through Positive Childhood Experiences as a way to counterbalance ACEs. Furthermore, the implementation of culturally responsive teaching methods like transmediation allow educators to draw upon the strengths of Indigenous culture for academic achievement.

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