Beyond the Brain: Integrating Somatic Therapy and Embodied Cognition into Clinical Practice

By

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Abstract

Somatic therapy addresses the influence of both the brain and the body on mental health. While traditionally applied in trauma treatment, a growing body of research affirms the role of somatic therapy in addressing dysfunctional bottom-up processing systems, such as interoception and neuroception. Grounded in embodied cognition, polyvagal theory, and regulation theory, the paper outlines how bottom-up processing influences cognition, affective experience, and a sense of embodied self. Traditional cognitive therapies have limited efficacy in addressing bottom-up processing dysfunctions like emotional dysregulation which are prevalent across many forms of chronic mental illness. Somatic strategies directly address bottom-up processing issues through therapist attunement, co-regulation, and embodied mindfulness practices. The paper highlights how body-based therapeutic engagement strengthens client outcomes, particularly for trauma-related conditions, and supports practitioners in integrating somatic techniques within a fourth-wave, process-based model of care. A range of somatic interventions suitable for clinicians new to the modality are included in this paper.

Keywords: somatic therapy, embodied psychotherapy, bottom-up processing, interpersonal neurobiology, polyvagal theory

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Oceanic gratitude for Luca who accompanied me in this adventure and because he understood that I wanted to write from the heart.

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Chapter 1

Imagine that someone happens to ask you about cognition in an elevator. You say, "Cognition is what you know and how you know it." They say, "Oh, so basically, brain stuff." You say, "No, brain stuff plus body stuff. Our bodies know before our brains know. It really works for gamblers. They unconsciously tap into body sensation to help them avoid playing risky cards." The elevator doors open and your audience vaults to freedom before you can add, "Check out the Iowa Gambling Task Experiment. It showed that even when participants did not have enough information to make a rational decision, they were able to choose low-risk cards. They tapped into physiological sensations in their bodies that they weren't even conscious of (Sinha & Parsons, 2017). Is that not fascinating?" The doors close. You are alone in the elevator, alone with your enthusiasm for the latest developments in cognitive science. You feel the enthusiasm as tingling in your torso. Suddenly, you feel a tightening in your chest, and then your brain clues in. You've missed your floor.

Overview of the Topic

Cognition

As counselling practitioners, how we understand cognition is essential in determining our psychotherapeutic approach. What exactly is cognition and what physiological and mental processes are at the heart of human experience, awareness and knowing? This paper explores how cognitive awareness is generated by both the brain and the body as the brain's neural

networks engage with the body's internal sensory networks in a constant interplay of information processing (Venter, 2021).

The elevator dialogue encapsulates psychology's evolving view of cognitive processing. A core tenet of the conventional cognitive model is that cognitive processes are brain-based. Current neuroscientific findings disagree with that framework (Fugate et al., 2024). Evidence demonstrates that cognition is a process embedded in both the body and brain, and that "cognitive processes are not possible without the participation of the body" (Fugate et al., 2024, p. 577). The elevator scenario refers to a tightening in the individual's chest, a bodily signal alerting the individual that they have missed their floor. Our perception, thoughts, moods, and behavioural responses are all influenced by body-based sensory systems (Pietrzak et al., 2018).

Body-based processing is hypothesized to underlie intuition. Our decision making and behaviours are informed by body-based processing although we do not process the information consciously (Damasio, 1999). Do you remember the last time your hair stood on end and you instantly began looking for danger? That was your body-based processing system in action. Rationally, you had no reason to believe you were in danger. However, your intuition, otherwise known as your body, detected danger and conveyed that message to your conscious awareness through the sensation of your hair standing on end. This motivated you to shift your behaviour and perception to focus on potential threat. Research evidence and perhaps your own personal experience, point to the important role of body-based processing in making sense of our internal and external worlds.

Integrating Embodied Psychotherapy

For counselling practitioners interested in working with both *body-based* and thought-based processes, *embodied psychotherapy* offers an integrated approach. The approach is grounded in *embodied cognition* theory which acknowledges *body-based information processing.* In contrast to earlier cognitive models, current theories view cognitive processing as "influenced by morphology, sensory systems, motor systems and emotions [where] emotions are not just categories we think about but involve bodily changes that have strong effects on cognition and action" (Pietrzak, 2018, p. 7). When addressing psychopathologies, embodied psychotherapy places equal importance on the client's *somatic* symptoms as well as their cognitive expression of the disorder (Rosendahl et al., 2021).

Embodied psychotherapeutic approaches often yield more effective client outcomes because they address body-based as well as thought-based processing (Church et al., 2022; Pietrzak et al., 2018). Church et al. (2022) conducted a review of over 400 peer-reviewed articles on somatic approaches for treating anxiety, depression, and PTSD. The study found that *embodied* approaches result in "treatment effects often an order of magnitude greater than conventional therapies" (Church et al., 2022, para. 5). Church et al. emphasize that psychotherapies focusing on "the relationships between the mind, body, brain, and behaviour are now being recognized as effective treatments by various official bodies, including the US Veteran's Administration, the UK's National Institute for Clinical Excellence, and the World Health Organization" (Church et al., 2022, para. 5). A study by Pietrzak et al. (2018) concludes that when conventional CBT techniques are enhanced by interventions related to embodied and experiential processing, the risk of a depressive relapse decreases by 43% for the most

vulnerable clients. A meta-analysis on the effectiveness of embodied psychotherapy as the sole treatment method, without cognitive therapy, found medium effect sizes on psychopathology and psychological distress. Rosendahl et al. (2021) state that embodied psychotherapy is "beneficial for a wide spectrum of psychic suffering" (Rosendahl et al., 2021, Abstract, para. 1). These studies suggest that it is both clinically relevant and ethically aligned for therapists to integrate embodied psychotherapy approaches into clinical practice alongside cognitive-based approaches.

Purpose Statement

This paper aims to provide counsellors with a functional understanding of body-based processing and to demonstrate how embodied psychotherapy expands therapeutic effectiveness beyond the limits of cognitive therapy, alone. The paper aims to equip practitioners with the ability to recognize body-based processing in clients and to engage with these processes therapeutically. My hope is that the information presented in this paper will affirm the clinical legitimacy of the embodied psychotherapy lens, and to support practitioners in psychoeducation that explains body-based processing and its impact on mental health to clients. As a counsellor, I know it can be challenging to integrate new research into established modes of practice, especially if that entails learning a new modality. At the same time, counsellors have a duty of beneficence and fidelity to the client (Kitchener, 1984).

Theoretical Framework

Theory of Embodied Cognition

The theoretical framework anchoring this paper is the theory of embodied cognition. It provides the rationale for a therapeutic focus on body-based processing. While conventional psychotherapy treats the mind as a separate entity, embodied psychotherapy directly addresses

the physiological mechanisms that impact thoughts and feelings (Levit, 2022). Embodied cognition deconstructs mind-body duality, replacing it with an evidence-based model of the mind as a dynamic system (Damasio, 1999; Fuchs, 2020; Siegel, 2009). The embodied mind is not viewed as a biological unit that uniquely creates cognition. Instead, it is conceptualized as the locus of a system where information from the body, mind, environment and social context converge in "*multi-modal cycles of integration"* (Fugate et al., 2024, p. 578; Siegel & Drulis, 2023). Dan Siegel describes the mind as an "emergent, self-organizing, embodied and relation process that regulates the inner and inter flow of energy and information" (Siegel & Drulis, 2023, "Mind as a self-organizing emergent process*" section*). Three important aspects of embodied cognition to note are:

- The mind is both system and process.
- The mind is an information processing system where information flows between the body, the mind, and the environment.
- The purpose of the mind is to attune to the needs of a physical body located in a specific environmental and social context, in order to maintain its survival and to allocate biological resources efficiently in service of its survival (Jékely & Keijzer, 2021).

Finally, the theory of embodied cognition views the client-therapist *dyad*, not as two separate minds, but as an intersubjective system where the often *nonconscious*, body-based processing of client and therapist impact the felt sense and efficacy of the therapeutic alliance (Schore, 2014). Embodied psychotherapy identifies the benefit of therapist *attunement* to the client's body, and also to the therapist's own physiological signals. Attuning to and regulating body-based processes as they occur within the client-therapist dyad is considered essential to the

therapeutic change process (Schore, 2014). Essentially, embodied cognition theory extends the field of engagement for counselling practitioners to include physiological processing patterns in addition to thought and behavioural patterns.

Polyvagal Theory

Polyvagal theory is frequently referenced by practitioners working from an embodied psychotherapy perspective. This theory, developed by Stephen Porges, emphasizes the body-based mechanisms that support defense and social engagement responses for survival. Polyvagal theory describes the body's continuous, nonconscious monitoring of environmental threat cues through *interoception* and its response to these cues through *neuroception* (Porges, 2022). Interoception collects signals from both the internal and external environment and relays them to the neuroceptive system—a higher-level processor. The neuroceptive system uses this information to activate adaptive autonomic nervous system (ANS) response designed to maximize security either through social engagement or defense. (Porges, 2022).

ANS response activates what Porges refers to as *autonomic states.* The three states delineated by Porges are: (1) *safety and social engagement*, (2) *mobilization* (fight or flight), and (3) *immobilization* (shutdown) (Porges, 2022). These states determine a client's felt sense of safety or lack of safety. Operating at the edge of consciousness, autonomic states influence the client's perceptions, mood, thoughts and behavioural responses. The state of safety and social engagement activates physiological and neurological systems that optimize social connection, learning, rest and restoration. If the body detects cues of danger, the ANS activates a defensive neurophysiological state associated with mobilization (fight or flight). If mobilization strategies do not resolve the perceived danger, the ANS may activate the autonomic state of

immobilization associated with shutdown, triggering a state of withdrawal and collapse (Porges, 2022).

When a client is in a defensive autonomic state, their ability to engage with cognitive therapy is inhibited, even if they consciously wish to engage. Defensive states redirect energy away from higher cognitive processing to support the physiological systems that prepare the body for responding to danger. A core tenant of polyvagal theory is that cognitive intent and bodily state can be misaligned. Porges believes that body-based processing is a more powerful motivator than cognitive intent in conditions where misalignment is present. "As an observer of both (intentional) behaviour and autonomic state, my bet is on the potency of autonomic state" (Porges, 2022, section "Neuroception"). In the therapeutic context, autonomic states impact the client's ability to experience secure attachment with the therapist, and their capacity to generate insights and integrate new thought patterns. When a client is in a defensive autonomic state, it is more effective to pause and address the autonomic state directly through body-based practices, as opposed to continuing with cognitive-based strategies (Porges, 2022). Polyvagal theory explains why body-based processing can influence the strength of the therapeutic relationship and how lack of attention to body-based processing can limit positive client outcomes.

Regulation Theory and Intersubjectivity

Regulation theory, developed by Allan Schore, is one of the primary frameworks informing embodied psychotherapeutic practices. It positions the therapeutic alliance as a critical instrument of treatment, guiding counsellors to use attunement and co-regulation to address client emotional dysregulation. Regulation theory emphasizes how an individual's capacity for *regulation* and *attachment* is constructed in relationship with the primary caregiver during the

first year of life. *Neurobiological* patterns of regulation are established through the experience of receiving *attuned* communication from the caregiver. These regulation patterns, shaped in infancy, remain consistent into adulthood. Attuned caregiver response to an infant's nonverbal cues establishes the neurological foundation for self-regulation, which underpins secure attachment (Schore, 2022). When caregiver response is intrusive or neglectful, the infant does not receive the neurobiological template for self-regulation and therefore is unlikely to develop secure attachment without intervention.

In attuned communication, the infant's autonomic nervous system is regulated by the embodied cues of the attuned caregiver which include eye contact, touch, facial expression, body posture, and tone and rhythm of voice. The caregiver-infant dyad represents an embodied system with regulation taking place via physiological cueing from the mother that is received nonconsciously by the infant. As the infant undergoes regulation by the mother, the regulation experience is encoded in emotional, not cognitive memory, as neurological and physiological patterning (Schore, 2002). The body-based processing at the heart of attuned communication is enacted through *right-brain to right-brain synchrony.* This mechanism of nonconscious communication between right-brains is referred to by Schore as *intersubjectivity.* It catalyzes a convergence of physiological and emotional states between the caregiver and infant in the dyad (Schore, 2022).

Any time there is focused dyadic engagement, right-brain to right-brain synchrony occurs. This means that intersubjectivity also occurs within the attuned therapist-client dyad. For example, a therapist may experience a sense of anxiety or joy as she listens to her client's narrative of relational conflict or success. Her body is attuning to the client's non-verbal

communication, and her right-brain mirrors the physiological expression of emotion the client is experiencing. These body-based communications form the basis of *mindsight* (Siegel, 2001). Siegel suggests that mindsight, the therapist's ability to deeply empathize and to make sense of the non-verbal, emotional content of the client's narrative, is dependent upon the internal cues she receives from her own body. When the client and therapist occupy the space of intersubjectivity, the therapist is able to act as the emotional regulator of the client through the nonverbal language of her body, in the same way a caregiver does for an infant. In cases where a client's emotional dysregulation interferes with relationships and daily functioning, working directly with the body-based processing component of dysregulation is often necessary. The client is unable to access these patterns through cognitive therapy because they are stored as body-based emotional memory (Schore, 2011). Attuned therapeutic alliance allows the client to experience co-regulation with the therapist. Over time, with the support of therapist regulation, the client is able to organize new neurobiological patterns of functional regulation within their own system. Schore highlights the importance of addressing regulation dysfunction as a component of the therapeutic change process across a range of psychological conditions. He asserts that "right-brain relational processes and resulting affect dysregulation underlie all psychological and psychiatric disorders" (Schore, 2014, p. 185). Regulation theory moves beyond the concept of therapeutic alliance as rogerian positive regard or as healing empathetic presence. It identifies the body-based processes that underlie empathetic connection, demonstrating how attuning to these processes can establish healthy emotional regulation and provide corrective relational experiences for the client.

Contribution to the Field

As neuroscientific research zeroes in on the body's role in psychological functioning, it seems both appropriate and ethical to explore how practitioners might engage with body-based processing in therapeutic practice. In the field of psychotherapy, cognitive-based therapies remain dominant (David et al., 2018). However, embodied psychotherapy and its most common modality, *somatic therapy,* are gaining legitimate recognition in the public domain (Salaman, 2023). The principles of embodied psychotherapy equip practitioners to effectively work with the current *biopsychosocial* model of mental health and to implement trauma-informed approaches (Wang et al., 2021) Somatic therapy is aligned with what one somatic practitioner and author calls "the next wave of mental health treatment [which] recognizes that unresolved trauma and emotional dysregulation are deeply rooted in the body" (Peteet, 2018, *para. 4*). Somatic therapy addresses the physiological imprint of trauma, offering a method of healing that complements cognitive and pharmaceutical interventions. Embodied psychotherapy offers a perspective of psychology that integrates feminist critiques of cognitive therapy. It emphasizes the role of the body as locations of intersubjectivity where our experience of who we are, our self-worth, and the cognitive schemas of who we are, are mediated by relationality. We formulate an internal narrative of ourselves based on how our bodies relate to cultural norms and value hierarchies (Lennon, 2019). Our sense of self, our response to our cultural environment, our emotions and thoughts are all inextricably linked with our bodies.

Given the potential opportunity cost of working solely from a cognitive-based approach, embodied psychotherapy offers an important wholistic alternative. A practitioner's lack of awareness of the brain-body connection can have real consequences for positive client outcomes,

and even for the therapeutic alliance. Practitioners may miss the opportunity to engage and develop emotional self-regulation in clients. Clients may fail to learn body-based practices that help them address chronic stress, anxiety and depression. Inadequate focus on the body-brain connection may result in a retriggering of trauma in clients and an escalation of PTSD symptoms (van der Kolk, 2014). Clients who have had limited success with cognitive therapy often benefit from an alternative embodied approach.

Despite growing acceptance of the legitimacy of somatic therapy, significant barriers continue to exist for practitioners curious about integrating it. Harvard Health reports that somatic therapy remains less well understood and less well researched than cognitive-based therapies (Salaman, 2023). This paper aims to contribute to the field by addressing some of the "unknowns" of embodied psychotherapy so that practitioners feel comfortable applying the somatic lens in their work.

Reflectivity and Positionality Statement

I am a Caucasian woman who grew up in Canada. I have experienced the academic privilege that is associated with belonging to a middle-class family with both parents employed by the provincial government. My academic background is in Political Science, Geography and Education. I was informed by the norms of positive rationalism that invalidate personal experience as a legitimate way of knowing. The concept of mind body dualism was a principal lens for most of my adult life. However, in my search for a non-heteronormative experience of femininity, I began to research the concept of embodiment and to explore feminist critiques of positive rationalism which led to my interest in embodied psychotherapy.

I view the world through a post-modern, constructivist lens. This lens encourages me to consider the legitimacy of research that falls outside the realm of randomized clinical trials. When I analyze research, I consider a range of evidence including case studies, theoretical frameworks, and research-practitioner knowledge. For example, founders of somatic therapy such as Peter Levine, Pat Ogden and Bessel Van der Kolk have not conducted extensive randomized clinical trials, but their research converges in a cohesive framework that aligns with the neuroscientific evidence on body-based processing. I evaluate research with awareness of the patriarchal power structures that fund certain research which reinforces concepts of mind-body duality while delegitimizing embodiment (Bader-Johansson, 2013).

My analysis of psychotherapeutic modalities resonates with feminist critiques. From my perspective, an unethical power imbalance is reinforced by standardized approaches such as CBT which impose a one size fits all approach and do not actively modify treatment for the unique positionality and experience of each client. The therapist's directive approach risks causing harm to a client by lowering self-efficacy or reinforcing patterns of dominance and marginalization that may already exist for the client in the wider social environment. I do not deny the value of cognitive-based therapies, but I believe they can obscure aspects of the individual's psychological health that relate to their positionality, the political dynamics that exist within the therapeutic reliance, and the client's experience of their own body.

There is some risk of confirmation bias in my research because I have had positive personal experiences with embodied psychotherapy. Embodied psychotherapy has worked exceptionally well for me while cognitive-based therapies have not yielded positive outcomes.

Definition of Terms

Afferent system

Neural pathways that carry sensory information from the body to the brain. Interoception is an afferent system (Craig, 2002).

Anterior Insula

The anterior portion of the insula integrates interoceptive signals with cognitive and emotional processes, contributing to self-awareness and emotional salience (Craig, 2002; Tisserand et al., 2023).

Arousal

The intensity of core affect or autonomic nervous system activation, the degree to which the body and mind are activated, ranging from low to high levels of engagement (Feldman et al., 2024).

Attachment

Attachment refers to the emotional bond between individuals, often rooted in early caregiver relationships, that influences emotional regulation, social development, and resilience throughout life (Pearlman & Courtois, 2005; Schore, 2002).

Attuned

Being attuned involves accurately perceiving and responding to another person's internal states, fostering a sense of safety and connection in relationships (Siegel, 2009; Tronick et al., 1978).

Attunement

Attunement is the process of synchronizing with another person's emotional and physiological state, promoting trust and co-regulation in relational contexts (Siegel, 2009; Schore, 2014).

Autonomic state

Autonomic state refers to the physiological condition mediated by the autonomic nervous system, including ventral vagal, sympathetic and parasympathetic responses to threat detection (Porges, 2007).

Big T trauma

An overwhelming event that threatens life or bodily integrity, typically involving a single incident such as natural disaster, physical assault, or serious accident (Barbash, 2017).

Body-based psychotherapy

Body-based psychotherapy is a therapeutic approach that incorporates bodily awareness and movement to address psychological issues, emphasizing the interconnectedness of mind and body (Röhricht et al., 2014; Rosendahl et al., 2021).

Chronic relational trauma

Long-term exposure to unsafe or abusive relational dynamics that disrupt the development of secure attachment and self-regulation capacities (Pearlman & Courtois, 2005)

Cognition

Cognition refers to the mental processes involved in acquiring knowledge, encompassing functions such as perception, memory, reasoning, and problem-solving (Fuchs, 2009; Siegel, 2009).

Cognitive-based psychotherapy

Cognitive-based psychotherapy focuses on identifying and modifying dysfunctional thoughts and beliefs to improve emotional regulation and behaviour (David et al., 2018; Beck Institute for Cognitive Therapy and Research, n.d.).

Cognitivist lens

The theoretical perspective that emphasizes mental processes such as thinking, memory, and problem-solving as central to understanding human psychology (David et al., 2018).

Cognitive misappraisals

Inaccurate or distorted interpretations of internal or external stimuli that contribute to emotional distress and maladaptive behaviour (Beck Institute for Cognitive Therapy and Research, n.d.).

Cognitive processing

Cognitive processing involves the interpretation and organization of information through mechanisms such as attention, memory, and reasoning, forming the basis for perception and decision-making (David et al., 2018; Fugate et al., 2024).

Constructed emotion theory

A theoretical model proposing that emotions are not innate reactions but are constructed by the brain based on interoceptive sensations, context, and experience (Barrett, 2017).

Core affective state

The neurophysiological experience of an emotional state which is generated by interoceptive sensation interpreted through a contextual lens, typically described in terms of valence and arousal (Barrett, 2017; Feldman et al., 2024).

Downregulation

A physiological process involving the reduction of arousal and emotional intensity, often facilitated through self-regulatory or co-regulatory mechanisms (Grabbe & Miller-Karas, 2018).

Dyad

A term used in interpersonal neurobiology to describe a pair of individuals engaged in an interaction of shared attentional focus where attunement and co-regulation are present (Schore, 2014; Tronick et al., 1978).

Early relational trauma

Disruptive experiences in early caregiver relationships that impair the development of neural structures responsible for regulation and attachment (Schore, 2002)

Earned secure attachment

The process by which individuals with insecure childhood attachment develop secure relationship patterns in adulthood as a result of experiencing a healthy relationship or within the context of the therapeutic alliance (Filosa et al., 2024).

Efferent

Neural pathways that carry motor or regulatory signals from the brain to the body, including autonomic responses that influence homeostatic states (Craig, 2002).

Embodied

Being embodied refers to experiencing oneself as a physical body integrated with cognitive and emotional processes, highlighting the inseparability of mind and body (Fuchs, 2020; Schubert & Semin, 2009).

Embodied cognition

Embodied cognition is a theoretical perspective suggesting that cognitive processes are deeply rooted in the body's interactions with the environment, challenging the notion of cognition as solely brain-based (Fuchs, 2009; Schubert & Semin, 2009).

Embodiment

The process by which subjective experience, perception, and cognition are grounded in the body's physical and physiological states (Fuchs, 2020).

Emotional dysregulation

The inability to modulate affective states in response to environmental or internal stimuli, often resulting in behavioral or relational difficulties (Corrigan et al., 2011).

Emotional valence

The hedonic quality of an emotional experience, ranging from pleasant to unpleasant (Barrett, 2017).

Heart rate variability

A measure of the variation in time between heartbeats, reflecting the flexibility of the autonomic nervous system and often used as an indicator of regulatory capacity (Lehrer, 2024).

Homeostatic

Pertaining to the maintenance of internal physiological balance and stability through regulatory processes (Strigo & Craig, 2016).**Information processing**

Information processing is a theoretical framework that views the mind as a system for receiving, encoding, storing, and retrieving information, similar to a computer, emphasizing the sequential stages of mental operations (David et al., 2018).

Insula

A cortical structure involved in integrating interoceptive information, emotional awareness, and sense of self (Craig, 2002).

Interoception

Interoception refers to the nonconscious sensing and processing of internal bodily states, such as hunger, heartbeat, and emotional cues, which influence self-awareness and emotion regulation (Craig, 2002; Chen et al., 2021).

Interoceptive awareness

The capacity to consciously detect and identify internal bodily sensations, such as heartbeat or hunger (Price & Hooven, 2018).

Interoceptive representations

Neural encodings of internal bodily signals that are integrated into cognitive and affective processes (Seth & Friston, 2016).

Interoceptive sensitivity

The accuracy with which internal bodily signals are interpreted or matched to actual physiological patterns (Murphy et al., 2017).

Intersubjectivity

Intersubjectivity is the shared understanding and co-construction of meaning between individuals during interactions, crucial for social connection and psychotherapy (Siegel, 2009; Schore, 2011).

Mindsight

Mindsight is the ability to perceive and reflect on the workings of one's own mind and the minds of others, fostering self-awareness, empathy, and emotional regulation (Siegel, 2009).

Middle insula

The middle portion of the insula is thought to act as a transitional hub between primary interoceptive signals and higher-order emotional and cognitive processes (Craig, 2002).

Multi-modal cycles of integration

Multi-modal cycles of integration describes how processing systems like interoception rely on several information processing loops which occur at lower levels of automatic processing and higher levels of midbrain and frontal lobe cortical processing. Information processing is not sequential from lower to higher levels of processing. Instead, these processing loops interact multi-directionally and continuously, influencing the information that is prioritized and suppressed at all processing levels (Fuchs, 2020; Seth & Friston, 2016).

Neuroception

Neuroception is the nonconscious, body-based processing system by which the nervous system responds to threat cues in the environment, influencing autonomic states and social engagement (Porges, 2001; Porges, 2017).

Neurophysiological state

The physiological and emotional patterns that are encoded and experienced in the body when autonomic nervous system states are activated (Porges, 2022).

Nonconscious

Nonconscious describes body-based information processing such as interoception and neuroception. Although these processes influence perception, emotions, and behaviour, they remain outside of deliberate thought (Schore, 2011; Porges, 2017).

Non-demand sexual touch

Physical contact that is affectionate and attuned but not goal-oriented or sexually demanding, contributing to nervous system regulation and safety (Huang & Santtila, 2024).

Posterior Insula

The posterior insula receives raw interoceptive data from the body and contributes to the primary experience of bodily sensations (Craig, 2002).

Predictive processing

A model in which the brain anticipates and interprets sensory inputs based on prior experience and internal models, resulting in reduced sensitivity to moderate changes in internal and external stimuli (Seth & Friston, 2016).

Process-oriented Approaches

Process-oriented therapy emphasizes targeting core, modifiable psychological processes that underlie mental health problems rather than focusing on specific diagnoses or protocols (Hofmann & Hayes, 2019).

Psychopathology

Psychopathology is used to refer to diagnosable mental disorders. The origin, development, and symptoms of the disorder are identifiable (Murphy et al., 2017).

Reafference

Sensory feedback generated by an organism's own actions, used to detect potential environmental threat (Jékely et al., 2021).

Regulation

Regulation refers to the capacity to manage emotional and physiological states through adaptive strategies, which can involve self-regulation or co-regulation with others (Schore, 2014; Ruiz-Aranda et al., 2021).

Right-brain to right-brain synchrony

Right-brain to right-brain synchrony describes the implicit, nonverbal communication and emotional attunement between individuals, particularly in therapeutic and attachment relationships (Schore, 2022).

Self-regulation

The capacity to modulate emotional, physiological, and behavioral responses to maintain internal stability and adaptive functioning (Siegel, 1999).

Sensorimotor

Relating to the integrated functioning of sensory input and motor output in the coordination of movement and behavior (Ogden & Minton, 2000).

Sensorimotor patterns

Paired movement and sensations patterns that are encoded over time in response to environmental and internal stimuli. These patterns can become stuck and maladaptive when related to trauma response (Fisher, 2019).

Somatic

Somatic refers to the body or bodily processes, especially as they relate to the connection between physiological sensations and psychological experiences (Levine, 2010; Salamon, 2023).

Somatic imprint

Lasting physiological patterns stored in the body as a result of unresolved trauma or chronic stress (Levine, 2010).

Somatic mapping

The process of linking internal bodily sensations with emotional and cognitive awareness (Fisher, 2019).

Voice Prosody

The rhythm, pitch, and tone of speech that convey emotional meaning and facilitate social communication and regulation, interpreted by the right-brain (Porges, 2001).

Valence

The intrinsic positivity or negativity associated with an affective state (Barrett, 2017).

Visceromotor

Pertaining to motor control over internal organs, such as heart rate and digestion, often mediated through the autonomic nervous system (Damasio, 1999).

Outline of Chapters

Chapter one introduces cognition as a process influenced by both brain and body, emphasizing the role of body-based processing in shaping perception, thought, and emotion. It provides an overview of embodied psychotherapy and outlines the advantages of incorporating embodied strategies alongside cognitive methods to improve therapeutic outcomes. This paper is grounded in the theory of embodied cognition, polyvagal theory, and regulation theory, which together explain the interplay between bodily states, emotional regulation, and therapeutic change. Chapter one also includes a contribution to the field, locating embodied psychotherapy within current mental health models and "fourth wave" therapies. Finally, a reflectivity and positionality statement identifies the author's personal and professional lens.

Chapter two explores the foundational role of body-based processing in cognition and psychological functioning. It challenges traditional models that view the mind as a disembodied, data-processing system. Instead, the mind is presented as a dynamic system where continuously updating body-based and brain-based streams of information are integrated with environmental

context to create both an embodied sense of self and an embodied sense of safety. Chapter two focuses on interoception and neuroception, core body-based systems that influence affect, perception, self-regulation and behaviour. When dysregulated, these systems commonly underlie mental disorders. Extending beyond the lens of symptom specific diagnostics, this chapter introduces a process-based approach to understanding mental illness that aligns more closely with how body-based processing systems operate.

Chapter three discusses embodied psychotherapy as a trauma-informed approach that complements cognitive therapy by addressing the body's role in psychological functioning. The chapter outlines the effectiveness of using somatic therapy to treat trauma and non-trauma related disorders through the use of strategies that support regulation, relational safety, and healing. Chapter three introduces several somatic strategies that are appropriate for use by therapists new to the somatic therapy lens. Clinical considerations are outlined, including the need for consent, the potential for poorly paced somatic intervention to retrigger trauma, and supporting therapist self-regulation. The chapter emphasizes the importance of therapist attunement, right-brain-to-right-brain synchrony, and co-regulation as mechanisms of change. An experiential narrative illustrates somatic techniques in practice. The chapter concludes by encouraging therapists to explore embodied methods to enhance client outcomes and deepen their own resilience and presence in the therapeutic process.

Chapter 2: Literature Review

Chapter two explores the foundational role of body-based processing in human cognition and psychological functioning. If like me, you graduated from a conventional counselling program, you probably learned that the primary focus of therapeutic change is to rationally address and reframe maladaptive thought, emotional and behavioural patterns. This is only part of the story. The critical missing link in this approach is the acknowledgement that there are physiological processes occurring in your client's body that underlie maladaptive patterns. These processes are not under your client's rational control. Research shows that atypical body-based processing plays a role in addiction, PTSD, emotional dysregulation, depression, anxiety and multiple other disorders (Schmitz et al., 2023). If this is the case, what might a counselling practitioner need to understand about physiological processes to integrate them into a treatment plan? An important question for professional consideration might be are body-based processes a legitimate focus for psychotherapy?

Chapter two addressed these questions. It explores the function and neural architecture of body-based processing, specifically, interoception and neuroception. These systems underlie emotional and cognitive experience, and when dysregulated, are concurrent with many forms of mental illness. They shape the client's affective state, capacity for emotional regulation, sense of self, and perception of safety. Body-based processing systems represent an integral but nonconscious component of thought and behaviour. In contrast to the diagnostic and mental illness model of mental health, this chapter outlines the benefits of a *process-based* embodied lens for therapeutic work.

Drawing from embodied cognition theory and critical neuroscience, this chapter challenges traditional cognitive models that treat the mind as an abstract, data-processing system separate from the body and the environment. Chapter two presents an alternative model of the mind as a dynamic, integrated system where physiological processes, sensorimotor activity, and social context converge to shape cognitive experience and behavior. This chapter offers an in-depth examination of interoception due to its influential role in cognition and to provide a comprehensive overview of the functioning of body-based mechanisms in general.

The Psychology of the Mind

The Mind as System

Cognitive theory designed the mind that counselling students are most familiar with. The *cognitivist* mind is viewed as a mechanism that generates an internal map of the world. It then navigates all the nuances and ever-changing terrain of daily life according to this map. Even when the mind receives clear external feedback that the terrain has changed, it continues to operate with its internal, static map, known in cognitive therapy as a cognitive schema (Beck Institute for Cognitive Therapy and Research, n.d.; Röritch, 2021; Schubert & Semin, 2009). Over time, a self-reinforcing, internal logic is constructed that fails to accurately represent current reality. The change process in conventional psychotherapy focuses on the mismatch between shifting reality and the mind's internal map. Cognitive psychotherapies seek to revise problematic cognitive schemata (internal maps) to increase flexibility in the cognitive "mapping" process, and to improve alignment between the internal map and the client's external reality (Beck Institute for Cognitive Therapy and Research, n.d.). Yet, the cognitivist model raises a fundamental question: if the mind generates an internal map and logic that is disconnected from

real-world input, how can we explain human capacity to adapt and respond effectively to changing environments? (Schubert & Semin, 2009)

Embodied cognition theory offers a solution to this question, which accounts for adaptation to environmental and social change. The embodied mind does not create a static representation of external reality. Rather, it is viewed as a dynamic system in which input from the body, mind, environment and social context continuously interrelate to create fluid awareness (Siegel & Drulis, 2023). Fugate contextualizes the embodied mind as a locus where internal sensorimotor information and sensory perceptual information from the physical and social environments converge in continually updating multi-directional looping cycles of integration (Fugate, 2024). Dan Siegel, a prominent researcher of cognition describes the mind as process, as an "emergent, self-organizing, embodied and relational process that regulates the inner and inter flow of energy and information" (Siegel & Drulis, 2023, "Mind as a self-organizing emergent process" section). Fuchs (2009) highlights core principles of the embodied mind in the following statement:

> "The individual mind is not confined within the head but extends throughout the living body and includes the world beyond the membrane of the organism, especially the interpersonal world of self and other; this is also the world in which mind and brain are essentially formed" (Fuchs, 2009, p. 221).

The key aspects of embodied mind recognized by Fuchs are:

- the mind is lived through the body, not abstracted from it
- the mind is formed and functions through the interpersonal world of relational and social contexts

- the mind and neurological development of the brain occur through lived, interpersonal, and embodied experiences

In embodied cognition models, the mind's primary function is to continually modulate, mediate and integrate the information flows in the system for the purpose of guiding the organism's actions to most efficiently meet survival and social needs (Schubert and Semin, 2009). Schubert and Semin (2009) stated, "We believe that adaptive action is precisely the function of cognition, an insight that has a long history" (p. 1135). Embodied mind research suggests that the mind first emerged to help organisms survive by linking internal physiological processes with external environmental cues. Amoebas, ancient unicellular creatures still in existence today, provide an example of how these body-based survival processes function. Light of high intensity causes damage to an amoeba's cellular structure. Studies show that when amoebas encounter light that is too strong, they consistently propel themselves out of the high intensity area. With no brain, no nervous system, and no eyes, amoebas are not thinking, "That light it too bright. Ow, it's burning me. I should move." There is no cognitive process occurring Instead, amoebas sense internal cues of threat related to shifts in ion balance and cellular permeability. These cues cause an automatic mobilization behaviour in which the amoeba moves away from the light (Lazowski & Kuźnicki, 1985). This primitive internal sensing and automatic response system continues to be an integral component of human awareness, threat detection and behaviour motivation. While higher cognitive functions evolved later, they built upon, rather than replaced, those ancient processing mechanisms that remain central to how we perceive, feel, and think.

Cognitivism: Psychology that thinks

Each therapeutic modality is embedded in a specific model of brain functioning, and each identifies the way in which emotion, thought, behaviour, and in some cases, social environment relate to each other. Modalities that arose prior to 1990, before advances in neuroimaging technology, were anchored in the lens of mind-body duality. They conceptualized the mind as a mechanism that produced cognitive and psychological content in abstraction from the body. The Cartesian notion of "I think therefore I am" underpinned scientific thought throughout the twentieth century, limiting the focus of psychological research to the mind and disregarding the body (Bader-Johansson, 2013). Cognitivism, the dominant framework of psychology in the last half of the 20th century, developed within this framework of mind-body dualism (Bader-Johansson, 2013). It borrowed from models of information processing salient in computer science. The model suggests that input from the environment is processed by the brain which then produces thought which leads to an emotional response which drives behaviour (Pietrzak et al., 2018). Counsellors with a cognitivist lens treat thought as the origin of emotion and behaviour. The therapeutic process of change requires adapting thought in order to shift emotions and maladaptive behaviour (Fugate et al., 2024). Cognitive-based therapies focus "attention to a set of dysfunctional automatic thoughts and deeply ingrained belief systems, along with learning and practicing new adaptive behaviours through cognitive disputation techniques." (Pietrzak et al., 2018, p. 2)

Third wave cognitive-based therapies expanded their therapeutic repertoire to work not only with thought content, but with a client's relationship with thought through mindfulness techniques and acceptance-based treatments (Fugate et al., 2024). If the cognitive approach feels

intuitive to Western practitioners, it should. Concepts from the cognitivist model remain prevalent among counselling practitioners and students. A study by David et al. (2018) indicates that CBT remains the most researched psychotherapy, with no other modality showing consistent superior outcomes. What David et al.'s study fails to point out is that research funding in psychotherapy disproportionately favors CBT while research in alternative psychotherapies is severely underfunded. Funding organizations are more willing to fund CBT research because of its predominance in the field, and funding committees are dominated by CBT researchers (Leichsenring et al., 2018). This has led to systemic allegiance bias with respect to how CBT is evaluated against other established psychotherapies. Studies examining the legitimacy of CBT's status as the 'gold standard' have found that CBT research is at a "high risk for researcher allegiance...and most CBT studies [demonstrate] a high risk of bias" (Leichsenring et al., 2018). A key challenge in researching alternative therapies like somatic therapy is the lack of standardized measures for body-based processes such as interoception, neuroception, or right-brain synchrony. In contrast, CBT research has established highly specific tools for assessing thoughts and behaviors, but these measures often fail to capture broader psychological functioning or everyday well-being (Leichsenring et al., 2018).

It is important to recognize the bias present in CBT's prevalence. However, there are reasons why choosing cognitive-based approaches makes sense, especially for new therapists. Thoughts are the most accessible unit of psychological content for clients and the most easily accessed by therapists. It can feel safer and less challenging for a client to communicate a thought rather than to dip into somatic sensation and emotion. Finally, there is ample evidence

that cognitive-based therapies are effective for treating anxiety, depression, and worry (Powell et al., 2024).

There are significant limitations associated with cognitive-based approaches that impact positive client outcomes. These include:

- the inaccurate CBT "sandwich" principle which assumes a linear, causal sequence of thought causes an emotion causes a behaviour
- a lack of attention to emotional regulation processes
- a lack of effectiveness in treating trauma and other complex mental conditions
- a lack of recognition that mental schema and thought are constructed within the relationship of a person's body to their cultural and social environment and their physiological processing
- "the potential for over-intellectualization and emotional disconnection, leading to a hindrance in processing and healing" (Fugate et al., 2024, p. 576; Pietrzak et al., 2018).

The limitations associated with cognitive-based therapies have led to an increased focus on modalities that support the integration of body-based approaches in psychotherapy.

It is important to note that the notion of mind over body, and "I think therefore I am" are not universal truths but culturally specific concepts rooted in western thought. Eastern and indigenous cultures hold a holistic perspective of mind and body as one entity, and these cultures' healing practices engage both (Chase-Begay et al., 2023; Lazzarelli et al., 2024). Cognitive-based therapies rely on the western premise of primacy of the individual as opposed to individual within community. It follows that the western therapeutic approach would be focused on individual processing. By contrast, indigenous healing modalities are relational and

embodied, facilitating reconstruction of relationship between individual and community, and offering practices that include the body such as sweat lodge ceremonies and drumming circles (Chase-Begay et al.,2023).

Cognitive-based therapies can feel “natural” for practitioners and clients raised with a western lens because thought is prioritized as the valued psychological unit. In western culture, thought is associated with intelligence, problem solving and individual expression, all of which can be important in self-understanding and addressing psychological distress. Exploring other fundamental aspects of self, like emotion and sensitizing oneself to body-based processes is not considered appropriate or welcome within the western social context. Self-knowledge and knowledge in general reside explicitly within the realm of thought in the western tradition. As a counselling practitioner raised with western cultural norms, I can appreciate how cognitive-based therapies appear to make the most sense. It is the ocean I swim in. Yet, when I reflect on the legitimacy and efficacy of healing modalities present in indigenous and eastern cultures, I am better able to identify the blind spots in my own therapeutic practice. I can better empathize with and adapt treatment plans to the lived experience of clients who do not share my cultural background. As neuroscientific research converges with holistic cultural understandings of cognition, theories of knowledge that integrate how our bodies inform what we know are gaining increased acceptance. Embodied cognition theory encapsulates a western reframing of knowledge as not confined to abstract thought but arising through the experience of the physical body as well.

Embodied Cognition: Psychology that Experiences Self in the World

In contrast to cognitivism, embodied cognition draws from neuroscience that shows "meaning-making is a process operating through our embodied experiences and emotional encounters, our *sensory-motor* responses to changes of the environmental milieu" (Röhricht, 2014, p. 11). Embodied cognition theory views psychological processes as "influenced by morphology, sensory systems, motor systems and emotions [where] emotions are not just categories we think about but involve bodily changes that have strong effects on cognition and action" (Pietrzak, 2018, p. 7). While the critical unit of cognition in cognitive-based therapies is thought, embodied cognition theory's view thought as one component of a multi-dimensional experiencing of self which involves the integration of emotional tone, somatic sensation, sensorimotor patterns and cognitive appraisals. Knowledge is understood to be encoded not just as a one-dimensional thought, but as a multi-dimensional array of "perceptual, motor and introspective states acquired during interaction with the… [environment] and our own bodies" at the moment of an experience (Pietrzak, 2018, p. 7). When knowledge is reactivated, the multi-dimensional experiential array is also reactivated which means an individual will re-experience all or some of the *emotional valence*, somatic sensation, and *sensorimotor patterns* associated with the initial experience (Pietrzak, 2018).

In embodied cognition literature, "*simulation*" and "*reenactment*" are terms used to describe the reactivation of these multidimensional, embodied arrays which occur in tandem with thought and memory (Pietrzak, 2018; Fugate, 2024). The physiological processing responsible for reenactment arrays is referred to as body-based processing. This simultaneous activation of both cognitive and physiological systems during the construction of knowledge has important

implications for psychotherapeutic interventions. A systematic review and meta-analysis conducted by Rosendahl et al. (2021) found that the majority of patients treated for psychiatric disorders in primary care had somatic symptoms. The study also pointed out the importance of non-verbal, "body dialogue" between therapist and client in the therapeutic alliance. The study authors found that the majority of chief physicians consulted in the study confirmed the importance of the embodied approach in psychotherapy (Rosendahl et al., 2021). If the body is directly engaged in both cognitive processing and the creation of emotion, and if psychiatric disorders include body-based symptoms, then the body is clearly a legitimate focus for therapeutic change processes.

Embodied Cognition: Aligning with Current Models of Psychotherapy and the Transdiagnostic Lens

Embodied psychotherapy aligns with core principles of third and fourth wave psychotherapy. Third wave therapies recognized the body as a location of therapeutic work and *self-regulation*. These approaches integrate mindfulness, meditation, and acceptance practices which are somatic in nature (Goldberg et al., 2023). Mindfulness develops present-moment awareness by attuning to bodily sensations such as breath or other somatic sensations like tension, heat, or tingling for example. Meditation can involve a focus on bodily experience through practices like body scans. Alternatively, meditations may involve the generation of emotional states like kindness or love. The physiological expression of these states is noticed and tracked within the body. Acceptance, a core tenet of these therapies, addresses the habitual avoidance of unpleasant internal experiences by encouraging clients to notice and tolerate the associated bodily discomfort. To practice acceptance, clients must develop awareness of the

ways distressing thoughts and emotions are linked to sensation in the body. Mindfulness-Based Cognitive Therapy (MBCT) enhances clients' sensitivity to their internal experience as a means of detecting early signs of relapse (Goldberg et al., 2023).

Fourth wave therapies represent a departure from the medical illness model and the assumption that psychopathologies are distinct entities that require treatment protocols specific to each diagnosis (Hofman & Hayes, 2019). The medical illness model has resulted in "a mind-boggling list of highly specialized treatment protocols for an ever-expanding number of *DSM*-defined disorders" (Hofman & Hayes, 2019, p. 44) Evidence shows that many standardized treatment models do perform effectively. However, the challenge in the DSM approach is that it diverts attention away from dysfunctional body-based processes that underlie many disorders, while promoting disorder specific training and standardized treatment protocols. Hofman and Hayes state that the problem with cognitive-based treatments is "more in what [is] not being studied than what is." (Hofman & Hayes, 2019, p. 42) The authors cite an example of catastrophic thought patterns in anxiety disorders. Conventional treatment for anxiety involves teaching cognitive diffusion. On the other hand, research shows that respiration training, a body-based approach, is a more effective response for catastrophic thoughts. For example, when a client feels symptoms of anxiety arising, they focus on the breath and regulating their breath pattern, rather than using a cognitive-based approach to address thoughts which amplify anxiety, . Expanding the treatment lens to include an examination of body-based processes provides a broader range of treatment options (Hofman & Hayes, 2019).

The primary concern with the medical illness paradigm is that in its siloing of disorders, it obscures the presence of critical biopsychosocial processes that operate across the majority of

disorders. These include evolutionary body-based processes related to attachment, security, emotional regulation, sense of self, and attentional flexibility, that interact with disorder symptoms (Hofman & Hayes, 2019). Hofman and Hayes (2019) question both the validity and the usefulness of conceptualizing mental disorders as discrete conditions which require specific treatment protocols. Instead, they affirm the benefits of a *trans-diagnostic approach* which emphasizes the common processing mechanisms that underlie dysfunction.

The prevalence of emotional dysregulation, maladaptive ANS functioning, and negative affect in diverse mental health disorders is notable, including post-traumatic stress disorder (PTSD), depression, anxiety, obsessive compulsive disorder, bipolar disorder and eating disorders (Barlow et al., 2017). It's probable that these symptoms arise from common body-based processing dysfunction and can potentially be treated with common protocols (Barlow et al., 2017). For example, Bessel van der Kolk (2014) makes a strong case that early childhood adversity and trauma are at the root of body-based processing dysfuntions like emotional dysregulation, maladaptive ANS response and an unstable sense of self, symptoms which present in a range of mental health diagnoses. He states that "Trauma victims cannot recover until they become familiar with and befriend the sensations in their bodies" (Van der Kolk, 2014, p. 103). His perspective is that recovering from trauma is contingent upon supporting clients to restore functional body-based processing. This involves building the client's capacity to engage with somatic sensation. A counsellor who adopts this lens would focus less on the diagnoses of her clients, instead seeking to identify which body-based processing issues lie at the heart of the client's presenting concerns. Her treatment plans would prioritize body-based practices to

support the client in mediating emotional and ANS dysregulation. The trans-diagnostic lens can potentially

Embodied psychotherapy is rooted within the fourth wave of therapies that adopt a holistic view of mental health, acknowledging that an individual's psychology is deeply interconnected with mind, body, and social relationships. While the conventional model of medical illness has focused on alleviating symptoms, fourth wave therapies endeavour to build resilience, long-term well-being and personal growth. Embodied psychotherapy aligns with this holistic lens on mental health by developing awareness of core body-based processes which leads to increased adaptive functioning of emotional regulation, relational safety and interoceptive awareness.

Body-Based Processing

While cognitive-based approaches focus on the content of thought and emotion, a process-oriented therapeutic approach prioritizes a person' s relationship to their internal experiences rather than on the cognitive content of the experience (Hofman & Hayes, 2019). For example, a cognitive-based approach to addressing emotional dysregulation would entail testing the validity of the thoughts that theoretically catalyzed the emotion. A process-oriented approach aims to increase a client's capacity to identify a range of emotions, support the client in locating sensation associated with the emotion, and shift attentional energy from cognitive rumination to present-moment experiencing of somatic sensation (Fugate, 2024).

Research in affective neuroscience, developmental science, and cognitive science is increasingly directed toward exploring the body-based processes that contribute to cognition. Roritch (2021) notes that a central theme in the "above scientific domains is the question of how

bodily realities (emotion/feeling state, interoception and proprioception, somatosensory perception, motor activity) impact upon what has been the centre of all psychotherapeutic work – 'the mind, the psyche' " (Röritch, 2021, p. 178). These "bodily realities" are often referred to as bottom-up processes within literature. For clarity, this paper uses the term "body-based processing". Operating autonomically and nonconsciously, body-based processing significantly impacts mood, emotional regulation, perceptions, and even learning (Chen et al., 2021; Craig, 2002; Critchley & Garfinkel, 2017). Although it can be useful to consider body-based processing in isolation, it is critical to remember that these processes actually operate in an iterative bi-directional loop or cycle. Cognitive top-down processing continuously integrates and modifies body-based sensory information while at the same time, body-based processing influences cognitive processes including affect, emotion and cognitive appraisal (Chen et al., 2021; Craig, 2002; Critchley & Garfinkel, 2017).

For counsellors, this means that when exploring a client's presenting comcerns, it is safe to assume that both their thought patterns and their physiological patterns are influential factors. Frequently, the client will be more aware of how their thought patterns contribute to psychological distress. Often, they will need therapeutic support to gain awareness of their physiological patterns, including emotion. Because body-based processing and cognitive processing create feedback loops with bi-directional influence, shifting a client's body-based processing patterns can result in a corresponding shift in cognitiion. When cognitive-based therapeutic approaches have limited effect, a practitioner can address the client's presenting concern via a focus on improving the functionality of the client's body-based processing.

Although body-based processing generally functions nonconsciously, it is possible for practitioners to assist clients in accessing and modulating body-based processes. A core principle in working with body-based processing is to increase the client's discernment of *somatic sensation* (Levine, 2019; Ogden, 2021). For example, a client experiencing chronic stress might become aware of specific body postures associated with stress, specific rhythms of respiration, or muscle tightness. A client experiencing emotion might experience sensation in the body like tingling, heat, or energy. By bringing body-based processing into conscious, attentional focus, practitioners collaborate with clients in constructing an embodied space in which to process emotions, perceptions and beliefs. Experiencing somatic sensation in the body allows the client to shift from an abstracted, cognitive relationship with thought and emotion into a present state experiencing of thought and emotion. In this alternative perceptual space, clients have the opportunity to explore their felt relationship with thought and emotion, to gain insight into how autonomic processing influences their perception, and to integrate "stuck" traumas.The role of the therapist in somatic work is to ensure that the client is able to safely contain somatic sensation, to facilitate client awareness of body-based processes, and to offer adaptive strategies for engaging with body-based processes (Ogden et al., 2006). Except in unique cases involving trauma, somatic work does not usually replace cognitive-based practice. Instead, it functions as the integral link that engages the bodily aspects of psychological distress.

Two body-based processes relevant to therapeutic change are interoception and neuroception. These processing systems are fundamental to an individual's capacity to feel safe, to regulate emotion, and to develop secure attachment, which makes them a potent area for psychotherapeutic engagement. (Critchley & Garfinkel, 2017; Schore, 2014; Porges, 2022).

Interoception: The Sensory System of Embodied Self

Knowledge of interoception and neuroception and how these processes contribute to psychological disorders supports the therapeutic process on many levels. wareness of a client's interoceptive and neuroceptives signals enhances the therapeutic bond and the quality of counsellor empathy. Consideration of interoceptive and neuroceptive functioning in treatment plans frequently leads to more positive client outcomes. Nevertheless, interoception and neuroception remain under the radar for many counsellors and counselling education programs. The following section is designed as an Interoception / Neuroception 101 to provide counsellors with a working knowledge of body-based processing.

Function and Architecture. The phylogenetically oldest body-based process is interoception. Interoception is an internal sensory system which captures and processes homeostatic information from within the body and translates it into a felt sense of embodiment and affective state. The homeostatic data transmitted by the interoceptive system include:

- biochemical signals involved in digestion, immune activity, and the endocrine, cardiovascular and respiratory systems (Craig, 2002; Chen, 2021)
- mechanical forces like stretch or pressure within organs such as the bladder or stomach or inflammation in tissue (Chen, 2021; Savitz & Harrison, 2018)
- rhythmic electromagnetic signals related to heartbeat, respiration, digestion (Craig, 2002; Savitz & Harrison, 2018)

Interoception is an *afferent system,* meaning that information flows from the body (e.g., viscera, muscles, and deep skin tissue) upward through the vagal and spinal nerves to subcortical processing centers such as the thalamus. These subcortical processors evaluate shifts in

homeostatic information and may make automatic adjustments to restore homeostatic balance, often without engaging higher-level cortical structures (Bettinger, 2016). Homeostatic data may be transmitted to higher level areas of the brain for additional evaluation. The insular cortex is at the apex of the interoceptive pathway. This cortex communicates interoceptive information to additional higher-level cortexes in the frontal lobe (Bettinger, 2016).

The *posterior insula* generates a topographical representation of the body's internal sensations, both somatic and *visceromotor* (Bettinger, 2016). The *middle insula* then integrates these internal signals with incoming data from the amygdala and hypothalamus to assess potential threats to survival. The *anterior insula* converts the body's sensory map into a conscious, cognitive and physiological expression of feeling, a subjective emotional experience (Tisserand, 2023). The emotional representation generated by the anterior insula is transmitted to additional regions in the frontal lobe which influence decision making, perception, motivation, and cognitive feeling (Bettinger, 2016). The networking of the insula and limbic system indicates the essential role of interoception in emotion and emotional processing. Functionally, the insula acts as a central processing hub linking internal homeostatic states with emotion and cognition.

Relation to Sense of Self. Interoception, like neuroception, is rooted in evolutionary mechanisms of survival and safety, and contributes to a stable sense of self. The interoceptive system (IS) processes multiple visceromotor data points to produce a continually updating felt sense of "being and having a body" (Seth & Friston, 2016, p. 6). Tisserand et al. (2023) hold a similar view that the activities of the interoceptive system are "at the core of bodily awareness and even of the self" (Tisserand et al., 2023, p. 4). Strigo (2016) refers to interoceptive processing as "the feeling of being alive that emerges from the integration of homeostatic

sensory… activity" (Strigo, 2016, p. 4). These definitions converge on one important concept: that the experience of self is anchored by the mind's awareness and monitoring of the homeostatic processes of the body within which it is housed. The significance of this concept for psychology is that our sense of self does not arise, at least not initially, from thought and emotional response to the external environment. Instead, it is an "emergent property that occurs when an organism becomes consciously aware of feelings associated with changes in internal bodily states" (Tisserand, 2023, p. 2). The experience of a stable self is tethered first, to functional interoceptive processing of homeostatic cues, and second, to accurate cognitive interpretation of interoceptive sensory maps.

The Evolution of Interoception. Damasio (2006) and others argue that there is a clear evolutionary rationale for how sense of self developed as a mind-body communication rather than emerging later in the evolutionary process as a mind-thought phenomenon. When early multi-cellular organisms initiated an automatic behaviour such as movement, the movement created a set of sensations within the body of the organism, referred to as reafference (Jékkely et al., 2021). Movements and the specific sensations linked to each movement occurred with consistency which allowed the organism to log movement-sensation reference pairs. This meant that the organism could predict the sensation references that should accompany each movement. If the predicted sensation reference did not match the movement, this signaled to the organism that there was an external environmental factor responsible for the unpredicted reference. Reafference was critical to the organism's survival because it allowed the organism to identify external factors which could be potential threats, and to respond to them (Jékkely et al., 2021). Early organisms could not identify threat as a cognitive concept like "predator". Instead, they

derived information about the external environment by referencing their internal sensations and detecting deviations from what was predicted. This movement-sensation pairing produced safety and danger cues within the organism. Damasio states that one of the critical tasks of neural activity is to receive information from the body related to its life processes, and to create a continually updated representation of the body's internal processes (Damasio, 2006, p. 226). In humans, the IS retains its evolutionary safety function, monitoring the body's homeostatic equilibrium for unpredicted shifts that potentially indicate environmental threat.

Interoception and Affect. Interoception plays a key role in the experience of sense of self and perception of safety, yet it is a nonconcious process for the most part. Interoceptive cues do eventually emerge into conscious awareness at the highest level of cortical integration. At this level, the internal sensory map is translated into an affective state perceptible to the individual. Core affect can be thought of as a generalized mental state that carries a generalized emotional resonance (Craig, 2002). Core affect is not experienced with the precision of an emotion. Emotions like anger, disappointment, joy, and surprise, are distinct from each other, and have discrete beginning and endings. By contrast, core affect is a basic and non-time specific state of experiencing (Feldman et al., 2024). There is a vagueness in core affective states. They may lack a specific location in the body and do not have temporal delineation. Affective states are experienced by an individual in two dimensions. The first dimension is valence which refers to the qualitative aspect of affect. Valence is perceived along a continuum of pleasant to unpleasant (Feldman et al., 2024). The second dimension is arousal which refers to the intensity of core affect, or the degree to which the "mind and/or body are stirred" (Feldman et al., 2024 p.1). Low arousal refers to background states such as calmness (pleasant) or numbness (unpleasant) while

high arousal could indicate states of excitement (pleasant) or chronic stress (unpleasant). To illustrate, if a client says they feel down, anxious or numbed out, they are describing the valence and arousal level of their core affective state. A client who feels numbed out would be experiencing a core affect with unpleasant or negative valence and low arousal. Clients do not control their core affective state (Feldman et al., 2024). The adaptive tendency of the IS is to anchor into a core affective state even if environmental changes indicate a shift would be appropriate. Affective states and homeostatic patterns are generally resistant to change because large-scale shifts require substantial metabolic resource expenditure (Feldman et al., 2024). Predictive processing mechanisms, discussed further in the Interoception and Predictive Processing section, also reinforce the maintenance of affective and homeostatic default patterns. For the client, this means that it may feel difficult to shift states despite new experiences or stimuli.

It is beneficial for the therapist to keep the client's affective state in mind because these states mediate perception of their social environment, as well as their experience of emotion. Silva et al. (2025) reference several studies that show anxious affective states correlate with higher perceptual sensitivity to negative facial expressions. In addition, negative facial expressions were evaluated by participants as more intense compared to control group evaluation. A study by Demenescu et al. (2010) found that depressive core affect (low arousal and negative valence) correlates with decreased ability to distinguish facial expressions and with bias toward negative evaluation of facial expressions. The study concludes that, "Major depression is characterized by negative cognitions (worthlessness, self-criticism, hopelessness) and consequently their evaluation of external stimuli, including facial expressions, might be

more negative than in healthy subjects" (Demenescu et al., 2010, p. 3). It is interesting to note that although the DSM categorizes major depressive disorder and anxiety as distinct and separate disorders. However, from the perspective of body-based processing, they have significant similarities. Atypical interoceptive sensitivity in both disorders results in emotional dysregulation. Anxious clients become hypersensitive to others' emotional cues and depressive clients being hyposensitive to emotional cues Core affect is impacted in both disorders although the symptoms appear slightly different. Core affect associated with depressive disorder presents as negative valence and negative arousal while core affect associated with anxiety has negative valence and positive arousal. In both disorders, atypical interoceptive processing results in similar perceptual shifts toward negativity bias. Rather than focusing on the disorders as distinct, counsellors can create treatment plans that draw on similar somatic interventions. When core affective states impair client functioning, it can be more effective to target these states directly through employing body-based strategies. Working through the body allows access to the root of the affective experience, which may be more effective than focusing on shifting maladaptive thoughts and perceptions related to the affective state (Fugate et al., 2024). Recognizing the influence of core affect on a client's perceptions and cognition expands the therapist's range of interventions.

Interoception and Predictive Processing. Ideally, core affective states would shift fluidly in response to changes in homeostatic equilibrium or environmental cues. For example, healing from the physical effects of an injury should be accompanied by a corresponding lift in mood and feeling of positivity. A vacation would induce a sense of calmness, eliminating chronic stress. Frequently though, clients do not experience anticipated changes in mood.

Research indicates that the “stickiness” of core affective states is in large part due to predictive processing. This is a nonconscious, efferent, processing mechanism that exerts control on interoceptive response to homeostatic cues (Feldman et al., 2024; Seth & Friston, 2016). Feldman et al. (2024) state, “We speculate that, as compared with exteroceptive sensations, interoception may be governed relatively more by the brain’s predictions than by actual sensory changes in the body. In this sense, interoception may be relatively less plastic than its ‘exteroceptive’ counterparts” (Feldman et al., 2024, section “The predictive brain”). Predictions arise from an evolutionary learning adaptation that permits the brain to notice regularities in internal and external stimuli and to encode predictive responses for future application. This increases automaticity and efficiency of information processing (Feldman et al., 2024; Seth and Friston, 2016).

To illustrate, an employee being harassed at work will encode the thought of work with the emotion and physiology of stress, and motor-patterns associated with defensiveness. The thought of work may become synonymous with shallow breath and a bodily sensation of fear in the stomach. Motor patterns associated with defensiveness might be hunched shoulders and muscle tension. These encoded physiological responses, triggered by the thought of work comprise a prediction. If stressful conditions at work remain consistent over time, the employee’s affective state could shift into one of chronic stress. If the employee’s harasser was fired, it’s likely that the employee would continue to experience the emotion and physiology of stress. The employee’s initial and appropriate homeostatic response to the thought of harassment free work would be non-defensive with regular respiration and muscle tone. However, higher level processing cortices would treat this appropriate response as a prediction error. The

employee's previously encoded prediction of work as stressful would override the appropriate homeostatic response to an improved work reality. This example illustrates the stickiness of affective states once they have been established.

Predictive processing devalues interoceptive sensory information that doesn't conform with the brain's prediction, labeling it as error (Feldman, 2016). For example, an individual beginning to practice meditation experiences a lowered heart rate which is of positive benefit to their health and may be the goal of meditation. Initially at least, the lowered heart rate may be labeled an error, and the brain's predictive processing mechanism may force the heart rate back up to make it conform to prediction. Prediction errors that don't deviate significantly from the prediction, or that are irrelevant to the prescribed goal of attention are ignored (Feldman, 2016). They will not be transmitted to higher-level cortices for evaluation (Feldman, 2016). If error messages are deemed essential for survival, or if they deviate dramatically from prediction, they ascend to higher level cortices for integration. New predictions are then generated with updated representations of the body's relationship to the environment, new beliefs and new adaptive behaviours (Feldman, 2016). For example, a client who has experienced sexual trauma may be triggered into a fight or flight response when she experiences sensual touch from a new, safe partner. Although her interoceptive system interprets the touch as safe, her predictive processing mechanism overrides the safety cues and activates fight or flight. If this client were to engage in sensate therapy with her partner, practicing non-demand sexual touch, her body would have the repeated experience of touch being safe (Huang & Santtila, 2024). Eventually, her predictive processing system would replace the prediction error and encode a new prediction that touch from her partner does not necessitate a fight or flight response.

Interoception and Mental Health Conditions. Given that interoception is a functionally adaptive mechanism that can become dysfunctional, how does a practitioner determine when prioritizing interoception might be critical for positive client outcome? There are several mental health conditions linked to atypical interoceptive sensitivity and abnormal insular function (Murphy, 2017). These include major depressive disorder, alexithymia, anxiety disorders, substance use disorders, chronic stress, and eating disorders (Heim et al., 2023; Murphy et al., 2017). Research suggests that alexithymia correlates with reduced sensitivity to interoceptive cues (Murphy, 2017). Major depressive disorder (MDD) is characterized by anhedonia, a reduced ability to experience positive emotion. (Furman et al., 2013). Studies show that individuals who have MDD demonstrate reduced *interoceptive sensitivity,* the capacity to detect and identify interoceptive signals. These individuals also experience atypical *interoceptive awareness,* the capacity for accurate cognitive interpretation of interoceptive signals. MDD impairs the individual's capacity to detect somatic representations of positive arousal (Furman et al., 20113). Research shows that in individuals with MDD, positive stimuli are interpreted as prediction error and automatically filtered out by the IS (Furman et al., 2013). Anxiety disorders are associated with amplified sensitivity to somatic sensation and increased negative appraisal of somatic stimuli (Murphy, 2017). Individuals with anxiety notice somatic stimuli more, interpret the sensations as bad, and cognitively appraise the signals as meaning that something bad is about to happen.

Repeated stress events impact interoception. "Stress and trauma affect the strength of signals at the most basic levels of interoception, as well as the ability to… tolerate the disturbance, which in turn compromises accurate interpretation of sensations and related

decisions regarding behaviour" (Price & Hooven, 2018, p. 3). The IS and the ANS produce an integrated response to stress. Initially, these systems react with adaptive sensitivity to stress, but over time, hypersensitivity develops and exhausts other regulatory systems in the body. To counteract the impact of chronic hypersensitivity, interoceptive signals are *downregulated*. This means that higher-level cortices begin to reduce responsiveness to interoceptive cues. Over time, the individual's ability to accurately interpret interoceptive signals in general becomes impaired (Price & Hooven, 2018). The Adaptive Calibration Model highlights how a stressful environment in early childhood will cause an *upregulated* or downregulated sensitivity to interoceptive representations. This maladaptive resetting of IS and ANS response does not readjust when the individual is exposed to less stressful environments as they mature (Price & Hooven, 2018). Atypical interoceptive processing is linked to a range of mental health conditions. Although the diagnostic approach categorizes these conditions differently, they all involve irregularities in how bodily signals are perceived and interpreted. These disruptions in interoception also have significant implications for how emotions are generated, experienced, and regulated.

Atypical Interoception and Emotional Processing. Disrupted interoception is a critical contributing factor in emotional dysregulation (Murphy, 2017). Conscious emotions emerge at the highest level of interoceptive cortical processing. However, interoceptive processing at all levels, even the nonconscious level of homeostatic regulation, contributes to the intensity and valence of conscious emotion. At lower, automatic processing levels, interoceptive representations are communicated to the amygdala where they are assessed for threat, interpreted, and assigned emotional valence (Price & Hooven, 2018). For example, increased

heart rate may produce an emotion of fear or excitement depending on the predictive processing information activated. At higher processing levels, cortices in the frontal lobe integrate environmental information with interoceptive representations. These combine to inform behavioural response. For example, frontal lobe cortices receive data related to affective state and somatic sensations, such as muscle and chest tightness or butterflies in the stomach. This data is integrated with visual information from the environment to determine an appropriate behavioural response (Craig, 2003). Price and Hooven (2013) describe the production of emotion as the "process by which information about invisible internal physiological states are communicated to cognitive centres in the brain in order to support… effective response [to the environment] ... via emotional awareness and regulation" (Price & Hooven, 2013, p. 3).

Functional emotional regulation and interpretation of emotional experience rely upon "the accurate detection and evaluation of cues related to physiological reactions" (Price and Hooven, p. 3). Unpleasant emotions can indicate stress and induce adaptive or maladaptive behaviours and thoughts to counteract the stress. Positive emotions motivate behaviours that lead to social connection. Emotional regulation can be disrupted at various levels of interoceptive processing. At the nonconsious level, the IS may maladaptively amplify or filter out internal cues. At the level of conscious processing, emotional regulation can be hindered by a low tolerance for experiencing internal sensations. Dysfunctional emotional regulation may also arise at the highest level of interoceptive processing. This occurs when an individual makes cognitive misappraisals of interoceptive representations, resulting in perceptions and behaviours that don't accurately reflect environmental context (Price and Hooven, 2013). A common example of cognitive misappraisal is misinterpreting the interoceptive sensation of hunger as anger which

might occur if an individual is in an environmental or cultural context that they find stressful (Feldman et al., 2024). In the counselling context, cognitive misappraisals frequently surface. Individuals with anxiety may interpret heart palpitations as a sign of heart attack or muscle tension as a signal of impending loss of control. Someone with depression may interpret low energy levels as evidence of laziness or hopelessness. People who have PTSD often interpret ANS arousal as a sign of social or environmental threat. Atypical interoception contributes to emotional dysregulation as bodily signals are misinterpreted or suppressed. Helping clients reframe or re-experience these interoceptive sensation safely through mindfulness and other somatic exercises can reduce maladaptive patterns. Because emotional awareness and regulation rely on the accurate processing and cognitive appraisal of interoceptive signals, interoception is increasingly recognized as an important focus in psychotherapy.

Working from the Inside Out: Interoception in Therapeutic Practice. For a therapist new to the concept of interoception, a practical first step might be to simply practice with recognition of what the research on interoception tells us, that affective states and emotions are governed, in part, by physiology. Interoception operates implicitly and explicitly. Implicit interoception occurs when an autonomic response to homeostatic shifts in the body is triggered. Implicit modulations of interoceptive processing may translate into shifts in conscious perception which guide behaviour (Murphy, 2017). It can be helpful for a counsellor to recognize that consistent, problematic beliefs and perceptions are potentially reinforced by physiological patterns of interoception. Explicit interoception refers to the somatic and visceral sensations that the client is able to perceive consciously such as heartbeat or respiration rate, and sensations that occur concurrently with emotion such as tightening of muscles with stress, butterflies in the

stomach with nervousness, or the flush of heat with anger (Murphy, 2017). Alternatively, clients may be aware of a lack of sensation associated with anhedonia or with dissociation as a defensive mechanism against trauma. Lack of explicit interoceptive sensation can be just as distressing to individuals as the presence of unwanted somatic sensation. Therapeutic interventions that address interoception work with the client's receptivity to explicit interoceptive signals, and with cognitive appraisals of these signals (the meaning that is made when interoceptive representations are interpreted) (Helm et al., 2023).

Considerations. The way in which individuals process interoceptive data varies between individuals and in relation to gender and cultural norms (Feldman et al., 2024). Some individuals are more prone to experience interoceptive representations as somatic sensations while others primarily experience them as emotion. When experiencing somatic sensation, some individuals tend to direct their focus inward, which allows them to detect and appraise somatic signals. Individuals with inward focus are aware that they are experiencing a physical signal from within their bodies. They may interpret the signal accurately, linking hunger to hunger sensations, or they may misappraise the signal. In both cases, the individual can detect somatic cues. Other individuals respond to somatic cues by directing their attention outward. In this case, interoceptive representation is experienced as an affective state which the individual believes is triggered by the external environment.For example, studies show that individuals with outward attentional focus cannot easily detect an increase in heart rate. Instead, they experience a negative shift in perception which leads them to "perceive social targets [as] more aggressive and judgmental and less warm and competent" (Feldman et al., 2024, p.657).

Females in eastern and western cultural contexts are more sensitive to interoceptive information and can more consistently associate somatic sensation with emotion. Males more frequently respond to interoceptive information by externalization, locating the origin of the emotion as environmental rather than sensing the emergence of the affective state within themselves (Prentice & Murphy, 2022). Culturally, individuals of Asian ethnicity interpret somatic sensation as purely physiological, attributing somatic sensation to illness while individuals with Western cultural backgrounds have a higher tendency to interpret interoceptive information as emotional (Huggins et al., 2023; Grover & Ghosh, 2014).

Interoception, the body's internal sensory system, plays a foundational role in shaping core affective states, informing sense of self, and influencing emotional experience. Dysfunctions in interoception are linked to a range of mental health conditions, including anxiety, depression, and trauma. This section has explored interoception in depth to provide a clear understanding of the mechanisms and therapeutic relevance of interoception and and to introduce afunctional framework for integrating somatic experience into therapeutic practice.

Neuroception: The Sensory System of Safety

The term safety, in common usage, alludes to being safe from physical, emotional or systemic harm. It describes an individual's relationship to their environment. It also describes a feeling, as in "I feel safe", which is the component of safety acknowledged by embodied cognition theory. Embodied safety represents a subjective felt sense within the body, which does not always align with the actual, objective safety of the individual. Felt safety can be experienced as a sense of calmness, openness, or relaxation in the body. Polyvagal theory focuses on *neurophysiological states* of felt safety or danger. These states are activated by the ANS in

response to interoceptive and environmental cues. Like other body-based processes, polyvagal states are autonomic and often nonconscious.

Porges (2021), the founder of polyvagal theory, identifies three autonomic states which have evolved as adaptive responses to perceived threat. The first state, the social engagement state, is the most recently evolved state. The neural circuitry of this state developed as mammals began to optimize survival through cooperative activity and communication. The second autonomic state of mobilization, or fight or flight, relies on an older response circuitry that evolved in reptiles. The most ancient autonomic state delineated by Porges is referred to as immobilization or freeze state (Porges, 2021). Each of the three states has a unique neurophysiological pattern which prepares the body to respond to threat. The social engagement state is the body's adaptive default state. If threat is detected, the social engagement state initiates automatic behaviours that motivate connection with other individuals. If physiological signals of empathy and calm are received, the individual's ANS returns to its adaptive state. When a perceived threat remains unmitigated, then the mobilization circuitry is activated, followed by the immobilization (freeze) state (Porges, 2022).

The social engagement state (SES) represents the default state for a functionally adaptive ANS. This is the state where the body's homeostatic processes are primed to optimize higher-level functions like growth and restoration (Porges, 2022). The SES supports the physiological systems of learning and creativity and activates the neural circuitry of cooperation and social connection (Porges, 2022). In the therapeutic context, when a client's ANS is operating in social engagement state the client is able to be co-regulated by the therapist. The therapist can assist in downregulating maladaptive emotional responses through social safety cues such as posture, tone

of voice, and gaze (Schore, 2014)). Porges emphasizes the evolutionary importance of the social engagement state in the following statement: “Feelings of safety reflect a core fundamental process that has enabled humans to survive through the opportunistic features of trusting social engagements that have co-regulatory capacities to mitigate metabolically costly defense reactions” (Porges, 2022, p. 1). The social engagement state permits the utilization of social connection to generate a neurobiological state of safety (Porges, 2022). Clients who have experienced trauma often have ANS’s that are permanently set to a defensive state and therefore they are unresponsive to cues of safety (Porges, 2022). Because autonomic states and cognitive perception do not necessarily align, a client may be able to cognitively determine that they are safe, while their ANS continues to be stuck in an autonomic state of mobilization or freeze.

Architecture and Function of Neuroception. Neuroception is akin to the individual’s home security system. This body-based processing system constantly scans the environment for threat and initiates ANS response when threat is detected. The afferent signals utilized by neuroception originate within the interoceptive system (Porges, 2022). These signals include visceromotor signals originating in the body’s internal organs, homeostatic rhythms (i.e., heart rate, blood pressure), and somatosensory information. External cues such as facial expression, vocal tone and prosody, converge with interoceptive information to inform neuroceptive assessment of safety. If there is no significant threat detected, the ANS defaults to the social engagement state which triggers decreased heart rate variability. The heart rate slows, sensitivity to potential threat cues is dampened, and fight/flight responses are inhibited (Porges, 2007). These physiological changes are caused by the activation of the ventral vagal complex, often referred to as the “vagal brake” because defensive response is “braked” by the social engagement

state (Porges, 1995). An individual in the social engagement state has a regulated autonomic nervous system and is able to respond to potential threat cues in an adaptive, flexible way which integrates environmental and social context. The individual's physiology is primed to apprehend and respond to social engagement behaviours for co-regulation (Porges, 2021). When the social engagement system fails to mitigate perceived threat cues, the individual shifts out of social engagement into the mobilization state. This transition is triggered by the disengagement of the vagal brake (Porges, 2007). Mobilization state utilizes the neural circuitry of the sympathetic nervous system. With the vagal break released, heart rate variability increases which results in increased heart rate, higher sensitivity to threat cues and more intense physiological responses to threat. The sympathetic nervous system primes the body for fight or flight. The final autonomic state engaged, if social engagement and mobilization do not adequately address perceived threat, is the immobilization or freeze state. This state relies on the dorsal vagal circuitry of the parasympathetic nervous system. Immobilization state triggers rapid decreases in heart and respiration rate which leads to feigning death in animals. In humans, the immobilization state can lead to fainting, dissociation, or behavioural collapse (Porges, 2017; Porges, 2022).

Porges states, "In [the] hierarchy of adaptive responses, the newest social engagement circuit is used first; if that circuit fails to provide safety, the [phylogenetically] older circuits are recruited sequentially" (Porges, 2022, "Hierarchy of adaptive responses" section). The older threat response circuits of mobilization and immobilization recruit more ancient neural circuitry and are less flexible and adaptive than the newest, mammalian social engagement circuitry. The activation of autonomic states and the regression from newer to older autonomic states is nonconscious. Porges clearly identifies the superior influence of autonomic states over cognitive

intention in the following statement: “Intentional self-regulation efforts originating in the cortex are frequently ineffective in downregulating survival driven reactions to threat, because the defensive response is being driven by…the lower, more ancient brain structures” (Porges, 2022, “Autonomic state as an intervening variable” section). Porges adds that the social engagement system is efficient in responding to moderate threats, but that it is difficult to access when the ANS has engaged the more ancient defensive states.

Essentially, polyvagal theory proposes that human relationship to self and to the environment is modulated by autonomic states. At a given moment, an individual is hypothesized to be either in the social engagement state or an autonomic defensive state. Individuals whose life conditions have enabled them to develop adaptive nervous system regulation operate primarily in the social engagement state. However, trauma and chronic stress can reset an individual’s ANS to a persistent defensive state (Hagenaars et al., 2014). This means that the body is no longer operating in a physiological state that promotes social engagement and connection, learning, and growth. Instead, the body is stuck in an autonomic defense state which is metabolically costly and undermines the influence of cognitive intention (Porges, 2022).

A core principle of polyvagal theory is that the individual’s autonomic state is a primary modulator of perception, emotion, cognition and behavior. It mediates “interpretation of contextual cues and shape[s] our reactions. … depending on the individual’s autonomic state, the same contextual cues and challenges may result in different behavioral, cognitive, and physiological reactions” (Porges, 2022, “Autonomic state as an intervening variable” section). A specific example of this is auditory physiology. In the social engagement state, the middle ear muscles tighten which enhances sensitivity to the higher-frequency voice tones of a co-

regulatory caregiver. When the nervous system shifts into a mobilization fight-or-flight state, the middle ear muscles relax, enhancing detection of lower-frequency sounds, such as those associated with predators (Porges, 2021). The reorientation of the middle ear muscles from safety to danger cues is one of the multiple ways body-based processing affects perception through physiological adjustments.

Therapeutic work with autonomic states prioritizes somatic strategies that promote a felt sense of safety. Because neuroception occurs nonconsciously, individuals are often unaware of the event or stimuli in the environment that trigger an autonomic response. However, they are usually aware of the emotional and physiological changes that accompany a shift in autonomic state (Porges, 202) The activation of defensive states can be accompanied by intense emotions of fear or anger, as well as disturbing somatic sensation like pounding heart, or sweating. Without the ability to consciously recognize environmental triggers, an individual can end up feeling overwhelmed and out of control. Clients with PTSD regularly experience defensive automatic states without awareness of what triggers them, which can become exhausting and debilitating (Price & Hooven, 2018). A polyvagal lens would suggest that therapists prioritize strengthening the client's vagal brake through a co-regulatory therapeutic alliance. Essentially, this means supporting the client in shifting from a defensive autonomic state back to the social engagement state. Tables 4 and 5 in section three provide strategies that help clients who are experiencing ANS arousal reorient themselves to the present and create separation between themselves and the somatic sensation they are experiencing. These strategies reduce ANS arousal, shifting the client back towards a social engagement state. In addition, co-regulation by an attuned therapist over the course of several sessions will tend to strengthen the client's vagal break and assist in

developing adaptive response to somatic cues of safety in the body and in relationship.(See the sections “Attunement Strategies” and “Facilitating Co-regulation in the Therapeutic Dyad**”** chapter three).

Summary: The Role of Body-Based Processing in Embodied Psychotherapy

This chapter challenges the cognitive paradigm that separates mind and body, introducing embodied cognition as a framework in which thought, emotion, and action emerge from systemic interaction between the body, brain, environment, and social context. Rather than treating the mind as a processor of abstract thought, embodied cognition posits that physiological experience is foundational to cognition, shaping perception, emotional regulation, and behavior. Thus, embodied psychotherapy repositions the body not as irrelevant to mental life, but as a primary access point for therapeutic change. Two foundational body-based processing systems, interoception and neuroception, are explored in detail. Interoception is the internal sensory system that monitors homeostasis, leading to the generation of affective states and a stable sense of self. Neuroception, a concept from polyvagal theory, describes the nonconscious detection of safety or threat via both internal bodily cues and external social signals, such as facial expressions and vocal prosody. Interoception and neuroception are intertwined but also have specific functions and unique neural architectures. Both contribute to core affect, emotional regulation, and the client’s ability to engage socially and therapeutically.

Chapter two argues that body-based processing issues underlie many forms of mental distress. Dysfunctions in interoception are linked to depression, anxiety, and trauma. They contribute to emotional dysregulation, negative perceptual biases, and difficulties with affective awareness. Because body-based processing dysfunctions often operate outside of conscious

awareness, they can be difficult to address through cognitive strategies alone. Cognitive interventions are frequently ineffective without the integration of an embodied psychotherapeutic approach.

This chapter critiques the DSM diagnostic approach for treating mental disorders as discrete, symptom-based categories requiring standardized treatments. The transdiagnostic, process-based approach is suggested as an alternative because it recognizes the common body-based dysfunctions that underlie mental disorders. By addressing physiological dysregulation, rather than merely treating symptom patterns, embodied psychotherapy offers a more holistic, individualized path to healing. In essence, chapter two acknowledges the critical importance of recognizing and working with body-based processing. Therapists can support clients in accessing, tolerating, and integrating bodily sensations, helping them to shift autonomic states, to regulate emotion, and to develop a coherent sense of self. Working with somatic therapy strategies expands the therapeutic arena beyond just cognition, offering therapists tools that are effective in treating trauma and other complex mental health conditions.

Chapter 3: Introducing Embodied Psychotherapy into Therapeutic Practice

Chapter three is intended for therapists who are curious about integrating an embodied psychotherapeutic orientation into their practice. It provides basic frameworks and strategies appropriate for therapists who are new to somatic therapy. An experiential description of how somatic therapy strategies might be used in session is also included. While the broader field of embodied psychotherapy includes modalities such as dance therapy, EMDR, and Mindfulness Based Stress Reduction, chapter three draws from somatic therapy techniques. Originally developed to address complex trauma, somatic therapy offers a trauma-informed, body-based approach that effectively addresses the treatment gaps in cognitive-based therapies (Pietrzak et al., 2018; van de Kamp, 2023; van de Kamp, 2024; Rosendahl et al., 2021). Somatic therapy is possibly the most well established and widely researched modality within the field of embodied psychotherapy.

Somatic Therapy: A Trauma-informed Approach

The somatic strategies outlined in this section increase positive client outcomes when used as a primary or secondary approach in conjunction with cognitive-based therapies. The strategies are appropriate for clients with psychological distress across the spectrum ranging from anxiety to grief to chronic stress. When working with clients who have sustained trauma, somatic strategies are not optional, they are integral to a trauma-informed approach. According to Levine (2019), if a therapist is unaware of body-based processing mechanisms that establish physiological safety or cause physiological overwhelm, they are at risk of amplifying trauma patterns or retriggering trauma in clients.

Peter Levine's (2019) research emphasizes that trauma does not automatically result from experiencing traumatic events or conditions. Levine and other practitioners in the field of trauma agree that trauma correlates with the presence or lack of protective factors at the time of the distressful event that insulate the individual. These include the individual's physiological capacity to respond to stress at the time of the event, prior traumas that may have already been imprinted on the ANS, and the amount of external support an individual has at the time of the trauma (Levine, 2010). It can be beneficial for the client, and for case conceptualization, to determine whether the client has sustained one of the clinically defined traumas listed below or whether the client is simply using the term as a general descriptor for psychological hardship. Understanding which type of trauma the client has experienced informs which treatment strategies may be most effective for the client. In this paper, trauma specifically refers to:

- Early relational trauma (ERT) - occurs when a child is the victim of abuse or neglect from the same caregiver whom they turn to for comfort and attachment. ERT critically impairs the developing neurological architecture of a child's autonomic nervous system. This results in ongoing challenges with attachment, emotional regulation, dissociation and stable sense of self (Classen et al., 2021; Hogg et al., 2023).
- Chronic relational trauma (CRT) - occurs when an individual experiences persistent threat in a relationship with another person, a group, or a culture. The individual believes that they are unable to effectively protect themselves against the threat. CRT occurs at a stage of maturation after the autonomic nervous system has developed, and attachment mechanisms have formed. CRT can be experienced in emotionally, physically or sexually

abusive or neglectful personal relationships, in bullying or harassment at the workplace, or from cultural oppression of non-dominant groups (Ogden, 2021; Olivine, 2022).

- Big T trauma - occurs in response to a significant event that threatens an individual's life or their emotional or physical security. Significant events include natural disasters, an accident, or assault. Big T trauma can result in feelings of helplessness and general lack of control in life post-event. Individuals often use avoidance to minimize distress associated with reminders of the event. Avoidance behaviours as well as distress can interfere with daily functioning (Barbash, 2017).

Trauma significantly impacts physiological responses to the environment, shaping cognition and behavior. The type of trauma experienced by an individual informs the somatic strategies most appropriate to a client (Ogden, 2021). Early relational trauma (ERT) has a particularly complex and long-term effect on interoception and neuroception. When infants are exposed to neglectful or abusive caregivers, they are deprived of early co-regulation experiences that support the development of neural pathways essential for emotional regulation (Schore, 2002; Wagner, 2015). ERT also impedes the development of adaptive autonomic nervous system to environmental stress. Even if there is no immediate environmental threat, individuals frequently find it difficult to activate “rest and connect” state or, in polyvagal terms, the social engagement system (Porges, 2020). This state is vital for emotional processing and adaptive stress response, as well as social connection (Classen et al., 2021).

The cumulative effect of ERT is the development of physiological and emotional patterns associated with insecure attachment (Classen et al., 2021; Hogg et al., 2023; Pearlman & Curtois, 2005). As adults, emotional dysregulation and lack of capacity to maintain the social engagement

state interfere with an individual's capacity to foster relationships that feel safe, secure and stable. Often, personal relationships "lead to additional interpersonal damage, including abandonment and loss, intensifying the mistrust of others while frustrating the need for connection and support that is so important to human development" (Pearlman & Courtois, 2005, p. 450). Cycles of unstable and harmful relationships further reinforce cognitive distortions associated with ERT, related to self-worth, value to others, and the motivations of others (Schore, 2022; Wagner, 2015) Research suggests that the common factor in borderline personality disorder, dissociative disorders, PTSD, mood disorders, and somatic disorders is body-based processing dysfunction arising from trauma (McKay et al., 2021; Ogden et al., 2006; van der Kolk, 2014).

While both CRT and Big T trauma can lead to disruptions in body-based processing similar to those seen in ERT, there is an important difference. Individuals with CRT or Big T trauma may have access to secure attachment experiences and a more functional social engagement system that is unavailable to individuals with ERT. Clients with a degree of access to these mechanisms tend to have greater capacity to engage in the therapeutic alliance, which is essential for healing trauma. A sense of relational safety enables co-regulation with the therapist, supporting emotional regulation and introducing new physiological patterns of relational safety (Ruiz-Aranda et al., 2021). Essentially, the client begins to experience the felt sense of being safe, both in their embodied selves, and with others.

Imagine what it might be like to inhabit a body that acts and feels as if it's under constant threat, regardless of whether any real environmental threat exists. Clients with trauma develop neuroception that is highly sensitized to danger cues in the environment, and which frequently

exclude cues of safety (Fisher, 2019). Individuals may feel "crazy" and invalidated by others as neuroceptive cues beyond their conscious awareness trigger intense emotional and physiological responses that appear random. To cope, individuals frequently attempt to avoid thoughts, emotions, and situations that may potentially trigger dysregulation (Fisher, 2019). For many survivors of trauma, dysregulation is made more challenging by a lack of receptivity to co-regulation or to calming through adaptive social engagement behaviours (Classen et al., 2021). Trauma survivors report not feeling safe in their bodies. Many also observe a lack of being in a body at all (Classen et al., 2021).

Embodied Empathy and Relational Safety

In the context of working with trauma, the primary outcome of somatic therapy is to build an experience of relational safety and co-regulation between the client and therapist, and to establish a felt sense of safety within the client. The therapeutic alliance functions as the safe container necessary for healing from trauma (Schore, 2014). Studies indicate that the quality of the therapeutic alliance is in fact the most significant common factor determining positive client outcome (Wampold, 2015). In other words, optimal healing occurs within the context of relationship. Effective therapeutic relationships are generally understood to require empathy, positive regard, and genuineness on the part of the therapist (Flückiger et al., 2020). Embodied psychotherapy deepens the concept of empathy from Rogerian positive regard to a bodily process of attunement by the therapist, here termed "embodied empathy." The APA Presidential Task Force on Evidence-Based Practice captures this conceptual shift in the following statement. "Central to… forming a therapeutic relationship [is] encoding and decoding verbal and nonverbal responses… and responding empathetically to the patient's explicit and implicit

experiences and concerns" (Schore, 2014, p. 388). Notably, the APA's statement draws attention to the implicit, body-based processes at play in the therapeutic relationship including non-verbal communication and empathetic relating with the client's internal emotional, somatic experiences.

To make sense of what embodied empathy might look like in the therapeutic context, it is helpful to identify the two information streams present in relational interactions. The left brain integrates meaning from language-based communication, constructing conscious narratives and rationally organizing external stimuli. Cognitive therapies focus on the psychology of the left brain. Embodied therapies place additional emphasis on right-brain processes. As mentioned in chapter one, the right-brain interprets relational and emotional information such as, "Am I safe?", and "Am I valued?" The right-brain evaluates moment to moment safety by interpreting implicit, non-verbal signals like body posture, facial expression, and vocal tone (Schore, 2022). The client's right brain reads safety cues from the therapist's non-verbal signals during the session. Similarly, the therapist's right brain interprets safety cues from the client's non-verbal expressions. An attuned therapist has built the capacity to monitor her internal response to the client's non-verbal communication while clients remain largely unaware of their right-brain processing. This nonconscious, right-brain processing exerts significant influence on the client's left-brain narratives, motivation and behavioural choices.

Embodied empathy relies on right-brain-to-right-brain synchrony, as the therapist attunes to non-verbal physiological communication from the client's body (referred to in chapter one). These cues are received by the therapist's interoceptive system and translated into a physiological state that resonates with the client's physiological state. As the therapist's physiology is activated in a way that mirrors the client's, the therapist experiences an embodied

emotional understanding of the client's internal experience (Schore, 2022). In essence, right-brain to right-brain synchrony produces a kind of "mindsight" which allows the therapist to attune to a felt sense of the client's internal emotional experience (Siegel, 2009). Therapist attunement reframes empathy as an embodied process, where the therapist actively tunes into their own physiological cues and those of the client which amplifies awareness of the client's internal experience. Embodied empathy emphasizes an added dimension to empathy which arises from attuning to the nonverbal, affective, and autonomic resonance within the client-therapist dyad. This contrasts with the cognitive therapy lens where empathy is typically understood as the therapist's ability to intellectually understand the client's emotional state and respond with nonjudgmental compassion rooted in perspective taking.

Therapist Attunement: A Keystone of Embodied Empathy

Embodied empathy, like the humanistic concept of empathy, can be deeply reparative (Schore, 2022). The client's neuroceptive system registers the therapist's attunement via her non-verbal signals. This produces in the client a sense of not just being listened to, but being "felt" which is profoundly stabilizing for the ANS and interpreted by the body as safety. Over time, the right-brain to right-brain synchrony of the client-therapist dyad creates the necessary conditions for the client to experience co-regulation and to construct an experience of earned attachment (Schore, 2022; Wagner, 2015).

Attunement to another individual relies primarily on autonomic nonconscious processes. However, it is possible to amplify one's capacity for attunement with practice (Schore, 2014). Attunement naturally arises in the dyadic container of therapy, and conscious use of attunement by the therapist optimizes treatment effectiveness. The strategies presented in *Appendix A*

provide an accessible point of entry for therapists interested in exploring the benefits of attunement in their practice."

Table 1

Attunement Strategies

Foundational Attunement Skill Set:
• notice and interpret bodily based nonverbal communications of client • consciously utilize one's own bodily based nonverbal communications • track one's own internal experience on a moment-to-moment basis • register slight modulations in client's expression and emotion • regulate one's own and client's affect
Strategies for Attunement:
1. Notice when your focus is highly attuned to the client's cognitive content. Soften and broaden focus to include emotional tone, posture and vocal rhythm of client, and your own present moment felt sense. **2.** Practice attuning yourself. Begin to build the habit of checking in with your own physiological sensations (i.e. sensations of tension, stress, fear, calmness) and your emotional resonance. **3.** Maintain awareness of the neuroceptive cues being expressed by your body-based communication. It may be helpful to ask yourself, "What does calm and socially

feel like for me?" If you are in a calm, social engagement state, it is likely that your client will receive safety cues from your voice tone and body language.

4. Know your ANS defensive states. When you are triggered, do you move into fight/flight or freeze? In sessions, notice if you are moving into an ANS defensive state. Defensive states are received by the client's neuroception and can activate their own defensive states. For example, if the therapist moves into emotional disengagement (freeze) in response to a thought that she isn't being effective, or a neuroceptive signal of danger, her face will assume a flatter aspect and the prosody of her voice will change. The client's neuroception will perceive the shift and interpret this as danger because the attachment figure (therapist) is no longer emotionally accessible.
5. Notice behaviours that cause your client's ANS to shift maladaptively into defensive state. For example, your physical proximity to client, body postures like leaning forward or relaxing back, or environmental stimuli (sounds, light conditions in the room) that may trigger ANS response.
6. On a regular basis, reflect on personal patterns of ANS defence that may be arising for you related to certain client behaviours, tone of voice, or body language. Explore responding to ANS arousal with the somatic strategies for breath awareness and dual awareness listed in tables 1 and 3. Practice utilizing these techniques outside of sessions so they are familiar enough to activate in session.

(Schore, 2014; Schore, 2022; Wagner, 2015)

Co-regulating Safety in the Attuned Client-Therapist Dyad

Co-regulatory experiences with the therapist support development of the psychic structures in the client's right-brain which are key to attachment, stress tolerance, emotional regulation and empathy (Schore, 2014). Co-creating healing co-regulatory experiences is dependent on the therapist's skills in *pacing* and *tracking*. The therapist tracks or observes the client's non-verbal cues that indicate shifts between ANS regulation and dysregulation. Tracking signs of ANS arousal helps the therapist pace somatic interventions safely. Attuned pacing supports the client in deepening awareness of somatic experience while offering pause to reestablish the internal base of physiological safety when necessary (Schlief, 2023).

Over time, the therapist's consistent attunement to the client's emotional experience helps rebuild and strengthen the client's right-brain functions. As noted in chapter one, regulation theory identifies the "formation of an emotion-communicating and regulating bond" within the client-therapist dyad as the primary mechanism of change (Schore, 2022, p. 6). The theory suggests that heightened affective moments during sessions offer the greatest potential for change. These moments often mirror the infant experience of dysregulation and the seeking of co-regulation from a caregiver. For the client, moments of heightened affect can be rife with relational disconnection and insecurity. When the therapist responds to the client with social engagement, they offer cues of safety that help the client re-establish relational connection and a physiological felt sense of safety. Such moments carry powerful reparative potential, as they frequently represent reenactments of early attachment dysfunction, which can be met with attuned, co-regulating response (Schore, 2022; Wagner, 2015).

Facilitating Co-regulation in the Therapeutic Dyad. The process of co-regulation can be thought of as a choreography of dyadic connection, disconnection, and reconnection. Typically, the sequence of co-regulation is as follows:

1. The therapist creates a dyadic container of safety through anchoring into her social engagement system. She attunes to the client's nonverbal communications and notices when the client is shifting into a state of dysregulation.
2. A client in a dysregulated, defensive state needs support in experiencing social engagement state through co-regulation. The therapist's role is to provide the path back to connection for the client. To lead clients back to connection, the therapist meets the client in a similar physiological state, mirroring body language and vocal qualities, but without joining them in distress. The therapist's capacity to co-regulate the client depends on her capacity to remain in the social engagement state (Wagner, 2015).
3. The choreography of co-regulation can be emotionally intense for both the therapist and client because moments of relational disconnection activate defensive ANS states which are essentially life or death responses in the body. Over time, it can feel exhausting for a therapist to continue to receive and contain a client's ANS arousal. It can also be distressing for the therapist if she feels unable to build moments of connection and security with the client. In addition, clients who begin to feel secure attachment with the therapist may feel the need to test the reliability of the relationship by behaviours aimed at alienating the therapist (Wagner, 2015). When dynamics within the dyad cause unresolved stress for the therapist over the long term, the therapist's ANS may enter a freeze/shut down state which is experienced as burnout (Wagner, 2015). A therapist's

primary tool in co-regulating clients and in preventing burnout is regulating her own ANS. An important component of self-care for therapists to consider when working somatically is integrating practices that support personal ANS regulation.

Establishing Safety in the Body: Somatic Strategies

While the relational safety provided by embodied attunement and co-regulation is a keystone of therapeutic change, felt safety within the body is also foundational. It represents the secure inner base for self-regulation and the seat of a cohesive sense of self. As previously mentioned, mental health conditions like anxiety, depression and PTSD, as well as trauma, are often associated with an upregulated or downregulated sensitivity to interoceptive and neuroceptive cues. Dysregulation in these processing systems results in inappropriate physiological responses to the environment such as intense emotion, dissociation from the body, and distressing physiological symptoms like palpating heart or sweating (Heim et al., 2023). These seemingly inexplicable and unpredictable episodes leave individuals feeling unsafe in their bodies. The goal of teaching somatic strategies is to build client capacity to engage with their internal experience without becoming overwhelmed. By offering somatic tools, therapists support clients in staying present with bodily sensations so they can learn to trust both their inner experience and connection with others (Classen et al., 2021)

Somatic Strategies Tool Box For Beginners

The following section provides a selection of somatic pathways that assist with establishing regulation and safety in the client's body. The five tables in the appendix include breath regulation and awareness, mindfulness, dual awareness, regulation and body orientation,

and resourcing. Each of the tables corresponds to a distinct therapeutic pathway for assisting the client in building somatic safety.

Table 2

Breath Regulation and Awareness: Orienting to the Body /Building Awareness of Body Sensation

Benefit to client: Decreases ANS fight/flight activation and cues the social engagement system to support emotional regulation. Can be used as a regular practice or as an immediate response to an emotional trigger.

Somatic Strategy	Considerations
1. Focus on (become aware) of the breath without trying to change it. Cues: notice if breath is shallow or full, feel of air through nostrils, how air expands chest/belly; reiterate that breath pattern is the body's wise response and need not be changed.	Focus on the breath can activate an ANS trauma response. Let clients know they can stop anytime.
2. Extending the exhale. Offer 4 count inhale and 6–8 count exhale depending on client comfort; leverages ANS toward calm and social engagement.	May activate freeze defensive response in clients whose ANS defensive state tends to be freeze.

3. Box Breath: 4 count inhale, 4 count pause, 4 count exhale, 4 count pause; leverages ANS toward calm and social engagement.	Therapist should ask how the client experienced the exercise. Breath focus may feel uncomfortable or trigger ANS defensive activation; alternatives should be offered if discomfort or panic occurs.
4. Alternate nostril breathing. Yoga technique activating ANS social engagement, improving focus, reducing anxiety.	Same considerations as above.

(Schlief, 2023; Rothberg, 2014)

Table 3

Mindfulness Practice

Benefit to the client: Builds tolerance for body sensation and emotion and reduces avoidance of somatic sensation.

Client Psychoeducation
• Direct attentional focus to present-moment experience in a curious, non-judgmental way. • The goal of mindfulness is not relaxation. Mindfulness helps clients reconnect with body sensation and emotion in a way that feels tolerable and integrative.
Considerations

Mindfulness practice may activate moments of heightened ANS arousal, emotion or memories. The therapist should offer opportunity to explore moments of heightened arousal. This allows opportunity to build mindsight around the client's physiological patterns of distress and encourages integration of emotion and memories.
Somatic Strategies
1. Mindfulness practice may activate moments of heightened ANS arousal, emotion or memories. The therapist should offer opportunity to explore moments of heightened arousal. This allows opportunity to build mindsight around the client's physiological patterns of distress and encourages integration of emotion and memories. **2.** Body Scan - guided meditation which client may eventually do independently. Slow, focused scanning of the body to observe the presence, location and intensity of sensation such as tension, energy, or fatigue. Encourage client to scan for both pleasant and uncomfortable sensation. Eventually, the goal is to suspend judgement and to interpret sensation as just sensation. **3.** Progressive muscle relaxation. Guided meditation which the client may eventually do independently. It involves therapist guided sequential tensing and releasing of muscle groups to promote discharge of physical energy and to increase body awareness.

(Schlief, 2023; Rothberg, 2014)

Table 4

Dual Awareness

Benefit to the client: Supports emotional regulation when a client's ANS has shifted into a defensive state.

How Does Dual Awareness Work?
• Therapist supports client in both attending to sensations in the body and orienting to the safety of the present moment. • Clients build capacity to decouple distressing body sensations from the narrative associated with the sensation. For example, a client may experience a tightness in the thr**o**at when they advocate for themselves. This may be linked to early experiences of parental punishment in response to speaking up for oneself. • With therapist support, dual awareness allows the client to feel sensation, to notice the safety of the present moment, and to uncouple the sensation in the throat from the story that punishment is impending (Fisher, 2019). Direct attentional focus to present-moment experience in a curious, non-judgmental way. • The goal of mindfulness is not relaxation. Mindfulness helps clients reconnect with body sensation and emotion in a way that feels tolerable and integrative.
Considerations
Dual awareness sensitizes clients to the sensations that accompany emotions and memories. Because trauma survivors often numb or dissociate from the body as a defensive mechanism, encouraging awareness of body sensation may retrigger present moment

reexperiencing of trauma. To reduce client risk, training in pacing, titration and pendulation are recommended before attempting dual awareness strategies.
Somatic Strategies
1. Slowing down and tracking sensation - clients are encouraged to "hover above" uncomfortable physiological sensations or impulses, tracking their emergence and observing their presence rather than becoming fused with the narrative attached to them. (Fisher, 2019, p. 160). This assists the client in building a cognitive map of physiological sensation or body postures that are linked to emotion or memories and which often hold stuck trauma.

(Fisher, 2019)

Table 5

Somatic Strategies for Self-Regulation and Body Orientation

Benefit to the client: Supports emotional and ANS regulation by reorienting the client to the present moment when they are in an ANS defensive response

Psychoeducation
• Brings awareness to the present moment using physical or sensory input. • Appropriate intervention for racing thoughts, anxiety, transitioning from ANS arousal back to social engagement, dissociation
Considerations

Strategies will resonate differently with different clients. It is important to check in with the client about how they experience the grounding strategy and to offer an alternative strategy if necessary. A trauma-informed approach emphasizes asking for consent and using attuned pacing for these exercises.
Somatic Strategies
1. 5-4-3-2-1 Exercise: Name 5 things you can see, 4 you can touch, 3 you can hear, 2 you can smell, and 1 you can taste. Appropriate for use in session and independently to help the client self-regulate. **2.** Feet on the ground: Prompt client to feel their feet firmly on the ground, feeling the support of the ground beneath them. Therapist can also prompt client to feel the seat beneath them. Appropriate for use in session and independently to help the client self-regulate. **3.** Pair common stimuli with an elongated breath cycle and a calming self-talk. For example, every time the client sees the fridge, or sees their pet, they can take one elongated inhale and exhale with awareness, and say out loud, "I am safe". The stimuli and message of safety should be identified in collaboration with the client. **4.** Humming or vocalizing. Activates the vagal brake and supports ANS regulation.

(Schlief, 2023; Rothberg, 2014)

Table 6

Resourcing

Benefit to the client: Supports the client in building access to a sense of safety within their own body.

How Does Resourcing Work?
• Therapist supports the client in identifying internal physiological states referred to as resources that embody a felt sense of safety.
Considerations
Use trauma-informed approach by being explicit in explaining the strategy and asking client consent, then checking in on the client's experience of the strategy
Somatic Strategies
1. Imaginal Resourcing - The therapist supports the client in imagining or recalling safe people, places, or scenarios that evoke a felt sense of safety. The client is prompted to notice the physiological sensations that accompany this embodied experience of safety. Over time, the client learns to intentionally activate these positive physiological and emotional states by imagining the safe person, place or scenario. This becomes a resource that the client can utilize for self-regulation both in and out of session. **2.** Postural resourcing - The therapist supports the client in identifying certain body postures or movements that activate a felt sense of safety. For example, punching the air may trigger an embodied sense of safety and strength. Alternatively, it may release a

> discharge of tension. In both cases, the movement allows the client's ANS to shift toward regulation.

(Schlief, 2023)

These somatic strategies aim to provide the client with novel experiences of felt safety. They are designed to expand the client's tolerance for interoceptive and neuroceptive cues without triggering overwhelm. Practicing these strategies can help clients access the profoundly regulating sense of an internal secure base within their own bodies. Somatic strategies are initially practiced within the container of an attuned client-therapist dyad. They are introduced at an appropriate pace with client consent. Over time, these strategies rebuild trust in bodily signals and strengthen the client's capacity for emotional and self-regulation. In the early phases of therapy, the attuned therapist employs these somatic strategies as a framework for co-regulating the client.

Co-regulation by the therapist from within the therapeutic container of embodied empathy can eventually provide the client with a reparative experience of *earned secure attachment* (Schore, 2001; Jacobsen et al., 2024).

Embodied psychotherapy in Action: An Experiential Perspective on Emotional Regulation

Body-based processing has implications for the way in which a therapist conceptualizes and works with emotion. *Constructed emotion theory* acknowledges the influence of body-based processing in emotional experience, suggesting that emotions are an integration of interoceptive data with predictive processing, cultural knowledge and environmental context (Barrett, 2017). The way in which a therapist understands the mechanism of emotion will guide their strategies for intervention. The theory of constructed emotion positions the body as a critical component in

the generation of emotions, implying that processing of emotions would involve awareness of the somatic imprint of emotion.

Working From the Somatic Lens: A Counsellor's Narrative

The following section is a narrative description of my somatic work with a particular client. It is not meant to be prescriptive or to suggest a standardized method of working somatically. It is meant to illustrate how somatic strategies can be woven into psychotherapeutic work, and the potential that somatic strategies offer to the client for insight generation and emotional processing. During my internship, I worked with a client who declared during her intake session that she was frustrated by questions that asked her to notice sensation in her body. Respecting her wishes, we used approaches that didn't involve somatic work. However, each time the client felt a strong emotion she said, "I *don't know what to do with this. What am I supposed to do with emotions*?" She was unable to think herself around an emotion. She couldn't work with emotion the way she worked with thought, through rational problem solving and interrogation. She couldn't make emotion go away by reasoning with it.

Some sessions in, when her frustration with emotion arose again, I asked the client if she would be interested in pausing and working with the emotion in a different way. She agreed. I offered a dual awareness strategy of allowing her awareness to just focus on what the sensation of anger felt like. She was willing to be curious about the physiological sensations that accompanied her emotion. She located where she felt the anger in her body. My sense is that the client was willing to explore a somatic approach at that time because of the trust that had developed in the therapeutic alliance. Immediately following the experience, I asked the client how it had felt for her to notice the sensation in her body. She said she was surprised because it

had reminded her of a distressing time when she was younger. I provided a bit of psychoeducation at that point, letting the client know that the way we experience a certain emotion in the body represents the activation of a repeated default pattern that our body developed at a younger age. If we pause to notice the feeling of an emotion, separating it from the current narrative, we are often reconnected to earlier memories of distressful events in childhood. The link to past, unresolved distress can frequently make emotions overwhelming, because they not only respond to a current event, but they activate the somatic experience of past distressful events. Exploring both the *somatic imprint* of the emotion, and the earlier childhood event leads to therapeutic change.

The client began to be open to experiencing her relationship with emotion in an embodied way. Rather than overwhelm and panic because she "couldn't control" her emotions by thought, she began to focus her attention on the experience of emotion as an internal sensation. In the process of paying attention, the client anchored herself into the present moment and into the experience of herself in her body. Engaging in emotion by moving toward its somatic sensation gave the client an alternative to battling emotion. She also negated the corollary wave of secondary emotion and negative self-talk that she usually experienced in response to emotion. Instead of suppressing the emotion, or amplifying her emotional arousal via negative self-talk, she was able to attune to it, which allowed her the opportunity to explore it. In addition, focusing on interoceptive sensation supported this client, who had anxiety, in nudging her parasympathetic nervous system toward rest and restoration (Price & Hooven, 2018).

As clients practice somatically attuning to their emotions, they become sensitized to the *somatic mapping* of emotion in their body. As previously mentioned, predictive processing

encodes physiological response patterns which are stored in subconscious emotional and procedural memory, while cognitive content is consciously accessible through autobiographical memory (Gentsch & Kuehn, 2022). When a client engages with memories or core beliefs, conscious cognitive content is activated along with the less perceptible emotional and physiological somatic map of the memory or belief. The somatic map of an emotion or core belief tends to remain consistent over time because of predictive processing.

For a therapist, working with the somatic imprint of an emotion, as opposed to the abstract memory of the emotional experience, shifts the client's focus away from their cognitive narrative of the event toward somatic sensations of the emotion. Focusing on a client's narrative can often obscure the root of the client's distress, which may be an uncomfortable relationship with emotions. If therapists remain aware of the somatic component of emotions, they have more options when working with emotional processing. Sometimes it will be of therapeutic benefit to explore the client's narrative, beliefs and perceptions of an emotional experience. In other cases, it will be more beneficial to support the client's sensitization to the somatic imprint of the emotion. The somatic imprint can act as a distinct container for the emotion so that the client can explore the discomfort and beliefs that arise when they feel the emotion.

To get a sense of how these two approaches might feel different for a client, simply think of a time when you felt scared and describe it. You can probably narrate the experience without significant autonomic nervous system arousal. The account may feel mostly cerebral. Cognitive expression of emotion allows the counsellor to work with beliefs and perceptions. Alternatively, if I ask you to imagine a recent experience of being angry, there is a good chance you will feel the sensation of anger activated in your body. In my experience, sensitizing the client to the

somatic imprint of their emotion provides opportunity for the client to experience the emotion as a physiological state that they can engage with, rather than something that happens to them because of an external event that they can't control. When the client can experience emotion as a physiological state, a separation emerges between their core self and the emotion. When the client can hold awareness of the somatic imprint of emotion as slightly separated from core self, it becomes possible to reduce reactivity to emotional states and to collaborate with clients to modulate and integrate emotion.

Working with the somatic imprint of a memory can also provide an avenue to activating early memories of stressful events that continue to cause psychological dysfunction or distress. When a client focuses on the somatic imprint of an emotion, it facilitates embodied recollection of younger, emotional experiences with the same somatic imprint. For example, if a client who is focusing on the somatic imprint of fear is asked if the sensation is familiar to them from when they were much younger, they are often able to easily connect with a childhood event. Because the somatic imprint of emotion remains consistent over time, the client is able to feel the emotion as if they were the child feeling the emotion. The counsellor can then facilitate a corrective experience for the client.

Somatic approaches, like cognitive-based approaches may not be accessible or helpful for all clients. If a client states a presenting concern related to emotional dysregulation or trauma, it is worthwhile to offer psychoeducation on somatic therapy because research shows that somatic therapy as an adjunctive treatment for these concerns is a more effective treatment than cognitive-based therapy alone. If a client has challenges feeling somatic sensation, and is interested in exploring a somatic approach, it can be effective to offer home-based practices such

as the mindfulness strategies provided in Table 3. These support the client in building awareness of somatic sensation.

Clinical Considerations for Somatic Practice

The somatic strategies discussed in chapter three are trauma informed and also appropriate for clients who have not been exposed to trauma. Many of the strategies are accessible for therapists who are just beginning to explore somatic techniques. Therapists can benefit from practicing these strategies themselves to gain a better understanding of the internal experience of using the strategies. Because many clients with trauma dissociate or numb body sensation as a defense mechanism, somatic strategies which sensitize clients to their bodily experience, can retrigger trauma. Prior training in somatic therapy is recommended when using somatic strategies for clients with trauma, especially knowledge of the core principles of pacing and tracking (Schlief, 2023). These principles ensure a client is re-exposed to psychologically distressful material incrementally to avoid an overwhelming ANS response or a retriggering of the trauma experience.

A therapeutic approach that integrates somatic therapy with cognitive therapy is more effective, and also more ethical. Because the client's thoughts, behaviours and emotions are generated by the interplay between body-based processing and cognitive processing, an effective therapeutic approach should address both. Relying solely on a somatic therapy lens risks ignoring the social-cultural context contributing to the client's psychological distress. For example, individuals who occupy a less privileged socio-economic location experience more frequent trauma and often experience racialized trauma. The social context of psychological distress is important to explore in treatment and recovery (Mutegi & Ngure, 2025). Working

from a purely somatic lens also fails to acknowledge the positionality of the therapist with respect to the client. Because the therapeutic alliance is so fundamental in creating a container of co-regulatory safety in somatic therapy, it is critical to be aware of social location within the client-therapist dyad. The integration of cognitive-based therapy with somatic therapy is essential for engaging the brain-based processes of cognition. Cognitive-based therapies address problematic narratives and cognitive distortions that can reinforce maladaptive body-based patterns (Lehrer, 2024).

Informed consent is an important consideration in somatic therapy because clients are being co-regulated by the therapist, a process which the client is mostly unable to perceive consciously. Psychoeducation regarding body-based processing should be provided so that the client understands somatic therapy's primary mechanism of change, which is not intuitive. The nature of right-brain to right-brain attunement is such that significant transference and countertransference arise during the therapeutic process (Schore, 2014). Therapists should be aware that these moments of disconnection or potential rupture are an important component of the client's relational healing process. The transference countertransference dynamic inherent in attuned co-regulation can exert a cumulative dysregulating effect on the therapist's ANS, potentially resulting in vicarious trauma or burnout. Notably, some studies indicate that a therapist who maintains attunement to their own body-based processes as well as their client's, lowers the risk of experiencing burn-out (Wolosky, 2022). It is beneficial for the therapist to make time for regular ANS practices that activate calming and social connection.

Given that there are relatively few randomized clinical trials that have tested the effectiveness of somatic therapy, therapists are forced to rely on their subjective evaluation of the

theoretical models that underpin embodied psychotherapy and the cumulative expertise of research practitioners in the field. As the neuroscience of embodied psychotherapy continues to evolve, therapists should ensure that they remain up to date with current research.

Conclusion

The body's role in autonomic nervous system regulation, emotional awareness, and a felt sense of safety highlights the value of integrating somatic approaches in clinical practice. Somatic strategies are crucial to healing trauma and they increase positive client outcomes when used as an adjunct to cognitive-based therapies. Somatic therapy supports right-brain to right-brain attunement within the therapeutic alliance, offering a corrective relational experience for clients with attachment wounds. These strategies increase client capacity to track interoceptive and neuroceptive signals, enhancing self-regulation and emotional regulation. Somatic approaches should be applied within a trauma-informed framework which is grounded in consent, attunement, and pacing. Chapter three provides examples of somatic strategies accessible for therapists new to somatic therapy. If the prospect of using somatic strategies with clients seems challenging, I invite you to practice some of these strategies for yourself. Notice how attuning to your bodily sensations and nervous system cues may alter your experience of emotion, your presence with your clients, and your resilience in tolerating stress.

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