

Mindfulness and Somatic Interoceptive Interventions: Impacts on Dissociation

by

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Abstract

This research explores the impact of mindfulness-based and somatic interoceptive interventions on dissociative symptoms in adults with a trauma history. Specifically, it examines the interaction between specific facets of interoception and dissociative symptoms, providing insight into intervention approaches for individual presentations. A thematic analysis of a literature review comprising 10 core articles was conducted, revealing significant themes and subthemes applicable to the use of these interventions with this population. While the findings indicate that these interventions have the potential to be effective, they also highlight significant gaps in the research, including a lack of cultural and gender diversity, which limits the generalizability of the findings. The study also includes an exploration of the clinical applications of the findings, including formal, general and ongoing assessment and treatment planning, as well as suggestions for integrating these findings into task-sharing frameworks to improve accessibility for high-risk and underserved populations. The research concludes with recommendations for further research questions that would improve understanding of specific applications of these findings.

Keywords: dissociation, interoception, mindfulness, somatic, trauma

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Mindfulness and Somatic Interoceptive Interventions: Impacts on Dissociation

Chapter One: Introduction

Background Information to the Study

This research explores the question: “How do mindfulness-based and somatic interoceptive interventions impact dissociative symptoms in adults with trauma histories?” through thematic analysis. Dissociation is a symptom in many trauma-related diagnoses, especially those linked to childhood trauma and cumulative trauma (Lynn et al., 2019; Millman et al., 2023; Schimmenti, 2018; Vancappel et al., 2024). Researchers often find correlations between interoceptive impairments, trauma, and dissociation, making this a potentially critical treatment avenue (Schäflein et al., 2018). Despite the emerging evidence on mindfulness-based and somatic interoceptive interventions (MSIIs), we currently know little about their impact on dissociation.

Dissociation is a psychobiological response that allows individuals to escape extreme pain or fear during and after traumatic events. Interoception refers to “the process by which the nervous system senses and integrates information about the inner state of the body” (Chen et al., 2021, p. 4; Schmitz et al., 2023). Clinicians often overlook these factors due to a lack of education in treating dissociation and a scholarly emphasis on approaches that are easier to research, such as cognitive-behavioural therapy.

Many factors influence this research question. Researchers link dissociative symptoms to deficits in mentalization, attachment insecurity, and environmental and social stressors (Duquette & Ainley, 2019; Rüfenacht et al., 2023). They find that attachment anxiety correlates with dissociative symptoms, interoceptive impairments, and childhood trauma (Farina & Imperatori, 2024; Ferraro & Taylor, 2021; Kong et al., 2017). Stress arising from health anxiety and reduced

social support during COVID-19 lockdowns, along with experiences of racial discrimination, shows similar correlations (Fani & Khalsa, 2022; Harb et al., 2023; Kolozsvári et al., 2023). This research investigates the gap in understanding how MSIs influence dissociation and interoception, presenting a promising avenue for potential treatment (Fung et al., 2022).

Research Problem Statement

Research Problem

This research aims to address the gaps in understanding and treating dissociative symptoms in individuals with a trauma history by evaluating the impact of MSIs. By promoting embodiment through accessible and adaptable interventions, this research aims to address the issues of limited treatment options and training for clinicians, improving culturally sensitive and individualized care.

History and Treatment of Dissociation

This research examines how MSIs impact dissociative symptoms in adults with trauma histories. Treating dissociation is challenging, as it is often linked to multiple comorbidities, complex trauma, and implicit trauma responses. Clinicians encounter additional difficulties due to limited self-awareness, avoidance-based coping strategies, complicated treatment planning, and challenges in establishing trust (Chien & Fung, 2022). Dissociative symptoms are frequently associated with risks of suicidality, self-harm, substance abuse, long-term inpatient treatment, and reduced interoceptive awareness (Schäflein et al., 2018). Many of these challenges and risks relate to aspects of interoception, such as self-regulation and bodily dissociation, making it crucial to deepen our understanding of the impact of these interventions on these aspects.

Research on interventions for dissociation is sparse (Fung et al., 2022). Many clinicians lack adequate training and often express skepticism about dissociative presentations, which

makes it challenging for them to diagnose and identify participants for research (Loewenstein, 2018). Furthermore, the historical emphasis on behaviour over internal experience, combined with the difficulty of quantifying dissociative symptoms due to their subjective nature, widens the gap in understanding dissociation (Purcell et al., 2024). Improving treatment options for individuals with dissociative symptoms is essential, and this research aims to improve understanding of these issues to provide direction for enhanced training, reduce skepticism through increased knowledge of dissociation, and further the development of effective interventions.

Embodied Experience in Treating Dissociation

MSIIs improve individualized treatment options with their adaptability. This adaptability plays a crucial role for individuals affected by intergenerational trauma, oppression, or discrimination, as it enables more culturally sensitive treatment options. Additionally, interoception, which is rooted in embodied experience, influences how individuals perceive their environment, shape their relationships, and understand social cognition and reality (González-Grandon et al., 2024). This research bridges the gap in trauma-focused treatment by deepening our understanding of body-based interventions and examining how engaging with embodied experience in psychotherapy may heal dissociative trauma survivors in ways that traditional cognitive or talk therapy approaches do not.

Research Question

The research question is, “How do mindfulness-based and somatic interoceptive interventions impact dissociative symptoms in adults with trauma histories?”

Rationale/Justification

Dissociative symptoms can contribute to functional and relational difficulties, lead to chronic medical conditions, increase reliance on social services, and increase victimization (Boyer et al., 2022). Numerous co-morbid diagnoses correlate with impaired interoception and emotion dysregulation, including borderline personality disorder (BPD), substance use disorder (SUD), attention-deficit/hyperactivity disorder (ADHD), post-traumatic stress disorder (PTSD), schizophrenia, eating disorders, and anxiety disorders (D'Andrea et al., 2022; Jakubczyk et al., 2020; Kutscheidt et al., 2019; Löffler et al., 2018; Nester et al., 2022; Nilsson et al., 2019; Quadt et al., 2018; Schmitz et al., 2021; Stewart et al., 2019). Research indicates that emotion regulation and interoceptive abilities influence each other, suggesting that improving interoception may reduce dysregulation and, consequently, decrease dissociative coping (Lynn et al., 2019; Schaan et al., 2019; Zamariola et al., 2019).

Interoceptive Interventions as Proactive and Flexible Approaches

Using MSIIIs proactively may help prevent some of the negative health impacts tied to dissociative symptoms. For example, the Community Resilience Model (CRM) acts as a sensory-focused program that enables diverse populations to increase their resilience through improved interoception (Grabbe et al., 2023). Proactive treatment requires less specialized training and increases accessibility, particularly for individuals from low socioeconomic backgrounds. This approach supports the ethical imperative for psychological researchers to contribute to societal development and well-being (Canadian Psychological Association [CPA], 2017, IV.20).

MSIIIs can also be utilized in various settings, increasing agency while promoting both collaborative and independent healing. Smith et al. (2021) use an online interoceptive intervention that reduces suicidal ideation. This example illustrates the potential to develop

accessible treatment options for high-risk and underserved populations, providing a significant justification for exploring this topic.

Interoceptive Interventions Across Culture and Demographics

Understanding how MSIs impact various cultures and demographics is essential. Interoception mediates dissociation linked to embodied trauma. Individuals who experience trauma related to their physicality—such as victims of sexual or gendered violence, racial minorities, or individuals with disabilities—may significantly benefit from this research. This also aligns with psychologists’ ethical duty to design research that helps vulnerable and diverse populations by increasing accessibility and ensuring cultural relevance (CPA, 2017, I.11 and II.18; Canadian Institutes of Health Research [CIHR] et al., 2022, Article 4.1). MSIs adhere to trauma-informed principles by establishing bodily safety, cultivating agency, and adapting to individual and cultural needs and differences (Parker & Johnson-Lawrence, 2022).

This research seeks to deepen our understanding of how interoception mediates and impacts dissociative symptoms, facilitating the development of tailored interventions for individualized treatment. Contributing to research in this area also provides clinicians with more educational opportunities to improve their competence in treating dissociation, potentially reducing negative public health implications and ensuring effective treatment.

Significance

This research aims to amplify our understanding of specific interoceptive facets. Examining how these facets correlate with comorbid diagnoses may encourage the development of interventions that target unique symptom clusters or diagnoses, ultimately leading to more effective treatments for specific presentations.

This research may also contribute to the development of unique approaches to MSIIIs. Several researchers incorporate exteroceptive enhancements to boost the efficacy of MSIIIs (Fani et al., 2022; Machorrinho et al., 2023). These innovations can drive the development of novel treatment strategies. By exploring these nuances, researchers increase understanding of the change mechanisms involved, which allows them to develop unique interventions and justifies future research. These approaches may facilitate the development of public health initiatives, improve treatment, strengthen relationships and family systems, improve physical health, reduce reliance on social services, and improve educational and career outcomes.

Overall, this research seeks to improve trauma-informed counselling for this population. Safety serves as the foundation of trauma-informed treatment, and MSIIIs seek to establish a felt sense of safety within individuals and their bodies (Parker & Johnson-Lawrence, 2022). This research may contribute to the development of training for clinicians, enabling them to improve their competence in treating dissociation by expanding their knowledge of these interventions.

Theoretical Framework

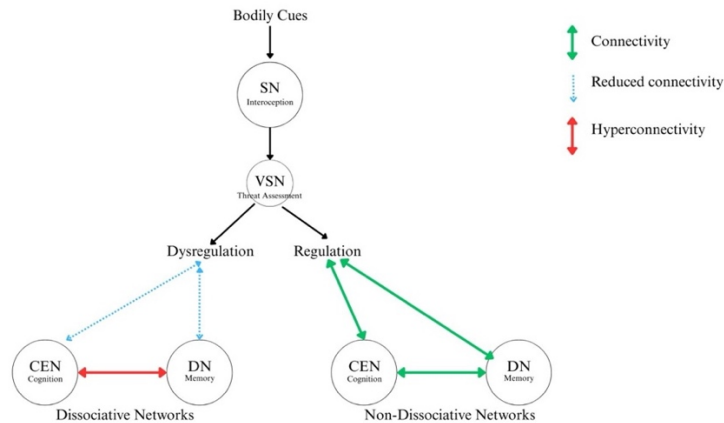
The Triple Network Model of Dissociation

This research uses a neurobiological theoretical framework to explore the research question by applying the Triple Network Model (TNM) of trauma-related dissociation (Lebois et al., 2022). The TNM describes how trauma-related dissociation involves changes in the connectivity of three brain networks—the salience network (SN), the right central executive network (rCEN), and the medial temporal subnetwork of the default network (DN).

MSIIIs may improve the accuracy of a component of the SN, the ventral salience network (VSN), which functions as a switchboard to determine whether interoceptive cues signal safety or threat. In individuals with trauma, the VSN is more likely to over-identify interoceptive cues

as threatening, activating the nervous system. Conversely, the rCEN is involved in cognition, and the DN is responsible for memory. Both the rCEN and DN show reduced connectivity to the SN and increased connectivity to each other in dissociative clients. This suggests that when the VSN consistently interprets cues as threatening, nervous system dysregulation might interfere with the connection between interoceptive signals and cognitive and memory networks, fragmenting the sense of self and contributing to dissociative symptoms (Beutler et al., 2022; Lebois et al., 2022). If MSIs can improve VSN accuracy, reducing chronic dysregulation, the connectivity among the three networks could also improve, potentially alleviating dissociative symptoms. Figure 1 provides a visual illustration of the alteration of the network function between dissociative and non-dissociative individuals.

Researchers find that individuals experiencing chronic trauma use dissociation as an internal escape when active defenses are unavailable (Terpou et al. 2019). The disruption of the SN, and particularly the VSN may explain the neurobiological underpinnings of this phenomenon. Additional findings reveal an inverse correlation between interoception, dissociation, and the activities of the insula and amygdala, further supporting this theory. By improving SN function, MSIs may alleviate dissociative symptoms, reduce unnecessary nervous system activation, and bolster the integration of interoceptive cues with cognitive and memory networks (Chen et al., 2021; Quadt et al., 2018; Wang et al., 2023).

Figure 1*The Triple Network Model of Traumatic Dissociation and Interoception***Definition of Terms**

- **Interoception:** the process by which the nervous system senses and integrates information about the inner state of the body (Chen et al., 2021, p. 4).
- **Dissociative symptoms:** Symptoms that represent a disruption in the usually integrated functions of consciousness, memory, identity, and perception of the environment (Vancappel et al., 2024, p. 30).
- **Mindfulness-based Intervention:** a therapeutic approach or practice that utilizes focused attention to present-moment awareness (Kang et al., 2022).
- **Somatic Intervention:** a therapeutic approach or practice that explicitly utilizes the body, including movement or exercise (Reuille-Dupont, 2021).
- **Mindfulness and somatic interoceptive interventions:** therapeutic approaches encompassing mindfulness and somatic practices that aim to increase interoception (Fani et al., 2023; Reuille-Dupont, 2021).

- **Emotion regulation:** strategies to (re)maintain homeostasis and body-related symptoms (Schmitz et al., 2024, p.2).
- **Attention regulation:** the ability to maintain intentional attentional focus (Price et al., 2019).
- **Bodily Dissociation:** disruption in an individual's ability to integrate bodily cues and sensations (Schmitz et al., 2023).
- **Exteroception:** the process by which the nervous system senses and integrates information from outside the body or the environment. Examples of this may include sound or touch (Fani et al., 2023).

Researchers Positioning Statement

Transparency and bracketing play essential roles in effective research. My lived experience with trauma and somatic practice informs my interest in this subject. This experience fuels my research interest and fosters my belief that interoception promotes mental healing. I recognize that this belief may indicate a bias suggesting that MSIs can aid in healing embodied trauma. My lived experience also motivates me to explore accessible and culturally sensitive interventions, aligning with my ethical commitment to serve vulnerable populations and promote diversity in research. Though I have chosen a theoretical lens relevant to the topic, I am drawn to physiological explanations, which may have influenced my selection. I acknowledge my position as a researcher who possesses considerable privilege as a white, cisgender, straight-presenting woman residing on Treaty 6 Indigenous lands. I recognize my privilege and strive to work through a non-oppressive and culturally sensitive lens.

In this research, I actively evaluate and bracket my biases related to the topic. I maintain ongoing reflexivity during the research selection process to avoid confirmation bias, interpret

data reflectively, and bracket my personal beliefs through reflexive journaling during the coding and analysis stages. Additionally, I engage peers for objective feedback throughout the thematic analysis.

Overview

This research explores how MSIs impact dissociative symptoms in trauma survivors. The literature review consists of five chapters. Chapter One introduces the topic and provides background information, establishing our current understanding of the research question and justifying the need for further examination. Chapter Two outlines the research methodology employed for the literature review and thematic analysis, detailing the strategy for selecting and analyzing the 10 core articles. It also describes the challenges encountered and the limitations of the research. Chapter Three presents the themes and subthemes that emerge from the thematic analysis and discusses how these themes expand our understanding of accessible and effective interventions for this population. It includes a discussion on research gaps and ethical considerations. Chapter Four details how aspiring practitioners can apply the findings in clinical settings, particularly in assessment and treatment planning. This chapter also discusses additional frameworks for implementing the findings on a larger scale. Finally, Chapter Five summarizes the research and concludes with suggestions for future research questions, recommendations for integrating findings into practice, and a reflective statement on insights gained through the exploration of this research question.

Chapter Two: Methods of Literature Search

This chapter details the method used for conducting this literature review and analysis, on the research question, “How do mindfulness-based and somatic interoceptive interventions impact dissociative symptoms in adults with trauma histories?” It explains the search strategies, including the databases searched, search parameters, and terms used. The chapter reviews the selection criteria, covering both inclusion and exclusion factors, the years considered, and the types of literature examined. Additionally, it evaluates the literature and discusses the challenges faced during the process. Finally, it outlines the limitations of the research.

Search Strategy

The search utilized databases that were available on publicly accessible websites or through online libraries of the City University of Seattle and Athabasca University. The databases that were searched included Google Scholar, PubMed Central, Taylor & Francis Online, ScienceDirect, SAGE Journal, ProQuest, and PsychInfo + PsychArticles. Only articles that were published in peer-reviewed journals were included.

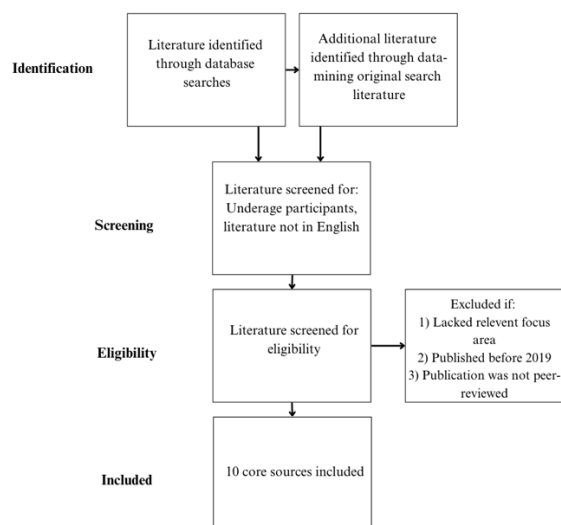
The following terms were used in the literature search: *dissociation, interoception, mindfulness, somatic, intervention, movement, interoceptive awareness, depersonalization, derealization, sensorimotor, dance therapy, yoga therapy, and trauma*. Synonyms, such as *disconnection, meditation, therapy, practices, exercise, and bodily awareness*, were also included. Additionally, the search included types of trauma and trauma-related diagnoses, including terms like *childhood trauma, domestic violence, abuse, veterans, borderline personality disorder, substance use disorder, and post-traumatic stress disorder*. Boolean search strings using the above terms were used; for example, *interoception AND dissociation AND trauma*, or *somatic interventions AND depersonalization*. Once sufficient results were found, the

abstract, results, and discussion sections of the articles were reviewed to determine relevance. The search also identified studies cited within these articles that had not appeared in the initial searches. This led to the selection of the most pertinent articles for the research question, resulting in 10 core articles for analysis. Table 1 outlines the search terms, databases, filters applied, and dates included. Figure 2 summarizes the search process, including identification of literature, screening, eligibility and inclusion.

Table 1

Search Terms, Databases and Filters

Search Terms	Databases Searched	Filters Applied	Dates
<i>dissociation</i>	Google Scholar,	Peer-reviewed journals	January 2019-
<i>interoception</i>			
<i>mindfulness</i>	PubMed Central		December 2024
<i>somatic intervention</i>			
<i>movement</i>	Taylor and Francis		
<i>interoceptive</i>			
<i>awareness</i>	Online		
<i>depersonalization</i>			
<i>derealization</i>	ScienceDirect		
<i>sensorimotor</i>			
<i>dance therapy</i>	SAGE Journal,		
<i>yoga therapy</i>			
<i>trauma</i>	ProQuest		
<i>disconnection</i>			
<i>meditation</i>	PsychInfo +		
<i>therapy</i>			
<i>practices</i>	PsychArticles		
<i>exercise</i>			
<i>bodily awareness</i>			
<i>childhood trauma</i>			
<i>domestic violence</i>			
<i>abuse</i>			
<i>veterans</i>			
<i>borderline personality</i>			
<i>disorder</i>			
<i>substance use disorder</i>			
<i>post-traumatic stress</i>			
<i>disorder</i>			

Figure 2*Literature Selection Flow Chart***Selection Criteria****Inclusion Criteria**

Once the search strategy was established, both inclusion and exclusion criteria were used to narrow down the selection of the most relevant research articles. Inclusion criteria included—articles published between January 2019 and December 2024, articles published in peer-reviewed journals, research involving only adult participants, research published in English, and studies examining interoception and dissociation as key variables. Additionally, research on interventions targeting dissociation, such as mindfulness, meditation, somatic interventions, sensorimotor interventions, movement interventions, and dance interventions, was required for inclusion. Finally, the studies needed to investigate trauma-related symptoms involving dissociation. Given the limited number of studies focusing solely on dissociation, it was necessary to include research on trauma symptoms that also captured dissociative symptoms (e.g., traumatic re-experiencing, depersonalization, derealization). All study designs—

quantitative, qualitative, and mixed-methods—were considered eligible to capture insights that a purely quantitative approach might have overlooked.

Exclusion Criteria

Exclusion criteria included research involving children or youth participants, articles published in languages other than English, studies that did not focus on dissociative symptoms, research published outside the specified date range of January 2019 to December 2024, and studies published in non-peer-reviewed publications.

Further Determination of Relevance

Due to the nature of the research question and the inclusion and exclusion criteria, applying search filters to narrow down the search excluded potentially relevant studies. This necessitated the additional step of manually evaluating each research article by thoroughly reading its content to determine if participants had a trauma history, whether dissociative symptoms were assessed as part of an overall trauma symptoms assessment, and if interoception was a focus of intervention, as none of these elements could be identified through search filters. This was an essential step in determining whether the core articles met the inclusion and exclusion criteria.

Evaluation of Significant Studies Reviewed

Upon selecting the core articles, the strengths and weaknesses of the studies were assessed. Notable strengths included the use of a neurobiological theoretical framework for formulating hypotheses and analyzing data (Fani et al., 2023; Kang et al., 2022; Reuille-Dupont, 2021). The research clearly outlined the purpose, design, recruitment, inclusion and exclusion criteria, dropout rates, sampling procedures, and data collection and analysis for each study. The quantitative and mixed-methods research used scales with established validity and reliability,

including the *Post-Traumatic Checklist for DSM-5* (PCL-5), the *Multidimensional Assessment of Interoceptive Awareness* (MAIA), and the *Dissociative Experiences Scale* (DES) as measures of trauma symptoms, dissociative symptoms, and interoception (Classen et al., 2021; Machorrino et al., 2023; Millman et al., 2023; Schmitz et al., 2023; Vancappel et al., 2024).

Methodological weaknesses were also examined. While recruitment involved participants with a history of trauma, all sampled individuals had previously received mental health support, which may have confounded the results. This also excluded individuals facing barriers to treatment. With the majority of the sample consisting of white women, applicability to other demographics or those facing systemic barriers to support was limited. Additionally, although reliable, the measurement tools varied, leading to inconsistent definitions of interoception and dissociation. The lack of long-term follow-up data and the small sample sizes in studies examining somatic interventions also limited the validity of the results (Classen et al., 2021; Machorrino et al., 2023; Millman et al., 2023; Schmitz et al., 2023; Reuille-Dupont, 2021; Vancappel et al., 2024).

Challenges Encountered During the Literature Search Process

Challenges that arose during the article selection process may have influenced the research outcome. Logistical challenges included the scarcity of research addressing dissociative symptoms. As a result, studies examining dissociative symptoms in the context of trauma were included. Moreover, not all research that involved participants with a trauma history or examined dissociation included this in the titles or search terms. This made determining relevance more time-consuming, as it required a thorough examination of the full article. Furthermore, much of the research focused on a single relevant factor rather than multiple factors, which extended the search process.

Conceptual challenges included an inconsistency in measures and definitions of interoception and dissociation. This necessitated the inclusion of research that described interoception using alternative terms, such as body awareness or mindfulness, and a range of dissociative symptoms, from dissociative behaviours, like substance use, to more definitive dissociative diagnoses, such as depersonalization and derealization disorder.

The accessibility of research also posed a significant challenge. Although many databases were accessible through public or academic platforms, a considerable amount of research remained behind a paywall. As it was necessary to review full articles to assess relevance, limited access potentially led to the exclusion of pertinent research. Considering these challenges, final articles were selected based on broad definitions of interoception and dissociation, which included a diverse range of trauma histories and primarily relied on publicly available research.

Significant Limitations in Research

Acknowledging limitations is crucial to maintaining the integrity of the research. Several factors arose that limited this analysis. One limitation was a lack of consistent measures of interoception. While the MAIA was the most comprehensive measure, other measures included *The Scale of Body Connection*, *The Five-Facet Mindfulness Questionnaire*, and qualitative descriptions (Classen et al., 2021; Machorrinho et al., 2023; Reuille-Dupont, 2021; Vancappel et al., 2024). Although interoceptive function was part of the selection process, the use of different measurement tools limited the synthesis of the findings.

Dissociation was also measured using various methods. Due to the scarcity of research, many dissociative symptoms were included, which eliminated a clear understanding of the impact of MSIs on specific symptoms. The same applies to trauma history; childhood trauma,

war trauma, domestic violence, and racial trauma were all included, leading to broad findings (Kang et al., 2022; Machorrinho et al., 2023; Price et al., 2019; Schmitz et al., 2023). Future research is needed to focus on the more clearly defined aspects of each factor. Lastly, apart from Fani et al. (2023), whose sample consisted primarily of Black women, there was a lack of gender and racial diversity, as most participants were white women. This could have been due to the study's limitation to English-language publications. Furthermore, restricting research to English and peer-reviewed studies may have introduced bias in the selection and publication process, potentially excluding relevant studies that could have influenced the analysis.

Chapter Summary

In summary, the articles selected for this literature review were recent, relevant, and publicly available studies related to the research question, chosen from peer-reviewed publications. While the studies used reliable measurement tools, a broad inclusion of dissociation, interoception, and trauma was necessary, and measures varied. Additionally, limitations in sampling, particularly a lack of cultural and gender diversity, raise questions about the generalizability of the findings. Chapter 3 introduces the themes and subthemes that emerge from the thematic analysis of the core literature. It also examines the gaps in the literature identified during the research, the limitations of the research, ethical and cultural considerations, and proposes suggestions for future research.

Chapter Three: Literature Review

This research addresses the question: “How do mindfulness-based and somatic interoceptive interventions impact dissociative symptoms in adults with trauma histories?” This chapter presents the themes and subthemes that emerged through the inductive thematic analysis. The themes that emerge enhance our understanding of how these interventions impact this population. The primary themes include: (a) interoception as a mediator of dissociative symptoms; (b) emotion regulation, interoception, and the reconnection from dissociation as parallel processes; (c) interoceptive interventions as corrective experiences in experiential therapy; and (d) safety building and expansion of emotional experience. Table 2 lists the themes represented in each of the core articles.

Table 2

Themes in the Literature

Primary Themes	Interoception as a Mediator	Emotion Regulation, Interoception and Reconnection from Dissociation as Parallel Processes			Interoceptive Interventions as Corrective Experiences in Experiential Therapy		Safety Building and Expansion of Emotional Experience	
		Bodily Dissociation and Experience of Self	Attention, Interoception, and Dissociation	Building Emotion Regulation through Interoception and the Relationship to Dissociation	Interoceptive Interventions within Relationship	Interoceptive Interventions as Alternative and Complementary Therapies for Dissociation	Interoceptive Interventions as Safety Building Treatment	Integration and Expansion of Emotional Acceptance and Experience
Subthemes								
Sources								
(Classen et al., 2021)	✓	✓	✓	✓	✓	✓	✓	✓
(D’Antoni et al., 2022)	✓	✓	✓	✓	✓	✓	✓	✓
(Fani et al., 2023)	✓	✓	✓	✓	✓	✓	✓	✓
(Kang et al., 2022)	✓	✓	✓	✓	✓	✓	✓	✓
(Machorro et al., 2023)	✓	✓	✓	✓	✓	✓	✓	✓
(Millman et al., 2023)	✓	✓	✓	✓	✓	✓	✓	✓
(Price et al., 2019)	✓	✓	✓	✓	✓	✓	✓	✓
(Reuille-Dupont, 2021)		✓	✓	✓	✓	✓	✓	✓
(Schmitz et al., 2023)	✓	✓	✓	✓	✓	✓	✓	✓
(Vancappel et al., 2024)	✓	✓	✓	✓	✓	✓	✓	✓

Themes and Subthemes

Interoception as a Mediator in Dissociative Symptoms

The initial theme that arose in this analysis—interoception as a mediator in dissociative symptoms—examines how interoception mediates various psychopathologies, including those with dissociative symptoms (Schmitz et al., 2023). Interoception describes how individuals

sense, interpret, and integrate sensory signals from within their bodies (Kang et al., 2022; Price et al., 2019). Interoception includes measures of noticing, awareness, accuracy, observation, and acceptance of one's internal bodily sensations (D'Antoni et al., 2022; Machorrinho et al., 2023). Fani et al. (2023) and Schmitz et al. (2023) indicate that improving interoception reduces dissociative symptoms, especially in individuals with interoceptive impairments linked to a history of trauma. The MAIA provide an in-depth assessment of interoceptive awareness using eight distinct scales: (1) Noticing; awareness of bodily cues, (2) Not Distracting, which measures an individual's tendency to orient their awareness away from bodily cues or distract, (3) Not Worrying; the level of concern about uncomfortable sensations, (4) Attention Regulation; the ability to maintain focused attention on bodily cues, (5) Emotional Awareness; the ability to connect bodily cues with emotional experiences, (6) Self-Regulation; utilizing awareness of bodily cues to manage discomfort or distress, (7) Body Listening; gaining insights from bodily cues, and (8) Trusting; the sense that one's body is safe (Millman et al., 2023).

Researchers identify distinct neurological and psychological correlations that support the relationship between interoception and dissociation, particularly in trauma survivors. Chronic dysregulation of the autonomic nervous system (ANS) contributes to many maladaptive symptoms experienced by trauma survivors. Trauma leads to dysregulation that correlates with abnormal activation in the insula, anterior cingulate cortex, amygdala, and prefrontal cortex. Additionally, trauma survivors who experience dissociative symptoms, specifically depersonalization and derealization, show disruptions in the connectivity between the insula and the amygdala, as well as abnormal cardiovascular responses to physical and emotional stimuli, indicating ANS involvement. This fact is notable when considering the relationship between interoception and traumatic dissociation because the amygdala, prefrontal cortex, and especially

the insula, primarily contribute to the neural networks involved in interoception (Fani et al., 2023; Kang et al., 2022; Machorrinho et al., 2023; Millman et al., 2023). This inverse relationship between the neurological correlates of interoception and traumatic dissociation suggests that methods targeting increased activity in the interoceptive networks may alleviate dissociative symptoms.

The relationship between interoception and dissociation functions in a circular and multifaceted way. Trauma disrupts interoceptive function on a neurological level, impacting various aspects of interoception, including attention regulation, emotional regulation, and bodily awareness. This disruption distances individuals from their bodily cues, making voluntary regulation more challenging and increasing dissociative symptoms as a coping mechanism. Dissociative coping further distances an individual from their present moment experience. This disconnection leads to a lack of connection with their body, the environment, and internal resources that could help regulate their emotions and attention. This highlights the importance of exploring interventions like mindfulness and somatic techniques that can help break this cycle (Fani et al., 2023; Vancappel et al., 2024).

Although not all MSIIIs included in this analysis measured brain and neural activity, Kang et al. (2022) reported changes in neural activity linked to improved interoceptive networks for the intervention group, which are related to symptom improvement. Fani et al. (2022) also observe improvements in neural activity associated with interoception, as well as with the interoceptive aspects of attention and emotional regulation, which are connected to reduced dissociative symptoms. While these findings underscore the potential mediating role of interoception in addressing dissociative symptoms, they also highlight the need for further investigation into the impact of MSIIIs on interoceptive networks and brain activity.

Individuals experience the mediating effect of interoception in ways that extend beyond the maladaptive impacts of dissociation. By integrating sensory information related to bodily cues, they increase their self-awareness and further personal growth. Individuals shape their sense of self, both physically and cognitively, through interactions between their sensory experiences and the cognitive meanings they assign to them (Classen et al., 2021; D’Antoni et al., 2022; Machorrinho et al., 2023). When people cultivate a non-judgmental acceptance of interoceptive experiences, they improve the integration of mind and body and lessen their reliance on dissociation as a coping mechanism. This process increases agency by promoting self-ownership through an integrated sense of self (Classen et al., 2021; Fani et al., 2023; Schmitz et al., 2023; Vancappel et al., 2024).

Emotion Regulation, Interoception and Reconnection from Dissociation as Parallel

Processes

While researchers highlight the role of interoception in mediating dissociative symptoms, interoception consists of a complex web of mental processes rather than a single ability. Dissociation and trauma operate within this web and shape an individual’s sense of self (Fani et al., 2023). This theme examines how different aspects of interoception—including bodily dissociation, attention regulation, and emotional regulation—must be developed in parallel for effective treatment (Reuille-Dupont, 2021; Vancappel et al., 2024). The first subtheme—bodily dissociation and the experience of self—discusses how the interoceptive facet of bodily dissociation serves as a foundation for dissociative symptoms. The second subtheme—attention, interoception, and dissociation—focuses on how the interoceptive facet of attention regulation must be addressed in conjunction with emotion regulation and bodily dissociation, along with specific techniques for intervening in this area. The third subtheme—building emotion regulation

through interoception and the relationship to dissociation—explores the role of emotion regulation in developing interoception and how to enhance emotion regulation and awareness. Understanding each of these interoceptive facets and their interactions offers pathways for personalized treatment that considers an individual's unique dissociative experiences and resources.

Bodily Dissociation and Experience of Self

The analysis reveals that bodily dissociation is a particularly salient factor related to the interaction between dissociation and interoception. Individuals who experience bodily dissociation often disregard, avoid, or disconnect from their internal bodily cues and sensations. This interferes with their ability to identify and regulate emotions, inhibits self-awareness and personal growth, disrupts attention and concentration, and impairs daily functioning. Researchers find a significant correlation between childhood, complex, and interpersonal trauma, suggesting that individuals use bodily dissociation as a coping mechanism to avoid traumatic memories ingrained in their bodies and to escape the lack of safety within themselves (Classen et al., 2021; Machorrinho et al., 2023; Schmitz et al., 2023; Vancappel et al., 2024).

While bodily dissociation appears to represent a singular aspect of dissociation, it may serve as the foundation for dissociative symptoms. When individuals disconnect from bodily cues, they lose access to present-moment somatic information that shapes their self-experience and interaction with the environment. Depersonalization and derealization are extreme forms of bodily dissociation, which significantly disrupt an individual's ability to experience the present moment, sense of self, and self-narrative. Similarly, positive dissociative symptoms, such as traumatic re-experiencing, separate individuals from current bodily cues to such an extent that their consciousness and memory diverge. In these cases, memory overshadows the present,

leading to total absorption and attention to the internal re-experiencing—an extreme version of bodily dissociation (Fani et al., 2023; Millman et al., 2023; Reuille-Dupont, 2021; Vancappel et al., 2024).

Understanding the nature of bodily dissociation helps contextualize how individuals experience fragmentation of the self. When individuals perceive their bodies as unsafe due to chronic nervous system dysregulation, particularly during critical developmental periods, dissociated internal parts of themselves often emerge. These parts form to manage stressors and frequently disconnect from bodily cues. While this protective mechanism prioritizes stress management, it undermines their coherent sense of self and narrative. After the protective role ends, these parts often remain disconnected, contributing to various mental health issues and diagnoses such as PTSD, BPD, SUD, major depression, and self-harm or suicidality (Machorrinho et al., 2023; Price et al., 2019; Schmitz et al., 2023). Movement-based interventions can stimulate the prefrontal cortex and activate connections within the somatic and nervous systems, promoting neuroplasticity and encouraging the reintegration of previously disparate parts. Ultimately, these interventions may help individuals cultivate a more coherent sense of self, both somatically and cognitively (Reuille-Dupont, 2021).

Attention, Interoception, and Dissociation

The MAIA suggests that attention regulation is an important facet of interoception, interacting with bodily dissociation on multiple levels. Individuals with attention dysregulation have difficulty voluntarily focusing on and integrating bodily cues. This dysregulation serves as a protective mechanism, distancing individuals who lack adaptive emotion regulation skills from bodily cues that signal distressing emotions (D'Antoni et al., 2022; Fani et al., 2023; Millman et al., 2023).

During dissociation, the limbic system—including the insula, anterior cingulate cortex, and inferior prefrontal cortex—involuntarily hijacks attentional processes due to a persistent sense of threat (D’Antoni et al., 2022; Kang et al., 2022). As a result, individuals struggle to engage their frontal lobes sufficiently to maintain voluntary attention to bodily cues (Classen et al., 2021; Fani et al., 2023). Researchers believe that enhancing the attentional capacities of traumatized individuals through specific interventions can help them regain control over dissociative symptoms, thereby improving this facet of interoception (Vancappel et al., 2024).

Mindfulness-based interventions encourage individuals to focus on bodily cues to treat trauma symptoms, including dissociation. However, research remains unclear regarding whether mindfulness helps individuals develop attention regulation or if they must already possess these skills to benefit. While some studies suggest that mindfulness techniques improve attention regulation, others indicate that specific individuals, particularly those experiencing depersonalization or derealization symptoms, may experience increased dissociation when focusing on bodily cues (Millman et al., 2023; Vancappel et al., 2024). D’Antoni et al. (2022) find that mindfulness training improves overall dissociative tendencies but does not affect measures of depersonalization and derealization. Classen et al. (2021) do not observe any decrease in dissociative symptoms despite successfully increasing body awareness through mindfulness. This underscores the need for personalized assessments of dissociative symptoms and trauma history to determine whether attention regulation is an effective intervention point.

Clients who struggle with attention can seek less traditional interventions that increase neutral or pleasurable body sensations without requiring direct attentional focus. These interventions help build tolerance for physical sensations, reduce feelings of being overwhelmed, and prevent dissociation from occurring. Physical exercise and movement increase brain-derived

neurotrophic factor, which supports neuroplasticity (Machorrinho et al., 2023). Clients can engage in alternative activities such as sports, yoga, music, singing, or therapies like massage or acupuncture, which gradually and individually improve interoception and attention (Millman et al., 2023; Reuille-Dupont, 2021). As individuals develop tolerance to bodily cues, interoception can improve gradually. Increased tolerance and a present-moment orientation may lay the groundwork for more focused attentional exercises, such as mindfulness-based interventions.

Building Emotion Regulation through Interoception and the Relationship to Dissociation

If attention dysregulation acts as a protective mechanism against distressing emotions, individuals must develop their capacities for emotion and attention regulation in parallel. Trauma survivors endure the neurological repercussions of chronic stress, which disrupts the neural systems responsible for regulating emotions. This disruption leads to intense emotional dysregulation, which can heighten dissociative states (Kang et al., 2022; Price et al., 2019; Schmitz et al., 2023).

Bodily dissociation and attentional dysregulation hinder an individual's ability to receive the somatic information necessary for emotional awareness, complicating emotional regulation. When individuals dissociate, they keep their emotions outside of conscious awareness; however, these emotions still manifest in their nervous systems (Fani et al., 2023). By enhancing interoception, individuals improve their emotional awareness and gain greater agency. This allows individuals to extract meaning from their emotions and develop adaptive coping skills based on their interoceptive insights (Machorrinho et al., 2023; Millman et al., 2023; Price et al., 2019; Vancappel et al., 2024). However, they must develop each aspect concurrently to avoid becoming overwhelmed and to ensure effective treatment.

This literature review highlights somatic and mindfulness-based interventions that actively incorporate cognitive and awareness-enhancing strategies to boost emotional awareness and improve emotion regulation. Classen et al. (2021), Fani et al. (2023), and Reuille-Dupont (2021) incorporate psychoeducation about the nervous system, facilitate reflective discussions about the intervention experience, and help individuals distinguish between trauma-related thoughts and feelings and present-moment bodily sensations. Many interventions encourage individuals to explore their somatic experiences with curiosity and without judgment (Machorrinho et al., 2023; Vancappel et al., 2024). By adopting a non-judgmental approach to body cues, these interventions emphasize the value of integrating cognitive approaches into treatment.

Mindfulness interventions that increase awareness of implicit body and emotional states empower individuals to make intentional choices about their emotional regulation (D'Antoni et al., 2022; Fani et al., 2023; Kang et al., 2022; Price et al., 2019). While these interventions may be labeled 'body-based,' this overlooks the significance of the cognitive components. Furthermore, individuals' attentional abilities play a crucial role in regulating emotions; by directing attention, they improve their emotional awareness, regulate their emotions, and reduce the need for dissociation (Vancappel et al., 2024).

Interoceptive Interventions as Corrective Experiences in Experiential Therapy

Another theme that emerged—interoceptive interventions as corrective experiences in experiential therapy—examines MSII's ability to provide 'corrective experiences'. These experiences allow individuals to experience themselves, their emotions, capabilities, and relationships in new and adaptive ways. These new experiences teach individuals new coping skills related to various facets of interoception, including bodily awareness, attention, emotional

awareness, and regulation, which helps them develop new patterns of behaviour. The first subtheme—interoceptive interventions within relationship—explores the impact of the relational aspect that emerges through the analysis. Reuille-Dupont (2021) explains that movement-based or relational interventions allow individuals to approach the edge of their nervous system’s window of tolerance while practicing strategies to maintain regulation. The second subtheme—interoceptive interventions as alternative and complementary therapies for dissociation—synthesizes the findings on the effectiveness of these interventions, the corrective experiences they provide, and their potential use as an alternative or in addition to traditional psychotherapy. As individuals consistently practice these strategies, their system increases its capacity to regulate under stress, ultimately teaching their bodies to feel safe in new experiences. As a result of these experiences, changes occur in respiratory sinus arrhythmia (RSA), heart rate variability, brain waves, and increased connectivity in brain networks that involve emotional processing and interoception (Fani et al., 2023; Kang et al., 2022). This process helps trauma survivors harness neuroplasticity to heal.

Interoceptive Interventions within Relationship

When examining the impact of interventions, it is essential to consider their context. This analysis emphasizes the significance of relational context. Trauma survivors—especially those who face complex, childhood, or interpersonal trauma—often experience attachment disruption. This disruption leads to dissociative symptoms because they do not learn regulation skills from their caregivers, receive co-regulation during crucial developmental periods, and may perceive interpersonal relationships as sources of trauma (Reuille-Dupont, 2021; Schmitz et al., 2023). Consequently, these survivors find it particularly challenging to develop the regulatory aspects of interoception.

Many interventions included in this analysis use a group therapy format, which highlights the relational context. These interventions help participants to recognize bodily cues related to interpersonal interactions, set boundaries, reduce relational avoidance, and develop relational skills to minimize future avoidance and dissociation. This approach creates a sense of safety among group members. As a result, group members develop personal regulation and co-regulation skills (Classen et al., 2021; Kang et al., 2022; Machorrinho et al., 2023).

The individual interventions also encourage participants to develop co-regulation and create relational safety within the one-on-one therapeutic relationship. For some participants, experiencing a sense of safety, alongside literal safety with another person, becomes a novel and healing experience, whether in a group or individual setting (Machorrinho et al., 2023; Price et al., 2019; Reuille-Dupont, 2021).

Engaging in healing interventions with other trauma survivors can also reduce feelings of shame and fear. Witnessing the successes of others, providing reciprocal support, and fostering respect and trust alleviate individuals' feelings of isolation, shame of failure, and fear of the present (Classen et al., 2021; Machorrinho et al., 2023). These interactions help individuals integrate their sense of self within a relational context. They discover previously unknown, relational parts of themselves, receive acceptance from others, and recognize their empathetic and supportive nature. The impact of these experiences augments or even surpasses the effects of the interoceptive interventions. Feeling safe with others decreases the need to constantly look outward for threats, which increases attunement to bodily cues and body-listening, and directly reduces bodily dissociation (Price et al., 2019; Reuille-Dupont, 2021).

Interoceptive Interventions as Alternative and Complementary Therapies for Dissociation

Considering how the relational context of these interventions affects dissociative clients suggests that clinicians might utilize therapies that serve as alternatives or complements to traditional talk therapy. By incorporating these interventions, clinicians open more pathways for change in their clients.

The literature analyzed includes mindfulness and meditation programs that focus on developing interoceptive abilities. Clinicians often integrate mindfulness and meditation into traditional psychotherapy as alternatives to talk therapy, making it essential to evaluate their effectiveness. D'Antoni et al. (2022) find a negative correlation between higher mindfulness abilities and dissociative tendencies. However, the researchers primarily sample university students enrolled in a Sports Sciences program. They acknowledge that the high level of sports participation among their sample could potentially confound the results related to mindfulness and interoception levels.

Each mindfulness program included in this analysis actively encourages participants to sustain non-judgmental attention and curiosity. The programs utilize specific interventions, such as breathing exercises and body scans, to focus attention on the body and improve interoceptive awareness. Although variations exist, the overall results suggest that mindfulness and meditation effectively improve interoception, reduce dissociative symptoms and behaviours, and improve trauma symptoms (Fani et al., 2023; Price et al., 2019). However, several studies implement a cross-sectional design, which prevents researchers from establishing causal relationships (Schmitz et al., 2023; Vancappel et al., 2024). Additionally, while Kang et al. (2022) report improvements, they indicate that only 40% of participants experience changes greater than the minimum clinically significant difference.

Many of the somatic interventions included in this analysis incorporate elements of mindfulness—such as mindful awareness, curiosity, non-judgment, and practices like body scans and breath focus—while also placing a strong emphasis on movement and exercise. Researchers enhance bodily cues, alter brain function, increase a sense of agency, integrate the sense of self with the body, improve cognitive flexibility, and express unresolved emotions through physical exercises and movements. Approaches like dance therapy, physical exercises including Tabata movements or dance-based routines, psychomotor therapy, and sensorimotor therapy are used to achieve these benefits (Classen et al., 2021; Machorrinho et al., 2023; Millman et al., 2023; Reuille-Dupont, 2021).

While the results show promise, it is important to recognize the limitations. Researchers note high self-reporting results, which can lead to desirability reporting (D’Antoni et al., 2023; Reuille-Dupont, 2021; Schmitz et al., 2023). Additionally, many participants in both mindfulness and somatic interventions engage in additional treatments, such as individual therapy, group therapy, or psychiatric medications, which can potentially confound the results (Fani et al., 2023; Price et al., 2019). Furthermore, Millman et al. (2023) do not include a control group, meaning that the observed results might arise from spontaneous symptom improvement or regression to the mean.

Some researchers adjust specific interventions by adding exteroceptive enhancements. Fani et al. (2023) use a wearable subwoofer that delivers vibrations mirroring the frequency of the participant’s breath during breathing exercises. This approach reduces dissociative symptoms compared to participants without the enhancement. However, the researchers do not measure the auditory output of the subwoofer, making it impossible to determine whether the impact arises from the vibrations or from auditory cues. Price et al. (2019) and Reuille-Dupont (2021) instruct

participants to utilize self-touch as an exteroceptive cue to maintain focus on their bodily sensations during the interventions. Machorrinho et al. (2023) and Price et al. (2019) incorporate therapist touch into their intervention programs. The additional stimuli from the exteroceptive cues help individuals who struggle to direct their attention to their bodies. It intensifies physical sensations, draws attention to bodily awareness, and assists those with challenges in attention regulation. However, further studies are needed to fully determine the effectiveness of these enhancements.

Breath focus serves as a common alternative approach in both mindfulness and somatic interventions. These interventions incorporate breathing exercises like belly breathing, alternate nostril breathing, breath awareness through smell, and exploring the sensation of ribcage expansion using breath (Classen et al., 2021; Fani et al., 2023; Kang et al., 2022; Machorrinho et al., 2023; Reuille-Dupont, 2021). Furthermore, much of the research uses heart rate variability or RSA to partially measure the impacts of these interventions. These measures respond directly to breath and provide insight into an individual's ability to regulate their nervous system (Schmitz et al., 2023; Price et al., 2019).

Safety Building and Expansion of Emotional Experience

The theme—safety building and expansion of emotional experience—explores the effectiveness of these interventions in promoting safety and enriching the emotional experiences of dissociative individuals with a trauma history. Trauma often hinders individuals from experiencing a genuine sense of safety, so clinicians must adopt interventions that increase safety to address dissociation effectively. Additionally, self-harm and suicidality are associated with dissociation, affecting the individual's physical safety (Machorrinho et al., 2023). The first subtheme—interoceptive interventions as safety building treatment—examines how these

interventions establish safety both internally and with others. The second subtheme—integration and expansion of emotional acceptance and experience—focuses on building upon the foundation of safety established by these interventions to increase emotional awareness and facilitate joyful, pleasurable, and peaceful emotional experiences.

Interoceptive Interventions as Safety Building Treatment

When evaluating interventions for traumatized individuals, we must consider the risks of re-traumatization and the potential to create a sense of safety. The literature reveals significant themes regarding what researchers include and omit in these interventions. None of the interventions explore the trauma narrative or revisit the traumatic event to connect interoceptive experiences with the trauma history. Although similar interventions may incorporate these elements, the interventions in this analysis do not. This omission is crucial, as exploring trauma narratives can re-traumatize individuals who lack adequate resources. This underscores the careful consideration researchers take in developing these interventions.

Traumatic dissociation prevents individuals from experiencing the present and creates an internal environment that fails to differentiate between past threats and the current moment (Kang et al., 2022; Schmitz et al., 2023). Each intervention in this analysis aims to cultivate present-moment awareness (Classen et al., 2021; D’Antoni et al., 2022; Fani et al., 2023; Machorrinho et al., 2023; Millman et al., 2023; Price et al., 2019; Reuille-Dupont, 2021; Vancappel et al., 2024). By directing attention to the present moment, individuals experience safety and develop resources in a controlled and secure environment. This increase in present awareness increases their capacity for emotion regulation and facilitates their transition from a chronic sense of threat to a felt sense of safety. These transformative experiences forge new neural pathways and open up possibilities for the future.

Focusing on the present moment goes hand in hand with cultivating non-judgmental self-awareness. When individuals adopt a non-judgmental perspective, they nurture self-compassion. This approach enables them to integrate their external sense of present-moment safety into their self-perception. As a result, individuals carry this sense of safety beyond the intervention setting and into their daily lives, enhancing their overall quality of life and providing them with greater internal resources and resilience (Classen et al., 2021; D'Antoni et al., 2022; Fani et al., 2023; Machorrinho et al., 2023; Millman et al., 2023; Vancappel et al., 2024).

Another element of safety building in these interventions is relational safety. The relational aspects empower individuals to feel safe in the presence of others. This empowerment is especially crucial for those who have experienced interpersonal trauma. It enables them to engage in safe, connected interactions that challenge their previous relational learning (Machorrinho et al., 2023; Schmitz et al., 2023). Additionally, individuals explore safe relationships and learn to establish boundaries, helping them develop better discernment in future relationships. This exploration assists them in identifying safe companions through interoceptive experiences. By enhancing their ability to disrupt unhealthy relationship cycles, individuals can prevent future victimization, especially those who have previously experienced it (Classen et al., 2021; Kang et al., 2022; Price et al., 2019; Reuille-Dupont, 2021).

Integration and Expansion of Emotional Acceptance and Experience

When individuals establish a sense of safety by reconnecting with their sense of self, regulating attention, and managing emotional distress, somatic and mindfulness interventions broaden their experience beyond merely tolerating distress and regulating emotions. This fosters emotional experiences that include joy, pleasure, and peace, which they may have previously thought unattainable. Fani et al. (2023) and Machorrinho et al. (2023) indicate that these

interventions improve an individual's sense of body ownership and grant them greater agency within their body. By enhancing self-ownership and agency, individuals improve their sense of voluntary control, potentially decreasing dissociative symptoms, and may develop a more expansive and integrated emotional experience.

This research emphasizes enhancing participants' quality of life and creating novel, positive experiences that improve and move beyond basic functioning. Individuals may heighten their awareness of the present moment by savouring physical sensations, engaging in physical exercises, and embracing empowering movements such as dancing, pushing, and pulling, along with other forms of physical activity. This approach enables individuals to broaden their emotional range to include joyful, pleasurable, and social experiences, creating opportunities for them to feel sensations and emotions unrelated to trauma. Additionally, individuals learn and effectively form new neural pathways within the nervous system's window of tolerance. These repeated experiences of pleasure and joy increase the likelihood of perpetuating these experiences. This process becomes cyclical, as each new encounter strengthens the internal connection to self and reinforces the capacity to positively re-experience, providing a counteractive force against the cycle that reinforces traumatic dissociation (Classen et al., 2021; D'Antoni et al., 2022; Fani et al., 2023; Machorrinho et al., 2023; Reuille-Dupont, 2021).

Gaps in the Literature

In identifying the gaps in the answer to the research question, “How do mindfulness-based and somatic interoceptive interventions impact dissociative symptoms in adults with trauma histories?”, specific methodological issues in the research created gaps. Inconsistent measurement tools hinder the ability to determine impacts on dissociative symptoms, and there is a lack of clarity on how trauma history and interoceptive deficits influence this. Additionally,

sampling issues limit my capacity to address this question across broader demographics, cultures, and genders.

Measures and Definitions

The lack of a consistent definition and measures of interoception represents a significant gap in this research. Some researchers also fail to delineate where interoception ends and exteroception begins. Although the MAIA serves as the most consistent and clearly defined measure of interoception and its dimensions across various research methodologies, it is not used consistently by researchers. Furthermore, there is a lack of clear methods for integrating the MAIA-defined concept of interoception with qualitative descriptions of interoceptive experiences (Classen et al., 2021; D'Antoni et al., 2022; Fani et al., 2023; Kang et al., 2022; Machorrinho et al., 2023; Millman et al., 2023; Price et al., 2019; Reuille-Dupont, 2021; Schmitz et al., 2023).

There is also a gap in the research regarding specific dissociative symptomology and types of trauma. Due to this gap, this analysis casts a wide net, examining various dissociative symptoms and traumatic experiences, including both positive and negative symptoms, different intensities, and other associated mental health diagnoses (Vancappel et al., 2024). Additionally, Schmitz et al. (2023) find a correlation between high levels of bodily dissociation and childhood trauma, suggesting that a deeper exploration of this topic as it pertains to specific trauma types is necessary. This research gap highlights the need to investigate various dissociative presentations, specific trauma types, and the impact of co-morbid diagnoses on the findings.

Demographics and Sample Size

The analysis reveals a significant gap in gender diversity within the sample. Every research article, except for one, features only women or a large majority of women in the

experimental group. Additionally, researchers do not include gender non-conforming individuals in any of the samples (Classen et al., 2021; D'Antoni et al., 2022; Fani et al., 2023; Kang et al., 2022; Machorrinho et al., 2023; Millman et al., 2023; Price et al., 2019; Reuille-Dupont, 2021; Schmitz et al., 2023; Vancappel et al., 2024).

The literature includes samples from the United States, Canada, Portugal, Germany, France, Italy, and the United Kingdom, countries where much of the population is white. While European publications do not provide data on the sample's ethnicity, we can infer that most of these samples are likely white, assuming they accurately reflect the country's population. All but one North American publication includes information on ethnicity. Except for Fani et al. (2023), who primarily sampled Black women, the studies mainly report white participants. A significant portion of the collective sample demonstrates how these interventions affect white women (Classen et al., 2021; D'Antoni et al., 2022; Kang et al., 2022; Machorrinho et al., 2023; Millman et al., 2023; Price et al., 2019; Reuille-Dupont, 2021; Schmitz et al., 2023; Vancappel et al., 2024).

While Fani et al. (2023) shed light on how mindfulness impacts Black women, the overall lack of representation of individuals who experience racial trauma in this literature proves problematic. Gender non-conforming individuals and victims of racial trauma uniquely relate their trauma to aspects of their physicality, which significantly influences their relationship with their bodies. This connection makes bodily dissociation and interception particularly relevant for these groups.

While researchers have established robust sample sizes for mindfulness-based interventions, a gap remains in the research on sample sizes for somatic interventions. In the studies conducted by Classen et al. (2021), Machorrinho et al. (2023), and Millman et al. (2023),

the largest sample size consisted of 32 participants, while the smallest sample size consisted of nine, indicating relatively small sample sizes. Additionally, the remaining research includes five case studies (Reuille-Dupont, 2021).

Ethical Considerations

Evaluating ethical research practices is crucial for conducting a thorough literature analysis. The CPA provides the *Canadian Code of Ethics for Psychologists* (2017), which outlines researchers' ethical obligations and offers guidelines for evaluating ethical practice. These obligations include respecting participants' dignity, practicing responsible care, maintaining integrity in relationships, and fulfilling responsibilities to society. *The Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* (TCPS), issued by the CIHR et al. (2022), emphasizes that researchers must obtain thorough informed consent, ensure confidentiality, and uphold respect and care for participants while promoting justice and equity in research. The researchers from each of the included studies obtained approval from the relevant institutional ethics review boards. They also secured written informed consent from the participants.

Informed Consent

Researchers must obtain informed consent in research by communicating clearly and allowing participants the freedom to choose, ensuring they do so without coercion or limitations in understanding. Given the nature of this research, which involves individuals who have experienced trauma, researchers need to take extra care to ensure that participants provide consent freely (CPA, 2017, I.23, I.32 & I.34). The TCPS states that researchers must acquire informed consent, and that consent remains ongoing, allowing participants to withdraw it at any time. The research included in this literature review and analysis appears to have followed

ethical informed consent procedures, including ongoing consent, as evidenced by the fact that a small number of participants withdrew from most studies at some point. This suggests that individuals could revoke their consent as needed and felt free to do so, aligning with these ethical principles (CIHR et al., 2022).

Confidentiality

Psychologists and researchers play crucial roles in upholding confidentiality and privacy in their work. The collective research teams involved in these studies managed a significant amount of sensitive information, including detailed trauma histories. All the researchers concealed any directly or indirectly identifying information throughout each phase of the research. The researchers omitted sensitive data from the published reports, aligning with the *Canadian Code of Ethics for Psychologists*, Principles I.40 and I.44, as well as the TCPS Articles 5.1 and 5.3 (CPA, 2017; CIHR et al., 2022).

Benefits and Harms in Vulnerable Populations

As individuals with trauma histories and symptoms, the samples examined in these research studies are vulnerable populations, so researchers must ensure their protocols maximize benefit and minimize harm (CPA, 2017, II.23 & II.30). Trauma survivors risk re-traumatization, particularly those who have endured childhood or interpersonal trauma, and are especially sensitive to the themes of interoception and dissociation (Schmitz et al., 2023). Establishing a just power dynamic with this population is crucial, particularly for individuals who have experienced interpersonal victimization and past disempowerment (CPA, 2017; CIHR et al., 2022).

Re-traumatization and Follow-Up Care

Most research in this review requires participants to provide a detailed trauma history. Revisiting and discussing traumatic events poses inherent risks to the mental, emotional, and physical well-being of participants. Although researchers and therapists likely evaluated risk throughout the intervention and research process, none of the studies indicated that they offered follow-up care after the intervention and study completion. Some studies reported that specific participants experienced exacerbation of symptoms (Millman et al., 2023) or a lack of improvement on specific measures (Classen et al., 2021). This potential ethical oversight should be addressed in future research involving this population by including follow-up care and resources for the participants to ensure there is no ongoing harm and mitigate any distress that the research may have caused. Furthermore, some studies involved participants who had additional risk factors, such as SUD diagnoses and individuals residing in domestic violence shelters. This increases the potential risk for self-harm, suicidality, or violent victimization, making follow-up care particularly necessary to ensure that research participation does not cause ongoing harm (Machorrinho et al., 2023; Price et al., 2019).

Physical Safety

Researchers should prioritize the physical safety of participants when evaluating movement-based somatic interventions, which inherently carry the risk of bodily injury. Psychologists and researchers bear the responsibility of ensuring participant safety as part of their duty of care (CPA, 2017, Principle II; CIHR et al., 2022). The research involves instructing participants in person and providing detailed video and audio guidelines to assist them in adhering to physical safety measures and protocols (Classen et al., 2021; Machorrinho et al.,

2023; Millman et al., 2023; Reuille-Dupont, 2021). Furthermore, ethical review boards assess this aspect of the research during the ethical approval process.

Relationship and Professional Boundaries

Maintaining appropriate boundaries with research participants is an important ethical consideration. When conducting therapeutic interventions, researchers must ensure clear distinctions between the therapeutic relationship and their role as researchers to avoid assuming multiple roles (CPA, 2017, III.30; CIHR et al., 2022, Article 7.4).

Machorrinho et al. (2023) and Price et al. (2019) utilize therapeutic touch to increase interoception through exteroceptive experiences. Therapists and researchers must exercise caution when applying therapeutic touch to uphold ethical boundaries for themselves and their participants, particularly when working with survivors of interpersonal trauma. They must obtain informed consent, especially given the potential power imbalance between the therapist or researcher and the participants (CPA, 2017; CIHR et al., 2022).

Cultural Appropriation and Considerations

Cultural Appropriation

When examining mindfulness and somatic interventions, we must recognize that various cultures developed mindfulness practices within diverse spiritual and religious traditions before integrating them into psychological practice. Researchers should consider the potential for both direct and indirect appropriation of mindfulness practices while investigating these topics. They also need to reflect on their biases and cultural backgrounds to ensure they incorporate the appropriate level of respect and acknowledgment into their research, thereby avoiding both direct and unintentional appropriation of cultural practices (CPA, 2017, II.10, II.14, III.9, IV.15; CIHR et al., 2022, Article 9.8).

Additional Cultural Considerations

TCPS Article 4.1 emphasizes that researchers must incorporate representation from diverse cultures and demographics in their studies (CIHR et al., 2022). This principle aligns with the *Canadian Code of Ethics for Psychologists*, which highlights the moral duty of psychologists to pursue social justice while respecting individuals' dignity (CPA, 2017). Although this research represents a first step, researchers need to further include diverse cultural groups to fulfill their ethical obligation, especially considering the notable lack of cultural and demographic diversity in the reviewed studies. Additionally, researchers must investigate the effectiveness of various strategies to address the dissociative symptoms faced by traumatized individuals across a broader range of demographics and cultures.

Chapter Summary

In summary, interoception significantly mediates dissociative symptoms for traumatized individuals. This analysis reveals that understanding dissociation through the lens of bodily dissociation and evaluating the specific cyclical impacts of attention and emotion regulation provide essential avenues for intervention. Additionally, clinicians can explore methods to offer individuals corrective experiences and foster greater emotional integration, equipping themselves with effective tools to treat clients experiencing dissociative symptoms. These insights enable clinicians to address the clinical needs of this vulnerable population. Chapter Four further explores the clinical applications of these findings.

Chapter Four: Applications to Clinical Practice

This chapter discusses how aspiring clinicians can apply the research findings from the question, “How do mindfulness-based and somatic interoceptive interventions impact dissociative symptoms in adults with trauma histories?” It explores methods for clinicians to integrate these findings into assessments, examines available tools for measuring relevant outcomes, and considers how to adapt intervention points with flexibility. Additionally, it outlines how clinicians can implement these findings within task-sharing frameworks, reviews relevant laws and policies, and provides training recommendations that improve practice and benefit clients and the broader community.

Applications for Practitioners

Integrating Findings into Assessment

Assessment plays a vital role in the therapeutic process and is essential for practitioners. This research suggests that clinicians actively evaluate interoception, dissociation, and trauma history through general and ongoing assessments. By doing this, clinicians can identify effective intervention points, understand diagnoses, and build trust with clients who have a history of trauma.

Interoception and Assessment Tools

Clinicians should assess how bodily dissociation, attention, and emotion regulation interact, as these interoceptive facets play a crucial role in assessment and treatment planning for individuals with a history of trauma. Although these facets may appear distinct, findings reveal that they interact within a broader context. Incorporating each facet into assessment provides a more accurate conceptualization of the client and enhances treatment planning.

Clinicians can use the freely available MAIA self-assessment tool to evaluate clients' interoceptive abilities and identify potential deficits. This evaluation assists in treatment planning and creates opportunities for psychoeducation. The MAIA features eight subscales, with several focusing on attention, emotion regulation, and bodily dissociation (Millman et al., 2023). Additionally, certain diagnoses, such as eating disorders, depression, anxiety, and autism spectrum disorder, correlate with MAIA subscales (Durán et al., 2024). This correlation highlights how incorporating interoception into clinical assessment improve conceptualization, diagnosis, and treatment.

Dissociative Symptoms and Assessment Tools

Clinicians should assess dissociative symptoms on an individual basis. Dissociation encompasses a broad range of symptoms, including dissociative behaviours, traumatic re-experiencing, depersonalization or derealization, and dissociation from bodily cues. These symptoms correlate with various diagnoses, such as SUD, PTSD, and BPD, among others (American Psychiatric Association, 2022). Additionally, clinicians may find that these symptoms correlate to deficits in interoception, requiring them to assess specific symptoms to determine the most effective interventions on a case-by-case basis.

The DES acts as a self-assessment tool that clients and clinicians can access freely to evaluate dissociative symptoms (Vancappel et al., 2024). This tool helps those who lack confidence in assessing dissociative symptoms, as many clinicians do not receive training in this area (Loewenstein, 2018). Additionally, the DES reveals how diagnoses compare to the general population. When clinicians use the DES alongside the MAIA, they can gain a clearer understanding of an individual's symptoms and how interoception affects their presentation.

Trauma History and Ongoing Assessment

Clinicians should assess individual trauma histories alongside interoception and dissociative symptoms. Researchers find that specific traumatic experiences correlate with various interoceptive deficits, such as childhood trauma and bodily dissociation (Schmitz et al., 2023). By incorporating trauma histories into assessments of interoception and dissociative symptoms, clinicians can identify which deficits should guide intervention.

Ongoing assessments of trauma history play a crucial role for individuals with dissociative symptoms. These clients often struggle to trust, which may lead them to disclose information over time as their trust in the therapeutic relationship develops (Chien & Fung, 2022). Continuous and flexible assessment and treatment planning allow clinicians to incorporate new information. Clinicians should also consider how interoceptive and dissociative assessments may suggest an undisclosed trauma history. For instance, if clients exhibit high levels of bodily dissociation, clinicians should exercise caution during treatment planning to account for potential complex trauma, even if the clients do not initially disclose it (Schmitz et al., 2023).

Integration of Findings into Treatment Planning

Flexibility in Intervention Points and Strategies

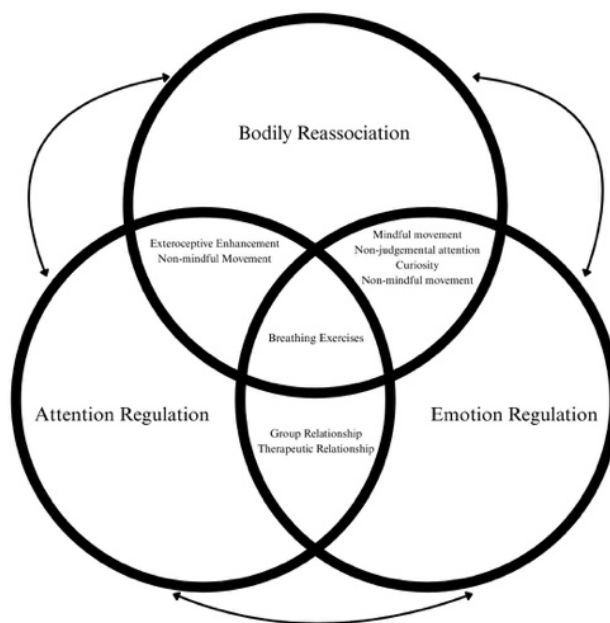
Effectively assessing interoception, dissociation, and trauma informs treatment planning. By identifying various aspects of interoception that practitioners can target, they can flexibly determine the most effective intervention point for each individual based on their assessment and adapt as treatment progresses, maintaining ongoing assessment.

Building interoceptive capacity involves actively addressing attention regulation, emotion regulation, and bodily dissociation in a cyclical and adaptive manner. Clinicians can implement interventions or enhancements at different intervention points based on the individual's capacity

and symptoms. As clients develop their capacity in one area, the relevant intervention point may shift. For example, one client may begin with non-mindful movement to improve their attentional capacity and increase tolerance for bodily sensations without experiencing emotional dysregulation. Once the clinician observes improvement, they can use the new attentional capacity to engage the client in mindful movement. This allows the client to shift their focus from enhancing attention to spurring bodily reassociation and improving emotional regulation. As a result, clients may engage in mindfulness practices, such as non-judgmental awareness, to improve body awareness and emotional regulation. By understanding the foundations of these interventions, clinicians can select the most effective approach based on individual assessments. Figure 3 highlights the themes of the interventions and their potential impact on various interoceptive facets.

Figure 3

Intervention Foundations for Interoceptive Facets



Cultural and Gender Gaps

Clinicians should recognize how the limitations of this research impact the application of the findings. The lack of cultural and gender diversity underscores the necessity for caution and cultural humility in assessment and treatment. Research also indicates that men exhibit lower interoceptive abilities and associated structural brain differences (Longarzo et al., 2021). Because the MAIA relies on self-report, clinicians may need to use additional assessment methods for male clients.

Cultural differences significantly influence how individuals perceive and present symptoms, particularly subjective ones such as dissociation. For example, in Asian and African cultures, individuals with dissociative identity disorder often express their experiences as spiritual possession, contrasting with Western cultures. It is crucial to assess and treat these symptoms within their cultural and religious contexts, as many dissociative disorders face challenges related to cross-cultural validity (Jayan et al., 2024). Clinicians should not entirely dismiss these findings within the context of other cultures and genders; instead, they must apply them flexibly and cautiously, considering the limited research on these demographics.

Research indicates that culturally adapting these interventions can be effective. Morales and Burnett-Zeigler (2025) review mindfulness-based interventions, modifying the language, delivery, content, and format to accommodate the cultural differences of participants of colour, and they find the adaptations effective. Additionally, studies on the impact of Somatic Experiencing, a somatically based treatment approach, on gender-diverse individuals demonstrate its potential as an effective treatment (Briggs et al., 2018). Continued exploration of adapting these interventions for various cultures and demographics may prove valuable.

Clinicians and researchers are responsible for advocating for and striving towards greater demographic representation in research. While these findings show promise for improving community programming aimed at addressing inequities, clinicians must ensure they effectively meet the treatment needs of individuals within their specific cultural contexts.

Recommendations for Clinical Practice

Task-Sharing Frameworks for Assessment and Intervention

Identifying dissociative symptoms and accessing care for this population remain ongoing issues. Several frameworks have emerged to address these challenges by focusing on task-sharing and shifting. The Concepts and Opportunities to Advance Task Shifting and Task Sharing (COATS) Framework advocates reallocating tasks within communities to enhance access to effective interventions (Orkin et al., 2021). This approach expands care options and facilitates more culturally sensitive care by increasing community and cultural involvement. The CRM, developed by Grabbe et al. (2021), demonstrates a proactive interoceptive self-care intervention that builds emotional regulation and resilience through interoception and is grounded in this framework.

The SHIFT-SHARE framework outlines six cyclical stages for implementing task shifting and sharing to increase the accessibility of MSII for dissociative populations (Das et al., 2024). In Stage 1, the environmental scan, practitioners assess whether the context is prepared to expand and shift some dissociative assessments and MSII interventions. In Stage 2, priming, they identify which individuals are most likely to effectively conduct evaluations or interventions. During Stage 3, risk signal, they implement risk assessment and management, which is critical for dissociative populations due to the high associated risks. This assessment helps determine whether an individual would benefit from proactive programming or specialized, reactive

treatment. Stage 4, capacity building, involves training individuals to increase their competence in conducting MSIs and dissociative screening, such as the DES. In Stage 5, monitoring and evaluation, practitioners assess the safety and effectiveness of the interventions and assessments, making adjustments to optimize their impact. Finally, in Stage 6, maintenance and diffusion, they strive to expand the system's impact and advocate for broader inclusion, such as through government health programs.

MSIs align well with task-sharing frameworks for both preventive and reactive approaches. Community care professionals can deliver interoceptive interventions and dissociative assessments, spreading the skills necessary for enhancing interoception in the community and identifying referrals for specialized care. Many professionals already integrate these interventions into their work, and by providing additional education on their potential impact on mental health, we can more effectively address the needs identified in the community.

Relevant Laws and Policies

In September 2020, Alberta amended the Mental Health Act (2020) to expand the roles of nurse practitioners, allowing them to carry out certain assessments related to mental health. This change signifies some progress towards a task-sharing model, though it remains minimal. Given the findings of this research, we should advocate for a more significant expansion of task sharing and training for those involved as the next step.

Additionally, Bill 21 amended the Health Professions Act (HPA) to require care professionals to be trauma-informed (2018). However, this bill primarily emphasizes the prevention of sexual abuse and misconduct by health care professionals. While this focus is necessary, we need to broaden trauma-informed care to include expectations of competence and training in identifying and treating trauma and related symptoms, such as dissociation.

Training for Interoception, Dissociation and Trauma

Clinicians and healthcare professionals should consider seeking proper training to address the numerous challenges in treating and caring for this population, particularly given that a lack of competence is an issue in effectively treating this population (Loewenstein, 2018). In the context of task-sharing frameworks, it is important to identify accessible training options for clinicians, other professionals, and community members. One example of freely accessible training is the Brain Story Certification offered by the Alberta Family Wellness Initiative (2025). This training emphasizes the neurobiology of trauma and includes modules on adverse childhood experiences, addiction, interventions, and resilience building. This training equips clinicians with a solid foundation for practicing a trauma-informed approach.

Clinicians can also find valuable options for mindfulness-based interoceptive training online. One available training is the 8-week Mindfulness-Based Stress Reduction (MBSR) course offered by Palouse Mindfulness, a nonprofit organization (2025). This online resource also provides guidance for mindfulness and meditation practices, including body scans and yoga meditations.

Although training on dissociation may not be as easily accessible, it is also available. For example, the National Institute for Clinical Applications of Behavioural Medicine (NICABM) offers a course titled “*How to Identify and Treat Dissociation.*” This course includes modules from leading experts in the field and provides crucial information relevant to this population (NICABM, 2025).

Chapter Summary

This chapter emphasizes how assessing individual factors like interoception, dissociation, and traumatic histories impacts treatment effectiveness. Ongoing assessments facilitate adaptive

treatment planning that addresses the evolving needs and interactive aspects of bodily dissociation, attention, and emotion regulation related to interoception. By implementing task-sharing frameworks, we can expand community-based treatment and improve accessibility for populations that often struggle to find effective treatment. Chapter Five summarizes the key findings of this research, offers recommendations for future studies, and reflects on the lessons learned throughout the research process.

Chapter Five: Recommendations and Conclusion

Summary of the Study

This research examines the question, “How do mindfulness-based and somatic interoceptive interventions impact dissociative symptoms in adults with trauma histories?”. Researchers highlight a significant gap in studies that address dissociative symptoms, despite their considerable effects on individuals who experience them (Fung et al., 2022). This gap becomes even more complicated by the complex presentation of many individuals with dissociative symptoms, which often includes comorbid conditions, high-risk behaviours, and low self-awareness (Chien & Fung, 2022; Schäflein et al., 2018). Furthermore, many clinicians lack training or exhibit skepticism regarding dissociative symptoms (Loewenstein, 2018). By enhancing our understanding of how MSIs influence dissociative symptoms, we begin to bridge this gap and provide more effective treatment options.

The thematic analysis of the ten core articles reveals four primary themes and additional subthemes. These themes include (a) interoception as a mediator of dissociative symptoms, (b) emotion regulation, interoception, and reconnection from dissociation as parallel processes, (c) interoceptive interventions as corrective experiences in experiential therapy, and (d) safety building and expansion of emotional experience.

The first theme, interoception as a mediator of dissociative symptoms, explores the neurobiological connection between interoception and dissociative symptoms. Interoceptive interventions actively influence the neurological patterns associated with dissociation, potentially leading to symptom improvement. Additionally, impaired interoception mediates an individual’s ability to experience a cohesive sense of self.

The second theme—emotion regulation, interoception, and reconnection from dissociation as parallel processes—investigates the interaction between bodily dissociation, attention, and emotion regulation. Clinicians must concurrently develop these capacities, which requires them to remain flexible and adaptable in their treatments while continuously assessing interoceptive changes. The findings also reveal that specific dissociative presentations may not respond effectively to certain intervention points. Additionally, this theme emphasizes how cognitive strategies can integrate into MSIIIs, highlighting the need for comprehensive treatment approaches.

The third theme—interoceptive interventions as corrective experiences in experiential therapy—examines the experiential factors that influence MSIIIs' treatment of dissociation. These factors help individuals engage in a new relational context, which reduces shame, fosters respect, and enables self-exploration. This process creates new and healing neural pathways for this population. Additionally, this section investigates key elements of MSIIIs, including non-judgmental awareness, curiosity, breathing exercises, and movement.

Finally, the fourth theme—safety building and expansion of emotional experience—focuses on the necessity of establishing safety in trauma-informed treatment. MSIIIs help individuals create internal safety by encouraging self-compassion and creating a sense of relational safety, which may be novel experiences. By building this foundation of safety, MSIIIs empower individuals to pursue greater agency and body ownership while allowing them to experience a wider range of emotions, including joy, hope, and peace.

Take-Home Message

Effective treatment options for individuals with dissociative symptoms and a history of trauma remain a significantly under-researched area. Interoceptive interventions show

considerable promise as tools to address this gap. However, clinicians must carefully assess individual symptomatology, interoceptive abilities and deficits, and trauma history to plan effective treatment. Given the complexity of dissociation and interoception, researchers should conduct further studies on the specific aspects of each, their interplay, and the impact of trauma history to advance knowledge in this area. While the relationship between emotional regulation, attention, and bodily dissociation is a particularly salient finding of this analysis, clinicians often lack training in these domains (Fung et al., 2022). Advancing evidence-based treatments for dissociation can equip clinicians with the necessary knowledge to build their competence. Overall, this research aims to fill the existing gap in the field and further advance the understanding of dissociative treatment.

Recommendations for Future Research

Future researchers should actively examine specific aspects of interoception and dissociation using both quantitative and qualitative methods, as each approach offers unique value. Quantitative methods allow researchers to establish direct correlations that inform assessment and treatment planning. Meanwhile, qualitative research provides depth and captures subjective experiences, which is crucial given the subjective nature of dissociative symptoms and trauma.

Future directions for research should also include examining how these interventions impact individuals who experience body-based trauma, such as racialized or gendered trauma, as these impacts are particularly relevant to this research question. Researchers need to expand their studies to include non-dominant ethnic and cultural groups, as well as genders beyond women. They should conduct research that includes these groups in a culturally sensitive manner, particularly given the importance of this research question for diverse populations. Furthermore,

future research should investigate the long-term effects of these interventions, as the studies reviewed here primarily focus on short-term outcomes.

Questions for Future Research

This research investigates how MSIs impact dissociative symptoms in individuals with a history of trauma from a broad perspective. While key themes emerge, researchers need to delve into more specific topics. I propose the following research questions to further address the existing knowledge gap:

1. What impact do movement-based interoceptive interventions have on individuals who suffer from the dissociative subtype of PTSD?

This research explores both mindfulness and somatic interoceptive interventions, highlighting movement as the clear distinction between the two. Investigating movement-based interventions within the specific symptom cluster of the dissociative subtype of PTSD could yield valuable insights for treating this demographic. This inquiry is particularly valuable, considering that the dissociative subtype of PTSD is a relatively new addition to PTSD diagnostic criteria (American Psychiatric Association, 2022). Furthermore, a research design that includes a non-treatment control group and a non-movement mindfulness intervention can help clarify the effects of movement-specific interventions.

2. How effective are mindfulness-based interoceptive interventions on individuals with dissociative symptoms comorbid with ADHD?

This analysis highlights an interesting question: how does attention dysregulation impact the effectiveness of mindfulness-based interventions that require focused, inward attention?

Investigating this question within individuals diagnosed with ADHD comorbid with dissociative

symptoms may provide deeper insights and holds value given the prevalence of ADHD and its correlation with trauma (Boodoo et al., 2022).

3. What correlations exist between specific identified dissociative symptoms and the facets of interoception as measured by the *Multidimensional Assessment of Interoceptive Awareness* (MAIA)?

This research investigates the various facets of interoception. While the MAIA assesses eight interoceptive facets, few studies explore how these facets correlate with different types and severities of dissociative symptoms. Researchers should seek to identify clear correlations to provide better guidance on which interoceptive facets act as the most effective intervention points based on a client's dissociative presentation.

Recommendations for Practice

These findings highlight several actions that clinicians and institutions can take to improve the treatment of dissociative individuals with a trauma history. Graduate counselling, psychology, and social work programs, along with medical and nursing schools and other healthcare disciplines such as substance use counselling or education, should incorporate training on MSIIIs. Many professionals in these fields will engage with this population, and a fundamental understanding of MSIIIs will help them mitigate the high risks associated with these groups.

Additionally, clinicians should improve their practice by being aware of available assessments for interoception, such as the MAIA, to identify deficits and establish individualized treatment plans and goals. During a general assessment, clinicians should evaluate an individual's ability to regulate attention, manage emotions, and experience their own body. This will guide the selection of interventions and allow them to adapt treatment in real-time.

It is important to acknowledge that there are barriers to incorporating MSIs. While mindfulness training and interventions are relatively accessible, many somatic interventions require specialized training and spaces that allow individuals to move freely. Limited access to necessary training or confined practice spaces may hinder clinicians. Moreover, movement-based interventions can present challenges or remain inaccessible for clinicians and clients with physical disabilities. Despite these obstacles, identifying aspects of these interventions that can adapt based on available training, spaces, and physical capabilities is beneficial.

Reflective Statement

Exploring this research question provides an excellent opportunity to reflect on my biases, broaden my perspective, and confront my privilege. The analysis reveals that the hypothesis guiding the development of my research question oversimplifies the complexities of the involved factors. I partially based my hypothesis on my own lived experience. However, the analysis shows that I belong to the demographic primarily represented in this and much psychological research. This realization underscores the existing inequities in research and challenges the assumption that interventions that are effective for me will also work for individuals with different histories and identities. Consequently, this strengthens my cultural humility and commitment to advocating for greater demographic and cultural representation in research. This study also highlights the care needed in assessing and treating individuals with a trauma history, enhancing my compassion for the uniqueness of those grappling with trauma.

Conclusion

This research strengthens our understanding of the relationship between interoception and dissociation and its connections to trauma. Individuals who experience dissociative symptoms often show interoceptive deficits, which complicate their access to appropriate treatment despite

their high-risk and vulnerable status. This analysis reveals themes that deepen our understanding of the effects of specific deficits and guides treatment approaches by considering individual presentations. Additionally, recognizing the common factors that improve the efficacy of MSIs—such as relational learning, breathing practices, curiosity, and self-compassion—allows clinicians to tailor interventions for each client while keeping these factors in mind.

The analysis identifies themes that serve as a starting point for incorporating these interventions into clinical applications while also highlighting numerous gaps in our knowledge about this topic. The samples lack cultural and gender diversity, which clearly signals a need for researchers to conduct further studies on broader demographics. Advocating for more diverse research is an ethical imperative that we must acknowledge. Additionally, researchers must examine specific facets of interoception, dissociative symptoms, and trauma histories to deepen our understanding of this topic. I hope that future studies will build upon the findings of this analysis, providing a more comprehensive understanding of the impact of MSIs on specific symptomatology and expanding research to include a wider range of demographic and cultural populations.

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