

Braiding Neuroscience, Decolonization, and Mental Wellness

Mind–Body Interventions, Indigenous Knowledge, and the Science of Healing

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Western neuroscience and Indigenous knowledge systems are often seen as separate worlds. However, when we examine emerging brain and molecular science alongside Indigenous teachings about land, story, ceremony, and relational responsibility, a powerful convergence emerges. Mind–body interventions, including meditation, reconceptualization, ritual, and kindness practices, are now demonstrated to alter neural networks, immune signaling, and gene expression in ways that echo what Indigenous peoples have known for generations: relationships, story, and ceremony are medicine.

This paper braids three strands:

1. **Neuroscience and the biology of intensive mind–body practice** (Jinich-Diamant et al., 2025).
2. **The Decolonization Equation** as a structural and relational framework for collective healing (Yellow Bird & Luo, 2025).
3. **Indigenous teachings and practices** that predate, and in many ways anticipate, today’s mind–body and kindness science (Basso, 1996; Indigenous Oral Scholars, Olson, 2025).

Together, they indicate that increasing kindness and prioritizing decolonization are not only ethically essential but also biologically feasible and culturally rooted parts of comprehensive mental health strategies.

Mind–Body Interventions and Biological Changes

Jinich-Diamant and colleagues (2025) investigated a 7-day retreat that combined three mind–body components:

- Reconceptualization: consciously reworking core beliefs about oneself and reality.
- Meditation: intensive guided practice emphasizing heart-centered awareness and non-judgmental presence.
- Open-label placebo healing rituals: clearly labeled “placebo” rituals that nonetheless engaged expectation, meaning, and group process.

Twenty healthy adults, selected at random, completed functional MRI scans and extensive blood analyses before and after the retreat. The researchers examined:

- Resting-state and meditation-state brain connectivity (fMRI).
- Proteomics, metabolomics, exosome miRNA, and cell-based assays of neurite growth and metabolism in blood plasma.

Neural Findings: Shifting the Story of the Self

After the retreat, meditation was associated with:

- Decreased functional integration in the default mode network (DMN)—a set of brain regions involved in self-referential thinking, rumination, and autobiographical narratives.
- Decreased integration in the salience network, which normally tags stimuli as “important” or “threatening.”
- Reduced whole-brain modularity, suggesting a more flexible, less rigidly segregated pattern of brain communication.

These findings are consistent with earlier meta-analyses indicating that meditation practices reliably and positively influence brain regions involved in attention, emotion regulation, interoception, and self-awareness (Fox et al., 2016).

From an Indigenous perspective, these neural shifts can be understood as a loosening of colonial, hyper-individualized narratives of self. The decreased dominance of the default mode network aligns with practices that quiet “I–me” thinking and foster a broader sense of kinship with land, community, and ancestors. Indigenous practitioners have long described ceremony as a way of “getting out of our small self” and returning to a relational identity; neuroscience is beginning to understand how this occurs in the brain (Olson, 2025).

Neuroplasticity, Immune Modulation, and Metabolic Reprogramming

On the molecular level, post-retreat plasma showed:

- Increased neurite outgrowth in vitro, pointing to enhanced neuroplasticity.
- Enhanced glycolytic metabolism, indicating a shift in how cells use energy.
- Up-regulation of brain-derived neurotrophic factor (BDNF), a key molecule for learning, memory, and neural resilience.
- Coordinated changes in inflammatory and anti-inflammatory pathways, suggesting a dynamic, adaptive recalibration of immune signaling.
- Modulation of endogenous opioid pathways and tryptophan metabolism, both critical for pain regulation, mood, and stress response.

Although the design was observational and not fully controlled, the study demonstrates that even a short-term (7 days), carefully maintained, intensive mind–body environment can quickly reshape fundamental systems that influence mood, pain, immune health, and cognitive flexibility (Jinich-Diamant et al., 2025).

This is precisely what many Indigenous traditions teach: that when we enter ceremonial time through story, song, movement, prayer, and collective intention, our minds and bodies remember how to heal and reorganize. This has been known, practiced, and passed down orally for thousands of years. This is Indigenous science.

Kindness and Prosocial Behavior as Biological and Relational Medicine

Though Jinich-Diamant et al. (2025) focus on meditation, reconceptualization, and placebo rituals, other research indicates that acts of kindness and prosocial behavior are powerful mind–body interventions.

In a 2017 randomized controlled trial, adults were assigned to different types of prosocial behaviors. Those who performed kind acts for specific others showed decreased expression of the “Conserved Transcriptional Response to Adversity” (CTRA), a gene expression profile associated with chronic stress, inflammation, and poorer health (Nelson-Coffey et al., 2017).

A second trial in 2022 tested a four-week kindness intervention and found that regularly practicing kindness could reduce stress-related immune gene expression, again targeting the CTRA profile (Regan et al., 2022).

School-based kindness interventions show that:

- Children who were asked to perform three acts of kindness each week for four weeks showed greater increases in peer acceptance than those in a control condition (Layous et al., 2012).
- A scoping review of prosocial behavior and youth mental health found a strongly positive link between helping others and outcomes such as resilience, self-esteem, and reduced distress (Hirani et al., 2022).

Kindness is more than just a moral ideal; it actively influences immune signaling, promoting resilience and repair. These studies are directly relevant to lateral kindness work. When kindness and helping behaviors are organized, visible, and supported within groups, a sense of belonging increases, and the likelihood of bullying and lateral violence decreases.

Indigenous Teachings as Original Mind–Body Science

Long before terms like “neuroplasticity,” “vagal tone,” or “CTRA gene expression” existed, Indigenous Nations developed sophisticated systems to regulate body, mind, and spirit. The Mescalero Apache Tribe notes that Apache people were “kind to their children,” teaching good manners, kindness, fortitude, and obedience, and creating games that built coordination and skill (Mescalero Apache Tribe, n.d.). Their concept of kindness was not sentimentality; it was a core lesson about how to raise strong, capable, and relationally responsible human beings.

Keith Basso’s work with Western Apache communities shows that placenames and stories linked to specific locations serve as a moral and emotional guidance system. Stories

“stalk” people in a good way—reminding them how to behave, how to treat each other, and how to stay in right relationship with land and community (Basso, 1996).

These teachings function as *embodied mind–body techniques*:

- Hearing a place-story can evoke shame, humility, or gratitude, and it can also shift physiology.
- Traveling to a specific site for reflection can quiet the self-focused narrative of the default mode network and reestablish one’s sense of identity through connection with land and ancestors—similar to the contemplative changes observed in meditation research

Nervous System Regulation and Social Connection

Loving-kindness practices, a type of meditation focused on goodwill and compassion, have been associated with increased positive emotions and higher vagal tone, a marker of parasympathetic (rest-and-digest) functioning and cardiovascular resilience (Kok et al., 2013). Importantly, this pathway operates through perceived positive social connections, implying that feeling connected and kind is one way the nervous system becomes more regulated and resilient.

Indigenous practices, such as the daily spiritual tradition known as *doohwaa-gon’ch’aasa*, or entering the silence (a combination of breathwork, prayer, and meditation), practiced by the Quero Apache, likely yield similar results. “When performed properly, this ritual becomes a path to self-realization and energetic attunement” (Yraceburu, book jacket, 2004).

Yellow Bird (2007) states that mindfulness is an Indigenous traditional practice that, when applied in modern healing settings, can enhance emotional regulation, strengthen the mind-body link, and help individuals confront oppression, thereby reducing the impact of colonial trauma.

Both the concept and practice of mindfulness, with their innate ability to help individuals calm their minds and bodies and make rational decisions in challenging situations, closely align with Indigenous cultural worldviews and traditional practices. Le and Gobert (2015) and Le and Proulx (2015) argue that Indigenous practices and mindfulness share common themes of balance, present-moment awareness, and interconnectedness. In his research with Indigenous Elders who are also traditional healers, Mehl-Madrona found that the “concept of mindfulness (or empty mind) was very familiar to them. ‘Your mind must be empty in order to hear the spirits,’ one said” (Mehl-Madrona, 2009, p. 26).

While western modifications of eastern meditative and mindfulness-based practices focus on individual experiences, Beshai et al. (2023) found that this is

contrary to Indigenous culture where mindfulness finds expression through ceremony, community, and a connection to the earth. There was consensus among participants that mindfulness in the context of the adapted program be expressed through sweats, pipe ceremonies, fasting, smudging, drum ceremonies, pow wows, contact with Elders, and prayer. Moreover, mindful experiences can even be cultivated through gathering Indian medicine wherein the close connection to Mother Nature can be curative. In this framework, mindfulness can be conceptualized as an attitude of appreciation and gratitude towards the Creator/Mother Nature and towards others in the community. It is having respect, kindness, and an open acceptance of other people.” (p. 546).

Yellow Bird explores Indigenous contemplative practices at the crossroads of neurobiology and decolonization, a field he calls “neuro-decolonization.” He asks the question: What happens to the brain when it’s colonized... what happens to the whole body when it’s colonized? He emphasizes that traditional practices such as meditation and mindfulness can

induce fundamental molecular changes. To boost these benefits, he suggests walking, exercising, eating traditional foods, singing, and spending time with supportive, joyful people who promote laughter and safety. These activities raise endocannabinoid levels in the brain, helping to protect brain cells. Yellow Bird explains that traditional Indigenous activities such as dancing, especially complex ceremonial dances, detailed storytelling, art, and purposeful movement, all strengthen the immune system, potentially restoring some white and gray matter in the brain and increasing mitochondria (Yellow Bird, 2024).

Colonization and ongoing toxic environments have led people to feel lost and experience “cellular numbing,” but they can find their way back to themselves. Once in a safe space with supportive people and a trusted support system, they might seek out their cultural identity and discover who they truly are. This is a process of “awakening their ancestors within” (Leona Schick, Inupiat, personal communication, October 2024).

Decolonization as an Emancipatory, Healing Process

While mind–body and kindness research focus on individuals and small groups, Yellow Bird and Luo’s (2025) “Decolonization Equation” addresses the structural and collective levels needed for sustainable healing.

Yellow Bird and Luo (2025) define decolonization as an emancipatory process that aims to dismantle colonial structures and restore Indigenous sovereignty, cultural integrity, and justice. Drawing on scholars such as Waziyatawin, Joseph Gone, and Taiaiake Alfred, they highlight that decolonization is:

- A collective act of self-reflection and self-determination, reconnecting with pre-colonial values while shaping a self-determined future.

- Both structural and personal political gains that do not reflect Indigenous values risk perpetuating colonial patterns.
- A path toward reconciliation and healing that emphasizes truth-telling, deliberate resistance, restoration of cultural practices, and a renewed relationship with the land (Clark & Yellow Bird, as cited in Yellow Bird & Luo, 2025).

Six Key Factors and Five Levels of Decolonization

The Decolonization Equation defines six measurable factors to monitor progress in decolonization.

1. Sovereignty
2. Cultural revitalization and language reclamation
3. Economic well-being
4. Political representation
5. Technological and digital fluency
6. Legal and social justice

Each factor is evaluated across five levels—Minimal, Partial, Substantial, Full, and Transformative—to help communities recognize their current status, gaps, and strategies for action (Yellow Bird & Luo, 2025). Importantly, the authors view decolonization as essential infrastructure for healing, not merely a metaphor or optional add-on. Without changes in sovereignty, economy, language, law, and technology, individual mind–body practices risk being co-opted into a status quo that continues to produce trauma.

Indigenous Mind–Body Medicine Frameworks

Indigenous mind–body frameworks, including this author’s (2025) work on “Inviting the sacred wound into circle,” emphasize:

- Circle processes that hold trauma and grief within the community rather than isolating individuals.
- Song, drum, movement, breath, and land-based practices that activate bilateral stimulation, vagal regulation, and deep interoception, long before these were described in polyvagal or somatic therapies.

- Relational accountability to self, community, more-than-human relatives, and future generations act as both diagnosis and treatment.

From this perspective, the “new” science of meditation and kindness can be seen as a delayed translation of Indigenous knowledge into western lab-speak, rather than a discovery of something previously unknown.

Indigenous Healing and Reclamation

Historically, western psychological paradigms emphasize reductionist, siloed approaches to disease or pathological treatment etiology, while Indigenous healing adopts a more holistic perspective, incorporating environmental and community contexts (Murillo, 2024). Seen as a lifelong commitment to balance and well-being, Indigenous healing connects individuals to themselves, others, nature, and spirit (Bear Hawk Cohen, 2003). Healing methods are often culturally specific and may not be relevant to individuals from different Indigenous communities.

While psychoanalysis can take years, an Indigenous healing ceremony may be short-term, infused with spiritual strength and ritualized archetypes (Hyatt, 2013). These ceremonies often begin with a prayer to focus the mind and connect with other beings and the earth, fostering gratitude and thankfulness (Bear Hawk Cohen, 2003). They incorporate many elements of cultural identity, such as language, family ties, spiritual practices, and traditional beliefs (McCormick, 2009).

Unlike the eurocentric model of healing, where the practitioner is viewed as the healer, most Indigenous healing models consider the true healer to be the person seeking care (Antone et al., 1986; Mehl-Madrona, 2003). The practitioner’s role is to guide the individual toward their own healing ability through various methods, such as talking, crying, or laughing (Nabigon,

2006), drumming or singing (Goudreau et al., 2008), ceremonies and rituals, sweating, and detoxifying the body and mind through the use of the sweat lodge (Anderson, 2016; Hart, 2002), along with the reciprocal nature of interaction (Alfred, 2005). Language revitalization, land-based healing, storytelling, and community action are vital parts of traditional Indigenous healing practices (Durie, 2005; Duran, 2008; Kirmayer, 2012; McCormick, 2021), where spirituality and medicine are often viewed as two sides of the same coin (Cohen, 1998; Hultkrantz, 1992).

Walking on Bones

The idea of belonging to and being of the land in Indigenous thought involves a deep, multigenerational perspective. However, most Indigenous groups were forcibly removed from their traditional homelands, which meant they lost the places where their loved ones were buried. The bones of Indigenous ancestors are literally ground into the earth throughout North America, and many Indigenous people see this removal from their lands as a break from the remains of their loved ones. “According to traditions, the land lives just as humans do and the land holds the spirits of our ancestors. We trace our lands and ancestors in the same lineage and traditional way that can be passed down over many generations” (Warner & Grint, 2015, p. 15). Some Indigenous cultures, including the Haudenosaunee and the Cherokee, see the land as *made of their ancestors*, “the first five feet down” (Mann, 2016, p. xi).

Given this strong connection to the land and Mother Earth, land-based healing and incorporating the earth into healing rituals are common; it is nearly impossible to proceed without including this element (Olson, 2025). Dr. Ruby Gibson, who has developed a comprehensive Indigenous-focused somatic and earth-based individual treatment modality to heal intergenerational trauma, shared that:

The entirety of nature speaks this silent language as a dialogue of formlessness. Each world responds to the other: animal to plant, plant to water, water to Earth. Earth to air, air to human, all without uttering one single word. And yet there is a cohesive moment, an unseen intelligence that guides the interaction of all species. *This is a voice that doesn't use words.*" (Gibson, 2008, pp. 39–40)

Both individuals and communities seeking healing, as well as those facilitating healing from an Indigenous perspective, recognize the presence of the natural world and its healing benefits. They understand the reciprocal healing process that benefits both humans and the earth whenever either is restored. "We are our ancestors when we heal ourselves. When we heal ourselves, we also heal Mother Earth and we heal all future generations" (Grandmother Dr. Rita Pitka Blumenstein, Yup'ik Tribal Doctor and Traditional Midwife, as quoted in Gibson, 2008, p. 44).

This deep connection to the earth is metaphorical, actual, practical, and embodied. It is also mutual. Just as we can heal the earth with our thoughts, feelings, and actions, Mother Earth can similarly influence our physical, spiritual, emotional, and mental abilities. In fact, "a lot of sensations in your body are from Mother Earth; you just haven't figured out how to translate the messages yet" (Maria Yraceburu, Quero Apache, personal communication, November 2024). "Her sorrows are felt in our bodies; we sense them in our minds and glimpse them in our dreams. The interweaving of personal and planetary losses has left many of us feeling uncertain, anxious, and ultimately brokenhearted" (Weller, 2015, p. xvii).

Connection to the land is healing. Mother Earth is the original provider of everything: food, plants, oxygen, and a place to live and grow. Land-based activities, rooted in respect and care for the land, are associated with indicators of health and well-being among Indigenous

people (Burgess et al., 2008; Kant et al., 2013). “Indigenous people understand their knowledge as inextricable from their lived experience in their distinct place, in spiritual relationship with land and life, and from traditions that change but are millennial” (Million, 2013, p. 13).

Including the earth and sacred land in healing interventions is essential. As Elder A. Poitras so eloquently stated, “It remains an ethical responsibility for the field of psychology to include, incorporate, and provide opportunities for the integration of the natural environment to support Indigenous ways of knowing and being in current practice” (Field, 2022, p. 132). This is crucial because “sacred ground is anywhere beneath your feet” (Maria Yraceburu, Quero Apache, personal communication, November 2024).

Braiding the Strands: Mind–Body Practice, Kindness, and Decolonization

When we braid these bodies of knowledge together, a coherent picture emerges:

1. Intensive mind–body practices (like those studied by Jinich-Diamant et al., 2025) quickly reshape neural networks, immune signaling, and metabolic pathways in ways that promote flexibility, repair, and new patterns of meaning.
2. Acts of kindness and prosocial behavior change gene expression, lower stress-related immune responses, and boost nervous system resilience, especially when embedded in genuine relationships and communities (Kok et al., 2013; Nelson-Coffey et al., 2017; Regan et al., 2022; Layous et al., 2012; Hirani et al., 2022).
3. Decolonization, as described by Yellow Bird and Luo (2025), establishes the structural, political, economic, and legal conditions necessary for these mind–body and kindness practices to truly take root and be sustained—rather than being used solely to help people “cope” with unjust systems.
4. Indigenous teachings, including place-stories and child-rearing practices centered on kindness, demonstrate that relational accountability, story, and land-based practices serve as regulation tools, resilience builders, and forms of decolonial medicine.

In other words, the science of kindness, meditation, and prosocial behavior is catching up to Indigenous science. The lab and the lodge describe the same pattern in different languages.

Implications for Healing-Centered, Indigenous-Led Practice

For Indigenous communities, social service providers, behavioral health programs, and educators, this comprehensive evidence base underpins several key commitments for us all to consider:

- **Prioritize Indigenous frameworks first.** Use neuroscience and molecular findings as supporting “two-row” (or two-eyed seeing) evidence, not as the main source of legitimacy (Olson, 2025; Yellow Bird & Luo, 2025).
- **Treat kindness and relationality as essential interventions**—not merely “soft skills.” Structured practices of lateral kindness, reciprocity, and mutual aid can be seen as nervous-system and immune-system interventions rather than just moral choices.
- **Integrate mind–body practices into decolonizing frameworks.** Meditation, breathwork, and sensory regulation are most ethical and effective when connected with sovereignty, language revitalization, economic justice, and legal transformation, as outlined in the Decolonization Equation.
- **Honor local teachings.** Apache, Lakota, Haudenosaunee, Māori, Sámi, and other Nations each hold unique teachings about kindness, courage, humility, and balance. Programming should highlight local language and stories, presenting western evidence as a guest.
- **Integrate land-based healing.** All of these practices become more deeply effective when combined with place-and-land-based healing that naturally involves the help of plant, stone, and animal allies, ancestors, and Spirit.

The research on neural and molecular changes during an intensive mind–body retreat and Yellow Bird and Luo’s work in the Decolonization Equation are not separate stories; they are chapters in the same book. One demonstrates that experience, meaning, and collective practice can quickly rewire the brain and body. The other emphasizes that healing must be connected to sovereignty, justice, and the dismantling of colonial systems. When read alongside Indigenous teachings and modern kindness research, they provide a strong foundation for amplifying lateral kindness: a healing-centered, decolonizing approach that is spiritually rooted, relationally accountable, and scientifically supported.

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