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**A dance of possibilities: A three-study inquiry of dance/movement therapy as an
intervention in treatment resistant depression**

Neha Christopher, MS, AThR, BC-DMT

<https://orcid.org/0000-0001-9335-8244>

**Submitted in total fulfilment of the requirements of the degree of
Doctor of Philosophy
January 2025**

**Creative Arts and Music Therapy Research Unit
Faculty of Fine Arts and Music
The University of Melbourne**

Abstract

This thesis includes three research projects designed to explore the influence of dance/movement therapy on emotional regulation in adults with a diagnosis of treatment resistant depression. Each study offers a different perspective on this topic, that is, from current literature (via a systematic review and meta-analysis), from dance/movement therapists (via a descriptive survey), and participants with lived experience (via a convergent parallel mixed methods case series).

The first research project, a systematic review and meta-analysis titled ‘Dance therapy as an intervention for stress and depression’ included a total sample of 613 adults presenting with the primary symptom clusters of treatment resistant depression, that is, stress and depression (91.2% female; n=303 in the dance therapy group and n=310 in the control or comparator groups). The intervention dosage varied between 15-24 hours over 3-12 weeks. Results indicated an increase in management strategies rather than symptom reduction. Meta-analyses revealed no statistically significant results for stress and depression.

The second research project, a survey study titled ‘The use of kinesthetic empathy with adults living with treatment resistant depression’, highlighted dance/movement therapists’ (n=8) rationale for using kinesthetic empathy to foster interoception, develop a rapport with participants, and to create a pathway for regulation. The data indicated emotionally felt responses, increased connection with the therapist, safety and trust within the therapeutic relationship as responses to kinesthetic empathy. Lastly, data illuminated potential links between kinesthetic empathy and self-regulation as changes in participants’ regulation patterns based on self-report and therapists’ observations.

Third, a convergent parallel mixed methods case series, ‘Investigating the effects of group dance/movement therapy sessions in adults living with treatment resistant depression’, revealed a convergent relationship between four forms of data collected (Perceived Stress

Scale-10, Multidimensional Assessment of Interoceptive Awareness-2, cortisol hormone levels measured through hair samples and two types of interviews). The intervention was implemented across a 16-week protocol (12 weekly 45-minute group sessions and one follow-up timepoint). Results illustrated an expansion in participants' capacity for regulation based on a body-based assessment of dysregulation, increased confidence in navigating bodily cues, and a positive association with one's body in three participants (n=3) who completed the study. Incomplete data due to dropouts (n=2) was linked with comorbidities, hence reinforcing current literature on challenges in accessing treatment. The participants' experiences captured in this case series primarily demonstrate adaptive coping strategies despite challenges from pre-existing regulation patterns.

Cumulative findings were categorised as 'possibilities' related to participant experiences, therapists' offerings, future research, and a specific experiential termed 'Point of Return', which is a possibility for future exploration from both the therapists' and participants' perspectives. The primary limitation of this doctorate research includes low recruitment, which prevents generalisation. Developing these three projects is an avenue to further knowledge of creative and non-invasive treatment options like dance/movement therapy for adults with a diagnosis of treatment resistant depression.

Declaration

This is to certify that:

- i. This thesis comprises my own original work towards the degree of Doctor of Philosophy except where indicated in the Preface,
- ii. Due acknowledgement has been made in the text to all other material used, and
- iii. This thesis is less than 100,000 words in length, inclusive of tables, maps bibliographies and appendices.

Signed: Signature removed for open access publishing

Name: Neha Christopher

Date: 10th January 2025

Preface

Thesis with Publications

This thesis differs from traditional dissertations as it includes five published articles. Two publications were sole authored and three were co-authored with my supervisors. My contributions in these co-authored publications include conceptualisation, study implementation, finalising suitable methodology, data collection, data analysis, documentation and writing the original draft. My supervisors supported me by advising on suitable methodology, reviewing, and editing the manuscripts; all co-authors have agreed upon this. Based on these contributions, these publications adhere to the requirements of including publications in this doctorate thesis.

Owing to the inclusion of co-authored publications, the narrative of chapters including co-authored material use a collective or plural voice while other chapters use a singular voice. Bridging material has been included preceding the chapter in which the published material has been reproduced.

The following publications have been included in this thesis:

Publication I

Christopher, N. (2024). Problem solving in dance/movement therapy research: Developing an intervention protocol for adults living with treatment resistant depression. *American Journal of Dance Therapy*, 1-22. DOI: [10.1007/s10465-024-09403-1](https://doi.org/10.1007/s10465-024-09403-1)

The original article has been divided and reproduced to constitute Chapters four and 12 of this thesis.

Publication II

Christopher, N., Dumaresq, E., & Tamplin, J. (2024). Dance therapy as an intervention for stress and depression: a systematic review and meta-analysis. *Body, Movement and Dance in Psychotherapy*, 1-18. DOI: [10.1080/17432979.2024.2377389](https://doi.org/10.1080/17432979.2024.2377389)

The entire original article constitutes Chapter six of this thesis.

Publication III

Christopher, N. (2024). Treatment resistant depression: a critical reflection on missing oral narratives in dance therapy literature. *Body, Movement and Dance in Psychotherapy*, 1-11. DOI: [10.1080/17432979.2024.2323072](https://doi.org/10.1080/17432979.2024.2323072)

The entire original article constitutes Chapter eight of this thesis.

Publication IV

Christopher, N., & Tamplin, J. (2022). The use of kinesthetic empathy with adults living with treatment resistant depression: a survey study. *American Journal of Dance Therapy*, 44(2), 115-142. DOI: <https://doi.org/10.1007/s10465-022-09371-4>

The entire original article constitutes Chapter 10 of this thesis.

Publication V

Christopher, N., Tamplin, J., Dumaresq, E., & Goodill, S. (2025). Investigating the Effects of Group Dance Movement Therapy Sessions in Adults Living with Treatment Resistant Depression: A Mixed Method Case Series. *The Arts in Psychotherapy*, 102270. <https://doi.org/10.1016/j.aip.2025.102270>

The entire article constitutes Part I of Chapter 14 of this thesis.

Funding

Funding from the following sources enabled my doctoral research:

- (i) The Melbourne Research Scholarship which supported my living expenses in Melbourne, Australia.
- (ii) The Faculty Graduate Researcher Fund from the Faculty of Fine Arts and Music which helped me implement the third study in my doctoral research.
- (iii) The Graduate Assistantship Program from the Faculty of Fine Arts and Music which provided me with the opportunity of experiential learning through research.
- (iv) The Graduate Travel Fund which enabled my attendance at the American Dance Therapy Association's International Conference in November 2023.

Content Disclaimer

This thesis discusses a complex mental health condition in the context of dance/movement therapy and hence includes several words that maybe distressing to readers including but not limited to:

- (i) Experiences and conditions such as, depression, anxiety, death, suicidal ideation, trauma, treatment, treatment failure, treatment resistance, chronic pain, alcohol and drug use, cancer, hopelessness, loss, crisis, chronic pain, grief, comorbid/ comorbidity, psychosis, COVID-19, therapy etc., and,
- (ii) Systematic issues such as caste, racism, minority/ minoritised, discrimination, inequality etc.

Acknowledgements

Acknowledgement of Lands

I begin this section by acknowledging the land beneath my feet, the unceded lands of the Wurundjeri people of the Eastern Kulin Nations, where I predominantly carried conducted this doctoral research in Australia. I offer gratitude and respect to the traditional custodians of this land, past, present and emerging. I am mindful that I was and still am an uninvited guest on this land. I appreciate the opportunity to live here and strive towards reconciliation in my personal endeavours. I am equally thankful for the wisdom of the First Nations people who knew the power of dance, connection and relational healing far before it was formulated or understood as dance/movement therapy. This land always was, and always will be, Aboriginal land.

I also acknowledge my home country, India, where I conducted my doctoral studies remotely during the COVID-19 pandemic. I am grateful for people groups across India who continue to dance in moments of resistance and joy. I mourn the attempted erasure of folk dances due to colonisation and am moved by innumerable stories and life lessons I have witnessed through expression and activism through dance in India.

Personal Acknowledgements

First, I thank the participants whose trust and openness to my studies made this doctoral research possible. The research participants included two groups of people: dance/movement therapists and adults experiencing treatment resistant depression. I recognise that both populations are painfully familiar with the systemic challenges towards genuine person-centred care in the current global healthcare infrastructure. To the dance/movement therapists who participated in my survey during a pandemic- thank you for your heroic work as frontline workers who witnessed the collective trauma of COVID-19 on an unimaginable level. I deeply

appreciate your time and commitment to furthering dance/movement therapy research in the best and worst of times.

To the participants who took a chance on my research study despite exhaustion and medical fatigue, your stories are precious and valid. I am honoured to shepherd your experiences with the world through this research. Thank you for allowing me to witness your journey, its pain and triumph; I offer my sincere gratitude to each of you.

I owe the inception of my intrigue for philosophy to my father and my uncle who had complex conversations with me very early on that made me curious about knowledge and pragmatism. To Mamu, I will miss the opportunity to debate my research findings with you. Your brilliant mind always amazed me and sparked a curiosity about my own mind.

To my husband, thank you for moving countries with me so I could chase my curiosities. Thank you for carrying me through this doctoral research amidst a pandemic, a cross-continental move, surgery and IVF. You offered balance and calm to my racing mind.

To my parents, your belief in me: your dyslexic, differently wired, dance-loving kid. You recognised a talent in me that I didn't know existed, and it changed the course of my life. Your trust in my abilities is the greatest gift. To my sister, you are my rock; thank you and Jeeju, for constantly checking on me and offering support. To my niece and nephew, our Facetime chats always made me smile. To my doggo, Brooklyn, thank you for being in my life, snuggles with you are the best.

To my supervisory committee, thank you for your support throughout my doctorate studies. Your individual and collective support has brought me this far and I hope our collaborations will continue beyond my PhD.

Dr Kim Dunphy, who passed on in the first year of my candidature- thank you for your mentorship prior to my enrolment! Your firm and encouraging voice has been a part of my

internal narrative, and I am grateful for the time we spent discussing and exploring the nuances of dance/movement therapy.

My primary supervisor, Associate Professor Jeanette Tamplin, thank you for seamlessly taking me on as your supervisee after Dr Kim's passing. You stepped in and offered exactly what I needed: clarity of thought and a razor-sharp focus for streamlining my elaborate ideas into an attainable PhD.

My secondary supervisor, Dr Ella Dumaresq, your gentle yet firm approach motivated me to keep discovering. Your approach to qualitative research has softened my edges and allowed me to connect with my ontological stance more authentically.

My co-secondary supervisor Emeritus Professor Sharon Goodill, I appreciate the wealth of dance/movement therapy knowledge we discussed. I am fascinated by the different intersections at which our lives have crossed paths, and I thank you for taking me on as your supervisee.

My committee chair, Professor Katrina Skewes McFerran, inviting me to connect with my north star offered tremendous guidance to me. You repeatedly mentored me through the maze of philosophy, trusted me with leadership roles, and advocated for me when it was needed. You saw me beyond just a PhD candidate, thank you. I also thank Professor Felicity Baker, who was the chair during the first year of my candidature- your pertinent questions helped me reassess and restructure my doctorate studies for the better.

To the CAMTRU crew, each of you has been instrumental in making me think deeper and wider. Thank you for holding space for my questions, my anxieties and accomplishments.

Although I am still on the profound journey of deconstructing and reconstructing my faith, I am grateful for God's tangible presence through the abstraction of life and for glimmers of hope through times of darkness. Lastly, to my body, the home of my experiences, thoughts and ideas, I am grateful that we are still here, still exploring, still dancing.

Dedication

To my Mamu, thank you for instilling a spirit of curiosity and a quest for discovery in me,

I miss you.

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Animation Demonstrating the ‘Point of Return’ Experiential

List of Included Acronyms and Abbreviations

DMT	Dance/Movement Therapy
DMP	Dance/Movement Psychotherapy
TRD	Treatment resistant depression
PROS	Personalized Recovery Oriented Service Program
SPMI	Severe and persistent mental illness
SARS	Severe Acute Respiratory Syndrome
DSM	Diagnostic and Statistical Manual
EMDR	Eye Movement Desensitisation and Reprocessing
CBT	Cognitive Behavioural Therapy
ECT	Electroconvulsive therapy
LENS	Low Energy Neurofeedback System
MCID	Estimated Minimal Clinically Significant Difference
PSS-10	Perceived Stress Scale-10
MAIA-2	Multidimensional Assessment of Interoceptive Awareness-2
HPA	Hypothalamus–Pituitary–Adrenal Axis
MNAR	Missing Not at Random
MAR	Missing at Random
MCAR	Missing Completely at Random

Chapter 1: Introduction

There are experiences in life that one never forgets—for me, witnessing change through dance/movement therapy is one of them. In this introduction chapter, I will expand on such experiences, which I term provocations in the following section. Next, in keeping with a critical feminist approach to research (Jackson et al., 2024), I will discuss my evolving positionality as a novice researcher. To conclude, I will present an overview of the chapters and studies included in this thesis.

1.1 Background to this Research Project

Provocation One

My first employment as a dance/movement therapist was at an outpatient day treatment program in New York, USA. Some of the services offered included dance/movement therapy, cognitive behavioural therapy, dialectical behavioural therapy, harm reduction for substance use, crisis management, respite housing, psychiatric services, and recreational groups. The outpatient program was specifically designed for adults diagnosed with severe and persistent mental illnesses typically following discharge from an inpatient psychiatric admission. The program adopted a collaborative mindset, which was exemplified in their terminology used. For example, rather than ‘clients’ or ‘recipient of care’ (which was standard practice as recommended by the Office of Mental Health in New York), the outpatient clinic preferred the term ‘participants’ - a word carefully chosen to indicate the active role one plays in their own recovery. In this introductory chapter, I will also use the term ‘participant’ instead of patient/ client.

With this employment being my first full-time job as a dance/movement therapist, I was understandably still finding my feet and learning to navigate the medical model as best as I could. During this time, I was confronted with the dissonance between individuals actively participating in treatment and experiencing unsatisfactory outcomes. I attempted to

reconcile this dissonance reflexively, both, through thought and dance. During these reflexive practices, I pondered deeply on the reasons behind moments I perceived as “successes” or “failures” in my sessions. Although I no longer think about my practice in such a black-or-white and arguably rigid manner, this reflexive practice gave impetus to my research interests. During one such instance of pondering, I noted a shift in some of my participants and became curious about their perception of this same matter, a shift specific to their stress response patterns. I will briefly share three vignettes encapsulating the shift that sparked my curiosity in the inquiry of dance/movement therapy as an intervention in treatment resistant depression; that is through the vignettes of Dina,¹ Evin,² and Claudia.³

Dina was a 66-year-old cis-presenting woman admitted to the outpatient program due to repeated in-patient psychiatric hospitalisations. Dina had lived with depression for over 40 years and her first psychotic break had occurred shortly after her husband abandoned her and her four children in her mid-30s. Her first experience with depression was in her early 20s. Dina often linked the onset of her depression with significant and unmanageable stress. Dina attended the outpatient program five days a week, had a group of friends at the clinic and enjoyed listening to the music of Abba. I worked with Dina in both group and individual dance/movement therapy settings, amounting to 10 direct contact hours per month (across 18 months). As Dina and I developed a rapport, I became curious about her treatment outcomes. Specifically, wondering why her depressive symptoms were not being effectively addressed despite years of active participation in

¹ Dina is a pseudonym.

² Evin is a pseudonym.

³ Claudia is a pseudonym.

treatment. Dina often reported low mood despite taking medication and being in therapy. Further, since Dina had struggled with depression for four decades, she had also tried other forms of treatments but had not benefited from them to her satisfaction.

As I continued to work with Dina, it became increasingly clear that her depressive symptoms were not persistent due to “low treatment adherence, medication non-compliance, or lack of nuanced care from service providers”⁴. Alternatively, Dina was well-versed with the outpatient system, offered support to her peers when they relapsed and readily shared her own coping strategies with peers. Despite doing everything “right”, Dina did not feel the benefits of treatment the way she wished or was “typical” based on the medical model.

Through Dina’s lived experience, I was introduced to the intricacies of treatment resistant depression. As a result, I also recognised my own somatic cues of frustration toward inadequate research in the field of treatment resistant mental health conditions. Simultaneously, I also noticed the lack of novelty in Dina’s story, which equally disheartened me and led me to be intrigued by another participant. I worked with at the same outpatient program, Evin.

Evin was a 60-year-old cis-presenting male admitted to the outpatient program six years prior to our interaction. He was admitted directly after his discharge from an inpatient psychiatric hospitalisation for depression with suicidal thought and intent, without psychosis. Evin lived alone and had been a widower for over 20 years with no long-term romantic partners since the passing of his wife. He had a son and one grandson who he enjoyed spending time with on weekends. Like Dina, Evin also attended

⁴ Quotation marks have been used as this is not my preferred language but was commonly used at the outpatient clinic.

the outpatient program five days a week. Evin and I spent approximately six contact hours per month (over 18 months). He often reported developing relationships to be a difficult and often eat lunch alone at the clinic. Evin had been on antidepressants for over two decades and tried varied types of therapy offered at the clinic. Evin also tried electroconvulsive therapy during his in-patient hospitalisations, which proved to be ineffective. Evin, too, was experiencing treatment resistant depression.

As commonly seen in depressive conditions, Evin largely presented with a “flat affect” while he was at the clinic and even during 1:1 sessions with his case worker. Yet, in dance/movement therapy sessions, I would see Evin smile, make eye contact with me, and gently participate in movement. As someone new to the employment site, I did not realise what a unique sight this was. However, soon, I learned that Evin “almost never” changed his facial expressions except during dance/movement therapy sessions. I was filled with a desire to understand the uniqueness of dance/movement therapy’s offering that could momentarily break this pattern in Evin.

After learning more about the answer to Evan’s depression, being deeply intertwined with trauma, I learned to look at his symptom of flat effect as a symptom of his regulation, specifically linked to a freeze trauma response (Schmidt et al., 2008) and not merely a negative emotional symptom and treatment resistant depression. Further, witnessing Evin’s journey filled me with a desire to inquire and understand my personal dance/movement therapy approach deeper as well. Specifically, I was curious to understand if my approach played a role in the momentary disruption in Evin’s common presentation of “flat affect” in treatment resistant depression. Next, I will also share the story of Claudia, which together,

with Dina and Evin's journey crystallised my research interest in the topic of dance/movement therapy and treatment resistant depression.

Claudia was a 55-year-old cis-presenting female admitted to the outpatient program three years prior to our interaction. Like Dina and Evin, Claudia was also admitted to the outpatient clinic after an in-patient psychiatric hospitalisation for depression and anxiety. Claudia lived in community housing. Although she had family and friends, she was often uninterested in staying connected with them. Among the various services offered, Claudia enjoyed dance/movement therapy and recreational groups the most. In her free time at the clinic, she was often seen applying nail polish and engaging in artistic pursuits in the recreational room. Claudia too was experiencing treatment resistant depression, and had not received the benefits of treatment per her expectations.

Unlike Dina and Evin, Claudia did not attend the program five days a week but did attend dance/movement therapy sessions the days that she came to the clinic (typically twice a week). We worked together in both group and individual settings, amounting to 7.5 hours of direct contact hours per month (across 18 months). Claudia often struggled to cope with stressors in her environment and helping her to regulate and navigate this was a primary focus of our work together. In fact, her symptoms would also intensify in the midst of stress. Since Claudia and I had the privilege of long-term work, I started to notice a change in her ability to emotionally self-regulate despite emotional triggers in her environment. I searched for answers in the literature to understand how and what enabled this change in Claudia. I simultaneously enquired with Claudia about her own evaluation of her developing ability to self-regulate with more ease in moments of distress. I recall Claudia talking about recognising when her stress was starting to build "before" it became unmanageable. Our

sessions certainly did not remove the stressors from Claudia's life, but they helped her recognise her own stress patterns, respond, and start to regulate sooner rather than later. I also recall Claudia using the phrases, "feeling understood", and "feeling more capable" of trying to manage her stressors after our sessions.

The phrases "feeling understood" and "feeling more capable" propelled me to dig deeper and reflect on the techniques I frequently used in sessions. I recognise that it is not appropriate to attribute the identified changes solely to dance/movement therapy (due to other concurrent interventions on-site), concerning the clinical provocations described above. However, I found myself being driven to understand the potential of dance/movement therapy in treatment resistant depression. Lastly, upon looking at the literature, I was surprised that no dance/movement therapy study focused on this population, which further heightened my curiosity. Of the three case vignettes described above, I will revisit Dina's story in chapter four of this thesis.

Unearthing my Theoretical Framework as a Dance/Movement Therapist. Based on my observations from the changes in Dina, Evin, and Claudia's life, I became increasingly curious about the central aspect of my dance/movement therapy practice. Although I was taught to think about my theoretical framework primarily based on the forerunners of dance/movement therapy, in my reflections, I found myself stirring away from this approach and embracing my theoretical framework to focus on my therapeutic presence and what I primarily sought to offer in sessions. As a result, I identified my therapeutic presence to be primarily driven by kinesthetic empathy. Although some forerunners' frameworks highlight empathic reflection of movement, as seen in the work of Blanche Evan (1909-1982) and Marian Chace (1896 -1970), I consciously chose to identify my framework as being beyond an individual dance/movement therapist. From my clinical introspection, I noted that kinesthetic empathy was common in my sessions with Dina, Evin and Claudia. Although the

clinical provocations described above were mere observations, they evolved into my research interests. I found myself consciously driven to explore and develop formative knowledge on this topic.

Provocation Two

Beyond my first employment in the United States, my work as a dance/movement therapist in India, Nepal, and Australia over the past decade has also influenced my research interest. During this time, I have repeatedly faced the challenge of justifying the potential benefits of dance/movement therapy and proving its value to employers and stakeholders. Since dance/movement therapy (as a formal field) is in its nascent stages of development, this is understandable. However, by sharing stories of desired change in participants through dance/movement therapy sessions, I have successfully advocated for dance/movement therapy to be offered as a service in mental health care centres. In my experience, it is also crucial to provide an integrated view of personal stories of change along with speaking to the benefits of dance/movement therapy via tools and assessments, like Laban Movement Analysis (Bartenieff & Lewis, 2013) and The Movement Assessment and Rating Application Dunphy and Hens (2018). This integrated approach to advocacy has also helped me rationalise hiring additional dance therapists at two of my past employment sites. In this way, presenting an integrated view of dance/movement therapy where varied types of data (quantitative and qualitative) have enabled tremendous positive effects in all three cultural settings. As a result, I found myself feeling driven by the potential of integrated and holistic information to increase awareness within employment sites and, most importantly, increase the accessibility of dance/movement therapy to more participants.

The Confluence of Provocation One and Two

The provocations stated above propelled me to think deeply and act on my desire to explore knowledge on this topic. Upon reflecting on the inception of my interest in treatment

resistant depression and dance/movement therapy, I was keen to explore the role of stress management, enhanced self-regulation and kinesthetic empathy in dance/movement therapy sessions. Likewise, my experiences mentioned in Provocation two influenced my approach to generating knowledge on these topics. Together, provocations one and two further piqued my curiosity and gave impetus to formalising my interests via this doctorate research.

Overarching Research Aim and Question

Based on the experiences described above, I acknowledged my desire to unearth the qualities of kinesthetic empathy that uphold its use in the niche of treatment resistant depression. This desire coupled with my passion to identify and integrate quantifiable data with the lived experience of individuals towards the clinical use and relevance of dance/movement therapy in this population. With this in mind, the overarching aim of my doctorate studies was to explore the use of dance/movement therapy in adults with a diagnosis of treatment resistant depression. Additionally, the overarching research question I sought to answer through my doctorate research was: “How does dance/movement therapy influence emotional regulation in adults with treatment resistant depression?” As I embarked on the journey of developing and exploring these research questions, I was mindful that my values and beliefs also formed the foundations of my inquiry. In the next section, I have attempted to elucidate my axiology (Given, 2008).

1.2 Axiology

The English word ‘axiology’ is derived from the Greek word ‘axios’, which is rooted in the Latin words for ‘to be strong or worthy’ (Given, 2008). In the interest of responsible research, I contemplated the values and beliefs underpinning what I consider ‘worthy’ in scientific research. My axiology corresponds to some cultural values (specifically valuing integrating the body and mind and emphasising oral narratives as a form of history) that I hold as a South-Asian woman of colour. These have been outlined below.

One, I value embodied knowledge. Embodied healing practices have been an integral part of many indigenous groups in India for generations. Therefore, it is deeply personal to reclaim the power of embodied practices by taking time and space to conduct research that focuses on increasing the understanding of, and respect for embodied knowledge and somatic healing practices.

Two, a direct result of my value of embodied knowledge is the value I place on multidimensional perspectives. Within the context of this research project, this value translates into understanding depression from multiple perspectives. This is closely aligned with my ontological stance *Anekantavada* (अनेकान्तवाद), described later in this chapter. I recognise that depending on one's worldview, depression can be perceived in different ways. For individuals that align with a medical model, depression may be a distinct mood disorder recognised primarily by melancholy, caused by biological or neurochemical imbalances (Nestler et al., 2002). From a collectivistic worldview, depression may be seen as a result of social adversity, relationship issues or the loss of a loved one (Mayston et al., 2020). In people groups with a magico-religious worldview, depressive symptoms may be justified within a religious context where symptoms may be considered to be a manifestation of spiritual turmoil, hysteria, demonic possessions (Verghese, 2008; Westerink, 2014) or as an indicator of a searching or dissatisfied soul (Pham et al., 2020). Geo-cultural differences also primarily inform one's perception of depression. For example, Wong et al. (2016) share that somatisation of depressive symptoms tends to be higher in Eastern countries compared to Western countries. For example, Penkala-Gawęcka (2013) and Biswal et al. (2017) discuss the possibility of some individuals living with mental health conditions in India and Nepal who often choose not to seek medical intervention due to the belief that they have been 'chosen by the spirits,' as compared to individuals in the West who tend to perceive

depression as a syndrome needing medical attention. I place value on understanding depression as a condition that may have a myriad of causes, stemming from socio-political, systemic, religious, emotional, cognitive and/or psychological issues. I also believe that depression needs to be looked at as a condition that manifests in the body/soma. The influence of my axiology can be directly seen in the third research study designed in this doctorate research (explained in Section 1.5).

Three, valuing the self-report of participants. While I have stated my appreciation for quantifiable data earlier in this chapter, it is essential to note that I am attentive to subtle (and arguably inherent) power dynamics between the assessor and the assessed when using any tool. I believe that participants are experts in their own lives. In my role as the therapist-researcher, I intentionally designed a mixed methods study to collect participants' personal narratives on their participation journey. Hence, preserving the conversational discourse which is intrinsically connected to my cultural values of preserving oral history. Further, the quantitative measures I chose were based on self-report and not on external or "expert observation". I chose these measures mindfully to represent this. This decision is an extension of my belief in acknowledging the importance of self-reported understanding of the self. The use of interviews also ties into the importance of conversational discourse which is intrinsically connected to my cultural values of preserving and documenting oral history.

Four, belief in *Ahimsa* (अहिंसा), *Ahimsa* is a Hindi word that is commonly understood as the concept of using non-violent measures to achieve an identified goal. *Ahimsa* (अहिंसा) was popularised in India as Mahatma Gandhi's (1869-1948) approach to India's freedom fight against the British regime 76 years ago. It remains a relevant and core value for many Indians, like myself, even today. *Ahimsa* (अहिंसा) is an approach that is rooted in providing a safe and protected existence to all and upholds universal human rights at its core. As part of my cultural upbringing, I believe in the human duty to protect and work toward the

betterment of individuals pushed to the margins of society. Similar to getting acquainted with my own somatic cues of frustration toward inadequate research in the field of treatment resistant mental health conditions (as mentioned in Section 1.1). My approach rooted in *Ahimsa* (अहिंसा) aims at developing a participant centred intervention protocol to track the somatic symptoms of treatment resistant conditions.

Five, belief in *Nyay* (न्याय), *Nyay* is a Hindi word that translates to justice in English. From a more nuanced lens, *Nyay* (न्याय) is about inclusivity and equitability in society. In my clinical experience, I have often witnessed patients go from one doctor to another to find a suitable treatment method, which not only increases their distress but also increases the financial burden of ongoing treatment/s. This observation is corroborated by literature that suggests that standard features of treatment resistant depression include potential medical comorbidity, a sub-therapeutic dosage of psychotropic medication, and increased financial burden on the participant (Hirschfeld, 2001; Pericleous, 2011; Trevino et al., 2014; Zhiguo & Yiru, 2014). From a specifically emotional perspective, the sadness that accompanies treatment resistant depression can also be emotionally draining. Considering these additional aspects of treatment resistant depression from a stance of *Nyay* (न्याय) or justice for all, I consider it important and urgent to generate more knowledge on treatment options for treatment resistant depression.

As a researcher in training, I resonate with both self-led and methods-led reflexivity in research which leads me to analyse my choices as much as I analyse the data I collect (Cayir et al., 2022). I remain mindful of the influence of my axiology on my research outputs. Similar to Roots' (2007) perception of the interdependence of axiology and epistemology, I agree that my values directly influence my epistemological stance and ontological position which I have briefly described below.

1.3 Epistemological Position

Epistemology is a branch of philosophy that studies the theories of knowledge. My epistemological stance aligns with the philosophy of pragmatism and epistemic relativism. This stance focuses on knowledge that can be both practically used and generated.

Pragmatism

The philosophy of pragmatism was formalised in the 19th century when American philosophers started to reject the notion of ‘formalism’ or the belief that one scientific method would produce undeniable or unquestionable data (Maxcy, 2003). Further, the philosophy of pragmatism suggests a person's actions cannot be separated from their thoughts, beliefs and circumstances; most importantly, this philosophy is rooted in reality being dynamic and never static (Kaushik & Walsh, 2019). Based on my clinical experiences, I acknowledge my belief that lived experiences affect the presentation of any diagnosis. Specifically, each individual will have a different experience of navigating life with treatment resistant depression. Further, my personal experience of living with dyslexia has also reinforced my belief in the dynamic nature of perception and reality.

Since pragmatism “embraces plurality of methods”(Kaushik & Walsh, 2019, p. 2), pragmatism is not only a personal influence but is also an intentional overall methodology which enabled me to navigate the complex topics of my research interests via various methods in each of the studies conducted in this doctorate research. Further, I will discuss how pragmatism also served as the philosophical methodology that informed my thought processes and decisions pertaining to research design in the third and fourth chapters of this thesis.

Epistemic Relativism

I believe race, culture, economic status, and social background heavily influence the lived experience of mental health conditions. Hence, my epistemic relativism stance implies a

desire to generate knowledge that is congruent with social realities. Epistemic relativism rejects the idea that claims can be assessed from a universally applicable lens (Luper, 2004). This has been mentioned and briefly discussed again in Chapter four.

1.4 Ontological Position

Ontology, a branch of philosophy that studies the nature of existence, also deeply influenced my research. My ontological stance is a complex and unlikely combination of *Anekantavada* (अनेकान्तवाद: ‘many-sidedness’ in English) and a critical realist stance. This combined philosophical approach recognises that our perception is always mediated by social, cultural, and historical contexts. This philosophical view allows me to inquire about different versions of reality based on socio-emotional, economic, and historical experiences.

Critical Realism

Critical realism is an alternative to a strictly interpretivist or positivist framework. Donald Campbell (1916-1996), an American social scientist, invited researchers to question realism. He also said, “Realism must remain a hypothesis and not a fact” (Shadish & Cook, 1998, p. 419). From a positivist stance, critical realism borrows the belief in an objective reality. Meanwhile, from an interpretive stance, critical realism borrows the importance of subjective, lived experiences. By combining these, a critical realist stance accepts that the perception of objective reality is always mediated by social, cultural, and historical contexts.

My critical realist stand is greatly influenced by my cultural background. Being an Indian woman and a person of colour, I have witnessed the differences between my lived experience and the reality of people from other races, specifically concerning power dynamics and privilege. I have learned to accept that varied versions of reality co-exist based on one’s social standing and intersectionality (inclusive of caste, class, and race). A poignant moment in discovering my ontological stance of critical realism was discovering the work of Roy Bhaskar (1944-2014), an Indian-British philosopher who actively advocated for critical

realism (Bhaskar, 2020). Bhaskar encouraged his readers to understand reality by experiencing creativity before attempting to understand reality cognitively (Bhaskar, 2008; Mirzaei Rafe et al., 2021). This discovery reinforced my value of embodied understanding through creativity (mentioned under 1.2: Axiology). My alignment with critical realism has also been noted and briefly discussed again in Chapter four.

Anekantavada

Extending from a critical realist stance, I believe no single perspective can fully capture the complexity of existence or reality. Hence, amounting to *Anekantavada* (अनेकान्तवाद), as mentioned, *Anekantavada* (अनेकान्तवाद) is a Sanskrit word that best translates to ‘many-sidedness’ in English. Historically, this stance was conceived by rejecting and critiquing oppressive Brahmanical values in India during the birth of Jainism. Although I do not identify as a Jain, my Indian upbringing was embedded with the philosophy of *Anekantavada* (अनेकान्तवाद) and embraced valuing multiple perspectives on any given matter. Furthermore, the philosophy of *Anekantavada* (अनेकान्तवाद) also considered varied perspectives as valid, considerably different from positivist or purely empirical philosophies (The Pluralism Project, 2024). At its core, *Anekantavada* (अनेकान्तवाद) holds space for ambiguity and not knowing.

Through my ontological stance that combines critical realism and *Anekantavada* (अनेकान्तवाद), I was energised to combine scientific inquiry with the lived experiences of individuals living with treatment resistant depression and discover data on the use of dance/movement therapy while working with adults who have a diagnosis of treatment resistant depression.

The confluence of valuing lived experience and critical reality is seen in the design of the studies in this doctorate research. Namely, by reporting on objective and measurable change via the meta-analysis (Study I), conducting a descriptive survey that sought individual

perspective (Study II), and following a mixed method data collection and analysis approach in my final study (Study III). The decisions on each of these study's research designs were based on the best-suited research method along with determining its alignment with my ontological stance. Further, the influence of pragmatism and pluralism is seen in the diverse methods employed to help answer the overall research question of this doctorate research (an overview is mentioned under 1.7: summary of methods below).

1.5 Terminology

I will clarify key terms in this section, some of which will be revisited later in this thesis, specifically in the literature review and reproduced publications.

Dance/Movement Therapy

Dance/Movement Therapy (DMT) is a therapeutic approach that uses movement and creative expression to help people connect their emotions, thoughts, and physical sensations. It is based on the idea that the body and mind are closely linked, such that how we move can influence how we feel and think and vice-versa. I align with the definition suggested by the Indian Association of Dance Movement Therapy (IADMT), "A psychotherapeutic method that uses movement and creative expression to further socio-emotional, cognitive, and somatic integration" (IADMT, 2020, parah 1). Globally, the terms 'dance therapy', 'dance/movement therapy', and 'dance movement psychotherapy' are interchangeable. In this thesis, I have chosen to use the terminology dance/movement therapy. I have attempted not to use the abbreviation 'DMT' as a step away from reductionism. However, some chapters (specifically publications) include alternate uses of this term due to respective journal requirements.

Treatment Resistant Depression

This is a term used within the medical model to describe when someone with a depression diagnosis does not feel symptomatically better, typically even after trying at least

two different types and cycles of antidepressant medications. The challenge with defining this term is that there is no universally agreed-upon definition. At least 30% of persons with a depression diagnosis experience treatment resistance and is hence considered to be a severe public health burden as reinforced by McIntyre et al. (2023).

Adults with a Diagnosis of Treatment Resistant Depression

Taking a strength-based approach, I use the phrase adults with a diagnosis of treatment resistant depression instead of adults suffering from treatment resistant depression (TRD). My chosen phrasing also centres the person first and steers away from inadvertently using an individual's diagnosis as an identifying label. Publications included in this thesis use the phrase “adults living with treatment resistant depression” or ‘adults living with TRD’ solely due to word count restrictions with the respective journals.

Mental Health Conditions or Experiences

I have adopted the use of the phrase mental health conditions instead of mental illness when possible across this thesis. There are some exceptions like referring to a pre-existing term such as ‘severe persistent mental illness’.

Intervention

Although I use the term intervention to describe the steps taken towards recovery, I would like to clarify that my use of the term intervention accounts and addresses an individual's needs from a bio-psycho-social lens and not a traditional bio-medical lens.

1.6 Research Sub-questions

As evident in this chapter, observations from my clinical practice sowed the seeds of curiosity which also matched my innate desire for and belief in contributing towards a more equitable healthcare system for all. A system where niche and complex diagnoses like treatment resistant depression are not left unexplored but instead researched alongside other nascent, and promising practices like dance/movement therapy (numeral numbers above nine

have been spelt out in the paragraphs below for consistency of language across this sub-section).

I expanded on the overall research question of: How does dance/movement therapy influence emotional regulation in adults with treatment resistant depression? to include three sub-questions to address via my doctorate project:

- 1) How does kinesthetic empathy play a role in interventions for treatment resistant depression, and how does it enable self-regulation in this population?
- 2) Does dance/movement therapy enhance stress management in treatment resistant depression?
- 3) What are the current guiding principles for the clinical practice of dance/movement therapy for adults with a diagnosis of treatment resistant depression?

The first sub-question has been addressed through the findings and discussion of a survey study (Christopher & Tamplin, 2022). The second and third sub-questions of this thesis have been addressed through a combination of two studies. One, a systematic review and meta-analysis (Christopher et al., 2024), and two, a mixed method case series (Christopher et al., 2025). All three studies have been summarised in the section below.

1.7 Summary of Methods

The three studies designed to achieve the aims of this doctorate research are:

Study I

The first study was a systematic review and meta-analysis. I conducted this study to collate preliminary data towards developing an intervention protocol for adults experiencing treatment resistant depression. In this study, I chose to explore the main symptoms clusters of treatment resistant depression that is stress and depression.

Study Aim. The aim of this study was to determine any differences in stress or depression in adults after participation in dance/movement therapy and learn the common practices used by dance/movement therapists working with adults experiencing both stress and depression.

Research Questions. This study was designed to answer the following research questions:

- i. Does dance/movement therapy reduce stress in adults experiencing depression?
- ii. Does dance/movement therapy reduce depressive symptoms in adults experiencing depression?
- iii. What common practices are used by dance/movement therapists while working with adults experiencing both stress and depression?

Method. Popay et al. (2006)'s five-step method was employed, which included: identifying the review focus, specifying the research questions, data extraction and quality appraisal, narrative synthesis, and reporting on the results obtained. The method also closely followed the PRISMA⁵ guidelines for systematic reviews.

Results. This published systematic review and meta-analysis have been included in chapter six of this thesis.

Study II

The second study was a descriptive survey study. Before designing this study, I acknowledged that just as I had worked with participants with treatment resistant depression despite a lack of direct dance/movement therapy research on this topic, similarly, there must be other dance therapists with practical knowledge who could provide data towards the development of an intervention protocol via the survey study. In this study, I chose to specifically explore kinesthetic empathy and treatment resistant depression.

⁵ PRISMA: Preferred Reporting Items for Systematic reviews and Meta-Analyses

Study Aim. The aim of this study was to collect data from dance/movement therapists on how they use kinesthetic empathy to foster self-regulation in adults living with treatment-resistant depression.

Research Questions. This study was designed to answer the following research questions:

- i. How is kinesthetic empathy used in dance/movement therapy sessions with people living with treatment resistant depression? and,
- ii. What (if any) are the key factor/s in supporting the link between kinesthetic empathy and self-regulation within dance/movement therapy?

Method. The data was collected using a descriptive survey, and it was analysed using deductive thematic analysis.

Results. This published survey study has been included as chapter 10 of this thesis.

Study III

The third study is a mixed methods study designed to understand participants' experience of dance/movement therapy sessions. At first, this study was designed to be conducted online as a COVID-19 adaptation. However, with the lifting of social distancing rules, this study was redesigned to be conducted in person. Additional precautions such as personal protective equipment and conducting rapid antigen tests weekly through the course of the study were set in place. The intervention was a 45-minute weekly group dance/movement therapy program, carried out over 12 weeks. Data gathered from the first survey study and the systematic review were used to inform the different techniques used in the dance/movement therapy sessions. Chapter four (part I) and Chapter 12 (part II) provides a clear methodological approach used to design the dance/movement therapy sessions. Both quantitative and qualitative data was collected across four time points (pre, midpoint, post and at 4 weeks follow-up).

Study Aim. The aim of this study is to explore the effects of group dance/movement therapy (G-DMT) sessions on stress associated with TRD and improve emotional regulation through somatic aptitude.

Research Question. This study was designed to answer the following overarching research question: Can a 12-week group dance/movement therapy intervention improve emotional regulation in adults with treatment-resistant depression? This study includes six sub-questions, which are listed in Chapter 14 of this thesis.

Method. This study is a convergent parallel, mixed methods case series where four types of data were collected and mixed with a complementary intent.

Results. The results are included in Chapter 14 of this thesis. Chapter 14 includes two parts, part I includes a publication (covering the results of participants who completed the study) and part II includes the results obtained from incomplete data due to attrition.

1.8 Thesis Outline

The current chapter provided a background to my doctorate research, including my philosophical underpinnings and a summary of the methodology used in each study. Starting with the next chapter, I will adopt a more formal writing style (numeral numbers above nine have been spelt out in the paragraphs below for consistency of language across this sub-section).

Chapter two will include a literature review that illustrates the problem/s being examined and potential treatment option being explored in this research project. Part I of the literature review focuses on understanding depression (including the epidemiology, prevalence, diagnosis, causes and potential treatment options for depression) and treatment resistant depression (including the nature and challenges in recognising treatment resistant depression). Part II of the literature review concentrates on understanding dance/movement

therapy in general, as well as its specific relevance in depression and treatment resistant depression.

Chapter three includes bridging material that helps contextualise the following chapter. Chapter four describes the methodology adopted to help answer the overall thesis question. This chapter includes a publication highlighting the philosophical and creative problem solving processes followed to develop an intervention protocol. A partial publication will be reproduced in this chapter. The publication is titled: “Problem solving in dance/movement therapy research: Developing an intervention protocol for adults living with treatment resistant depression”.

Chapter five includes bridging material that helps contextualise the following chapter. Chapter six presents a published manuscript titled: “Dance Therapy as an Intervention for Stress and Depression: A Systematic Review and Meta-Analysis”.

Chapter seven includes bridging material that helps contextualise the following chapter. Chapter eight presents a published manuscript titled: “Treatment resistant depression: a critical reflection on missing oral narratives in dance therapy literature”.

Chapter nine includes bridging material that helps contextualise the following chapter. Chapter 10 presents a published manuscript titled: “The use of kinesthetic empathy with adults living with treatment resistant depression: a survey study”.

Chapter 11 includes a bridging that helps contextualise the following chapter. Chapter 12 includes a remainder of the publication partially reproduced in Chapter four. The publication is titled: “Problem solving in dance/movement therapy research: Developing an intervention protocol for adults living with treatment resistant depression”.

Chapter 13 includes a bridging that helps contextualise the following chapter.

Chapter 14 includes two parts. Part I presents a publication titled: “Investigating the effects of group dance/movement therapy sessions in adults with treatment resistant

depression: A mixed method case series”. Part II includes an extended presentation of Study III’s results.

Chapter 15 will include a discussion based on the findings from studies one, two and three Chapter 16 will identify the strengths and limitations of the research undertakings, emphasising practice implications, make recommendations for future research and conclude this thesis.

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Chapter 2: Literature Review

The overall aim of this doctorate research was to explore the use of dance/movement therapy in adults with a diagnosis of treatment resistant depression. This literature review was conducted to collate in depth understanding about dance/movement therapy and treatment resistant depression as a step towards obtaining the aim of this doctorate research. This chapter provides a descriptive and critical overview of the epidemiology, diagnosis, prevalence, causes, theories of depression and, treatment resistant depression in Section I. Next, dance/movement therapy will be described and explored as a possible treatment option in Section II.

Section I: Understanding the Problem of Depression

2.1 Epidemiology

From Western written literature, it can be ascertained that in the early 1800s, depression was commonly referred to by using the term '*melancholy*' in many European cultures (Ellison, 2021; Schmidt, 2016). Hippocrates described '*melancholy*' as an affective state that stemmed from a physiological imbalance between the four 'humors' of the human body; specifically, an increase in 'black bile' (Telles-Correia & Marques, 2015). In the mid-19th century, '*melancholy*' was understood as an emotion that only co-existed with other conditions and was not yet recognised as an independent condition or experience. Once a separate diagnosis of depression was established in the mid-1900s, diagnosticians still believed that depression always suggested a comorbidity of psychosis (Healy, 2013). This belief coincided with the establishment of asylums in Europe and was only challenged by the systematic epidemiological study of depression which began in the mid-20th century (Hidaka, 2012; Wong et al., 2016) It was only then that depression was perceived as an illness independent of psychosis and comorbidities. Today, significant advancements in understanding and classifying depression have been made. Consequently, depressive

disorders are diagnosed only after a specific list of symptoms have been met. These symptoms typically manifest in the mental, physical, and behavioural systems of an individual.

Despite this increase in knowledge, certain types of depression are still not well understood. One such type of depression pertinent to this thesis is treatment resistant depression (TRD). Currently, treatment resistant depression still lacks standardisation or a consensual definition (McIntyre et al., 2023; Souery et al., 2006). Hence, regardless of the scientific headway made so far; distinctive, and in-depth knowledge about the epidemiology of diverse and nuanced types of depression such as treatment resistant depression remains lacking.

It is also important to note that this section on epidemiology focuses on a largely Western knowledge base and does not represent global insight on this topic. Some of the reasons for this are

- i) A higher volume of written literature in Western compared to Eastern cultures where information is passed on orally from one generation to another.
- ii) Chiu (2004) suggests a lack of financial resources in Asian countries as a cause for fewer written data on this topic. He says, “Epidemiological studies require financial, human, social resources, and infrastructure to plan, conduct and complete. Asian nations are yet to deliver up-to-date epidemiological data on depression” (p.4). Currently, it is uncertain if funds and infrastructure are altogether lacking or are vastly diverted to physical health conditions due to the stigma around mental health conditions in Asian countries.
- iii) On the contrary, Gbadamosi et al. (2022) notes the use of plant medicine by indigenous communities in Sub-Saharan African countries in combating depression. However, there is a lack of robust methodological studies that can

adequately highlight the epidemiology of depression. Gbadamosi et al. (2022) also note that new, emergent information from upcoming randomised controlled trials on indigenous treatment practices and depression may be forthcoming.

- iv) While the rates of depression in South American countries over 10 years was calculated to be 12.58% (Errazuriz et al., 2023) the treatment and research gaps are also understood to be significant (Kohn et al., 2018) and are an added factor towards a focus on a largely Western perspective on the epidemiology of depression.

2.2 Diagnosis

The first standardised set of indicators for diagnosing mental health conditions was published in the Diagnostic Statistical Manual (DSM) in 1952, which simply contained a glossary of so-called mental disorders (APA, 2020). Since 1952, the DSM has been through years of iterations and now also includes specific types of depressive disorders, such as clinical depression, persistent depression, bipolar, bipolar II and post-natal depression, perinatal depression, postpartum depression, postnatal depression (APA, 2013). Appropriate and timely diagnosis is of the essence in treating depression.

Clinical depressive disorders are made tangible by low vigour, low mood, low self-confidence, and aversion to activity without a specific reason (NIMH, 2018). Based on diagnostic criteria, symptoms include depressive moods lasting at least two weeks for most of the day, experiencing guilt, reduced concentration, fatigue, loss of energy, diminished interest/pleasure, and weight change of at least 5% (APA, 2013). Five or more symptoms need to be present for a depression diagnosis. Since depression symptoms can sometimes overlap with indicators of substance misuse, psychosis, and bereavement, it is essential for

medical professionals to screen for conditions that may mimic depression before a formal diagnosis (APA, 2013).

This understanding of the diagnostic criteria has progressed drastically from its early, rudimentary understanding as mentioned in the previous section (2.1: Epidemiology). However, despite these iterations, the diagnostic criteria have faced much criticism. One of the criticisms is directed towards the binary perception of the diagnosis. Kokanovic et al. (2013) support the idea that depression need not be looked at as a cluster of symptoms but more as a spectrum; they say, “lay accounts of depression vacillate in and out of the medicalised discourse of depression, highlighting the limitations of the biomedical approach to diagnosis and treatment” (p.377). Likewise, Blazer (2012) shares that the criteria for depression are more ‘fuzzy’ in the real world and are not as categorical or clear as the criteria may suggest. Another facet of this is the increase in depression diagnosis and the high volume of anti-depressants that are prescribed because of it. The central argument against the current diagnostic criteria seems to be that it does not account for the complexity of human emotions and the range of responses possible in distressing situations. A more humanistic approach that considers the subjective, relational and interpersonal context of presenting symptoms is strongly needed in the diagnostic criteria (Park & Kim, 2018).

2.3 Prevalence

In 2017, depression was considered to be the leading cause of disability in adults (Friedrich, 2017). With the onset of COVID-19, depression has not only continued to be a health concern for adults but there has been an estimated increase of 25% in its global prevalence (WHO, 2022). Sexual orientation and gender identification also influence depression prevalence in certain social groups; Ross et al. (2018) found that bisexual people were at a higher risk of depression compared to men or heterosexual people. The authors identified gender-based discrimination, social erasure, and lack of affirmative support as

potential causes for higher prevalence rates in bisexual people (Ross et al., 2018). Another recent study (Zhao et al., 2020) reinforces that gender and sex differences in depression prevalence exist; the sexual minority stress theory (Rich et al., 2020) and cognitive vulnerability model of depression reinforce this finding from a theoretical stance. However, the data used in the study primarily focussed on American and European populations, noting a similar struggle to obtain a global perspective on this topic vs a highly Westernised one, as identified in the epidemiology section earlier. This is also reinforced by Kneale and Bécarea (2021) who identified systematic discrimination and stress as predictors of depression, causing this group of individuals to be disproportionately presented in the prevalence rates of depression, especially as one of the effects of COVID-19. Similarly, Springfield (2023) recognised the disparity caused due to systematic exposure to racism as a cause for higher prevalence rates of Black, Indigenous, and People of Colour (B/I/POC) in depression.

Another proposition regarding the prevalence of depression is by Zhao et al. (2020) who suggest the genetic component of depression that may increase prevalence, specifically the genetic strains '5HT2A' and 'TPH' in women and 'COMT' in men. No clear information exists on the implication of this genetic potential in transgender individuals. While more research is needed to ascertain prevalence rates from a queer affirmative lens, there seems to be a consensus that both female-assigned and non-binary adults are at a higher risk of developing depression compared to other sexes and genders (Stanton et al., 2021). Likewise, there is a consensus that urban dwellers are at a higher risk of depression than their rural counterparts (Peen et al., 2010) with few noted variations like in China where urban dwellers who moved to rural areas were found to be at a greater risk of depression (Yang et al., 2020). It is essential to acknowledge that this study included data on older adults (aged 50-65) with a large sample size (n=3800). Considering that China was the most populous country in the

world at the time of this study, this data is still relevant in understanding the broader prevalence of depression (Yang et al., 2020).

Prevalence of Treatment Resistant Depression

Due to the criteria of treatment resistant depression (TRD) being varied, it is difficult to determine its exact prevalence. Although, a few studies do indicate its prevalence, most of them rely on a pharmacological perspective of treatment resistant depression and hence adopt a bio-medical model of understanding depression—a shortcoming of which is the lack of focus on community-centred treatments and non-pharmacological treatment resistance. Paykel (1994) suggested that historically, about 20% of individuals with major depressive disorder may struggle with finding the correct diagnosis and treatment plan, and one-third who do not respond positively to the first round of antidepressants may be considered to have treatment resistant depression. Six years later, Rosenbaum and Heninger (2000) argued that irrespective of the diagnosis, “it is indisputable that patients who do not respond, respond poorly, and no longer respond to available antidepressant therapies represent only a substantial minority of those with major depressive disorder” (p. 273). In 2004, Trevino et al. (2014) reinforced what Paykel (1994) identified—that one-third of individuals living with major depression potentially struggled with treatment resistance.

More recently, in a database study in Japan, researchers found 12% of those prescribed antidepressants experienced TRD; here, resistance was described as a lack of improvement despite 15 days of two types of antidepressants (Mahlich et al., 2018). In the United States alone, 30.9% of adults were found to have treatment resistant, which amounts to about 1.1% of the total US adult population; in their study treatment resistant depression was defined based on medication resistance that persisted for 12 months (Zhdanava et al., 2021). Another recent study identified a prevalence of “21% in Mexico, 32% in Colombia, 33% in Argentina, and 40% in Brazil” (Soares et al., 2021, p. 806). In the study by Soares et

al. (2021), TRD was defined as, “ ≥ 2 antidepressants and a lack of a complete response to treatment (based on the Montgomery-Asberg Depression Rating Scale” (p. 1799). However, it is unclear whether gender has been described as a synonym for sex or if it considers societal/environmental factors in specifying the prevalence. Lastly, like the prevalence rates of depression, members of Black, Indigenous, and People of Colour community are also unfairly affected by treatment resistant depression. There is a disproportional burden on Women (all-inclusive) and members of the Lesbian, Gay, Transgender, and Intersex ++ community (Ross et al., 2018).

2.4 Theories of Depression

Evolutionary Biology Theories

According to Darwinian models of evolutionary biology, depression is an adaptive mechanism used by our ancestors to deal with different hardships, like famine, drought, childbirth, illness, low social support, loss of a provider, or infertility (Allen & Badcock, 2006; Sheill, 2019). As such, this model suggests depression to be a defence mechanism that is normal to exhibit in distressing circumstances (Gluckman et al., 2011; Zisook & Shear, 2009). Similarly, a social-risk-hypothesis model suggests that depression increases one’s cognitive hyper-sensitivity, reduces a person’s tendency of high-risk behaviour, and expedites social support from others. The latter has also been supported by Sheill (2019), who suggests that depressive symptoms are a way of sending non-verbal social signals aimed at increasing the chances of survival, especially in the case of depression stemming from grief. However, one of the limitations I note in these perspectives is the lack of nuanced and complex understanding of suicidal ideation as a lived experience in people with or without a depression diagnosis. A limitation of the social-risk-hypothesis and Darwinian models of evolutionary biology that propose depression to be adaptive do not justify and accommodate for the complexity of suicidality in depression.

Affective Neuroscience Theories

An affective neuroscience perspective looks at depression in terms of cognitive capacity. Affective neuroscience theories suggest that the brain whilst experiencing depression is capable of being more analytical. This is done by shifting focus from functions of social obligations (that stem from the reptilian brain) to matters of deep thinking (that stem from the neocortex) (Montag & Panksepp, 2017; Sheill, 2019). As a result, this shift may manifest as ‘social withdrawal’ and diversion of energy from essential survival functions (e.g. hunger and sex) toward more analytical thought patterns, where a dilemma may be scrutinised and eventually solved. As symptoms of depression, these behaviours may present as decreased appetite, low libido and rumination respectively. Gałecki and Talarowska (2017) make an interesting comment that the evolution of the frontal lobes is both an asset and burden to the human race; they call it the ‘Achilles heel’ of Homo sapiens; indicating that while it gives humans the power to innovate, these same neural pathways can also host the process of rumination. While, rumination is a common symptom of depression, it is also proposed to be a highly valuable and sophisticated way to problem solve and think more analytically according to this school of thought (Gortner et al., 2006).

Interestingly, despite affective neuroscientific insights into depression, similar to the shortcomings of Darwinian models of evolutionary theories, the symptomology of suicidality and chronic pain is not explained by an affective neuroscience outlook either. For instance, post-mortem studies of people with a depression diagnosis who have died by suicide do not show increased brain signal activity within their neocortex (Rosel et al., 2000); this is directly contrary to the affective neuroscience theory of depression that proposes depression includes increased analytical function within the neocortex. Alternatively, in another review of post-mortem studies, researchers noted decreased serotonin receptors in the prefrontal cortex of individuals who died by suicide due to depression. While this theory does not rationalise the

symptoms of suicidality, it does account for mood-related symptoms of depression in the brain (Furczyk et al., 2013).

Social Theories

Contrary to the neuroscience theories, social theorists propose that depression stems from skewed cognition, in which individuals are unable to process complex social dilemmas and environments well (Weightman et al., 2014). The emphasis of social theorists is on the presence, absence or interpretation of social relationships. This theory emphasises a human's need for positive, healthy social connections to thrive. Social theorists suggest that depression results from social vulnerability, fundamentally caused by dysfunctional relationships (Bagana, 2013; Champion & Power, 1995). However, this unilateral stance does a disservice to understanding depression holistically.

One of the limitations of attributing depression to disturbances in social relationships is that it does not account for human resilience and love, both of which are unique ways for humans to overcome challenges such as disconnected or disturbed relationships. Additionally, recognising that people respond to social disconnections differently is lacking in this approach. For example, with regard to the death of a loved one, an individual may grieve for years; alternatively, some might 'bounce back' from a similar situation promptly. Archaic time indicators do not account for the individual differences and emotional bonds shared between the deceased and the griever. I argue that social theories do not account for the wide range of emotions humans can experience. Arguably "normal" responses to social loss/disconnection have been possibly pathologised as depression or post-traumatic stress disorders in this outlook (Shear, 2009). Further, the Diagnostic and Statistical Manual (DSM) also sets a definitive time period to separate expected grief from pathologised grief; which has been heavily criticised for potentially over-diagnosing people for the way they grieve (Thieleman & Cacciatore, 2013). Since the exclusion of bereavement as one of the criteria for

a depression diagnosis in the DSM 5, there has been serious debate about whether this is a client-centred decision, as the removal fails to recognise that depression usually has several interacting causes (Pies, 2014). Another aspect that is overlooked by social theorists is the prevalence of depression in people who are in loving and supportive relationships. One possible justification here might be the perception of relationships by someone experiencing depression. While understanding contributing factors to depression and anxiety, Hernández-Moreno et al. (2021) discovered that ‘felt perception’ of social support is more important than actual social support. Still, the rates of depression among people who are in loving relationships and recognise that they are loved but are also depressed simultaneously are not explained based on this outlook.

Theory of Learned Helplessness and Hopelessness

Psychological theorists propose that depression develops largely out of traumatic life events (England & Sim, 2009). In this perspective an event or situation is typically considered traumatic if it beyond the individuals psychological threshold (SAMHSA, 2014). This is closely linked to the cognitive models of depression rooted in the theories of learned hopelessness (Liu et al., 2015) and helplessness (Pryce et al., 2011). The theory of learned hopelessness was first formulated in 1978 and later re-formulated in 1989. This theory highlights one’s negative self-view, perceived incapacity, and psychological stress as essential considerations in this outlook of depression (Abramson et al., 1989).

Medical Model

Lastly, a medical model of depression attributes its cause and development to the imbalance in an individual’s brain chemistry with potential maladaptation in the stabilising and protective systems of the body (McEwen, 2009, p. 912). Aligned with this perspective, robust research on discovering if depression can develop due to inflammation in the body is ongoing (Chu et al., 2021). Currently, a few reasons to justify this line of inquiry is that

inflammation directly causes an imbalance in neurotransmitters (Leonard, 2014) and the biochemistry of stress and depression is alike; they both coincide with inflammation in the body and reduce serotonin production in a similar way (Liu et al., 2017). In this way, it is arguable that stress, inflammation, and depressive symptoms may be interrelated.

Regardless of which theory of depression one ascribes to, there are typically three main avenues in which symptoms of depression may present, they are, cognitive, somatic, and social symptoms. Examples of which are, demotivation, lack of concentration, rumination, disinterest in socialising, loss of libido, desire to isolate, change in sleep/appetite patterns, and fatigue (APA, 2013). While the aforementioned theories make strong arguments for understanding depression, each of them have a singular focus which only provides a limited understanding of depression. It is plausible that a multi-model approach that combines insights from different outlooks is the most helpful in understanding why depression has become the complex problem it is today.

2.5 Plausible Causes for Depression

Neurochemistry and Genetics

Being a multifaceted illness that manifests in several systems of the human body, the plausible causes of depression are also multifaceted and rooted in different aspects of human life. Concerns of mood and circadian-related circuitry are often seen in mood disorders at large (Rakofsky & Rapaport, 2018) and specifically in diagnoses of depression as well (Claudio & Andrea, 2022; Duman et al., 2016). For years now, depression research has focussed on neuronal deficits and the low levels of serotonin found in people living with depression. Yirmiya et al. (2015) propose that to gain deeper insight into the cause of depression, scientists must dig deeper into how glial cells function in those with clinical depression. This speculation does not guarantee that depression is a microglial disease but increasing research on this topic suggests that this could be a potential biological cause of

depression (Duman et al., 2016). At the same time, there has been an increase in curiosity about the connection between reduced neural density and changes in synaptic functioning. It is argued that synaptic functioning, just like personality traits and intellectual quotient, can be hereditary (Devlin et al., 1997; Lebowitz & Ahn, 2017). This is specifically true for autonomous depression, a type of depression solely attributed to biochemical causes (Isenberg & Schatzberg, 1978). Hence, individual and genetic neurobiological indicators such as low levels of dopamine, norepinephrine, and serotonin in the synaptic clefts may be genetically predisposed to create periods of low mood and be a plausible cause for clinical depression (Nutt, 2008). This attribution of depression to imbalanced neuro-chemistry was proposed in the 1960s, and there has been one critical discovery which discredited this long-standing theory (Moncrieff & Horowitz, 2022). Specifically, Moncrieff and Horowitz (2022) identified that there was minimal to no difference either in serotonin levels and activity between people with and without a diagnosis of depression. Similarly, they found no difference in gene expression in people with and without a diagnosis of depression. This ground-breaking discovery urges a global shift to look at the other factors as a cause of depression such as stress, dysregulation, and significant, distressing life experiences. Moncrieff and Horowitz (2022) note that a limitation of their study is the inclusion of low-quality studies in their umbrella review. Despite this, the discovery made by Moncrieff and Horowitz (2022) continues to aid critical conversations in the field of depression (Borgogna & Aita, 2022).

Vulnerability and Stress

Closely linked to genetics and biology is the cognitive vulnerability model of depression. This model understands depression to be a result of stressful life events. This model is integral to understanding unipolar depression where periods of low mood are not interspersed with high moods (Scher et al., 2005, p. 487). Initially, this model was called ‘the

cognitive model' and only attributed depression to extraordinary life events/changes (such as birth, death, marriage, divorce, sexual trauma, etc.). This model has now evolved to include the word 'vulnerability', which emphasises the emotional coping skills, life events, and exposures that may impact one's attitude and become part of one's schema (Beck, 2008). Schemas affect the way we think, perceive, and analyse our environment. Stressful life events increase the risk of developing negative schemas and a range of mental health problems, including the first onset of clinically significant mood disorders. Post (1992) reinforces this and suggests, that the first episodes of depression are often closely related to a specific psychosocial stressor. Further, it is even proposed that socially humiliating events that directly devalue individuals can also increase the risk of depressive episodes (Kendler et al., 2003; Mazure, 1998; Monroe et al., 1991). Traumatic experiences, specifically in childhood, are understood to be a strong causal factor in adult depression. Simon (2012) states that traumatic experiences, such as neglect, bullying, abuse and maltreatment in early childhood, can cause depressive symptoms and disorders in adults. Nanni et al. (2012) corroborate this by saying, "a history of childhood maltreatment was associated with a two-fold greater risk of chronic or recurrent depression"(p. 141). Such traumatic experiences have been found in most multifactor models on the etiopathogenesis of clinical depression (Bohleber, 2010; Hill, 2009; Schulte-Körne & Allgaier, 2008).

While trauma has been noted as a direct cause of depression, the amount of exposure to the trauma (single, multiple, or accumulated) also plays a role in the risk of causing a depressive episode. Chatterjee et al. (1981) found that individual with depression have a significantly greater number of traumatic life events 6-12 months before onset. Similar results have been found in a more recent study by Mgoqi-Mbalo et al. (2017). They emphasise that post-traumatic stress disorder and depression are expected mental health consequences of traumatic life events. A recent systematic review on trauma-related depression by Petereit-

Haack et al. (2020) also stresses the link between depression and trauma, emphasising specific occupational sectors. They identified that nurses, police officers, paramedics and firefighters are at risk for higher levels of depression due to the violence they experience at their workplaces (Petereit-Haack et al., 2020). Likewise, war journalists and soldiers were also considered to have an increased risk for depression due to the traumatic nature of their work (Feinstein et al., 2002).

In the context of COVID-19 hospital admissions, the fear of contracting or dying from COVID-19, and long stays in intensive care units were some of the shared traumatic experiences amongst people across the globe. In addition to this trauma, COVID-19 has significantly affected the social lives of many people. With social distancing and isolation recommended to protect oneself, there have been tremendous negative implications on social dynamics; the most crucial being an increase in perceived social isolation (Pietrabissa & Simpson, 2020). These experiences may serve as a trigger for anxiety and depression (Yamamoto et al., 2020). Epidemics in the past have had a similar negative impact on social relationships and resulted in increased anxiety and depression among the masses. Keita et al. (2017) identified this during the viral outbreaks of both Severe Acute Respiratory Syndrome (SARS) and Ebola in the past. In a study conducted to understand the long-term effects on survivors of critical illness, Demoro et al. (2020) identified that 41.4% of survivors experienced anxiety and depression. With over 100,000 adults who have been hospitalised due to COVID-19 in the United States alone, and over 250,000 patients hospitalised worldwide due to COVID-19 only in 2020 (Healthline, 2021); it is possible, that medical trauma may be one of the leading causes of depression in the coming years.

Modernisation and Social-Media Use

Apart from biological and psychological perspectives, other plausible causes of depression that consider one's environment include modernisation and increased social media

use in adults and children, respectively (Hidaka, 2012; Shafi et al., 2019). Modernisation is a double-edged sword. While it has helped humans advance in many ways, it has also fastened the pace of life and increased the demand for adaptation. Hidaka (2012) describes some of the negative impacts of modernisation as the population being “increasingly overfed, malnourished, sedentary, sunlight-deficient, sleep-deprived, and socially isolated”, all potentially impacting the incidence of depression (p. 205). Homelessness and political displacement that occurs due to modernisation are also known factors that exacerbate depressive symptoms (Jen et al., 2015; Stenius-Ayoade et al., 2017).

Power Disparities

Neitzke (2016) describes depression as an illness of power and argues that the causes of depression can only be understood from a ‘systems of power’ lens. Further, Neitzke (2016) encourages individuals to acknowledge influences on the field of psychiatry, namely social structures such as strict patriarchy and a binary view of gender in the world. Gender is a social construct that favours heteronormative cisgender individuals and poses a challenge for all other genders (WHO, 2023). For instance, those who identify with non-binary genders may also struggle with the negative impacts of this social construct. Transgender-related stigma is one such negative consequence of a binary world. According to a study conducted by Yang et al. (2015), “higher levels of exposure to transgender-related stigma were independently associated with higher levels of depression”(p. 306). Robust ongoing gender studies and depression research suggest that social stigma and patriarchy could also be potential causes of depression.

A final and pertinent perspective of understanding depression is as an interoceptive disorder. This stems from affective neuroscience, in which the link between emotion and interoception was first proposed in the 1920s (Hu et al., 2023). Evidence suggests interoception to be essential in maintaining homeostasis and emotional regulation; this is

based on the discovery that the right anterior insula of the brain is activated during interoception, as seen in brain scans (Garfinkel & Critchley, 2013). Similarly, Paulus and Stein (2010) stated that depression is caused by multiple factors, with altered interoception being one of them. Further, Eggart et al. (2019) who founded the Multidimensional Assessment of Interoceptive Awareness questionnaire, identified moderate depression to be linked with challenges with interoception and conducted a review which identified increased interoception with a reduction in symptoms of major depressive disorders.

Although these factors (biological, psychological, and social) illustrate the potential causes of depression to a great extent, these perspectives do not justify the variations in depression in adults with similar demographic/ childhood experiences. The influence of personality types and personality disorders on the probability of experiencing depression is unknown. Similarly, the root cause of neurobiological deficits in the brain is yet to be fully revealed. It is still inconclusive if negative life experiences create a brain circuitry susceptible to depression or if atypical brain circuitry causes stronger adverse reactions to life events. Despite research and recurrent debates on this topic, it is not possible to ascertain what occurs first, or the exact cause of biochemical deficits in an individual. Additionally, these causes do not explain the prevalence of treatment resistant depression. The interdependence between the social, biological, and psychological factors is important to take note of to attribute plausible causes of depression in individuals holistically.

2.6 Treatment Resistant Depression

Not all who live with depression may have access to or choose to receive appropriate care. Alternatively, not everyone who participates in treatment may benefit from it. The type of depression where the symptoms persist despite attempts to address them may be understood as treatment resistant depression (TRD). While there is no agreed-upon definition for treatment resistant depression, it is best understood as a state where depressive symptoms

do not decrease despite two rounds of antidepressants or the first line of therapeutic treatments (Al-Harbi, 2012; Voineskos et al., 2020).

Treatment resistant depression involves long periods of low/depressed mood, also called dysthymia (Akiskal et al., 1984). Although the definition of dysthymia has been reconsidered since, it is largely discussed to understand the persistent nature of treatment resistant depression (Ventriglio et al., 2020). “Dysthymic disorders have multiple physiological and psychological symptoms”, the manifestations of which are episodic, recurrent and continue for several years (Pandarakalam, 2018, pp. 280-281). Due to the complex nature of depression, reasons for treatment failure differ on an individual case-by-case basis. However, McIntyre et al. (2020) and Chatterjee et al. (1981) acknowledge the lack of time psychiatrists can offer versus the time needed to identify a treatment plan for patients as a potential cause for treatment failure. This, along with an overall lack of illness acceptance, poor doctor-patient relationship, and medical non-compliance are other factors for the failure in treatment (Hirschfeld, 2001; McIntyre et al., 2020).

Depressive disorders, both treatment responsive and resistant, are often co-morbid with anxiety (Hirschfeld, 2001; Pericleous, 2011; Zhiguo & Yiru, 2014). This tends to increase the financial burden on patients. Patients often go from one doctor to another to find a suitable treatment method for depression and potential comorbidities, ultimately increasing distress (Trevino et al., 2014). Continuous exposure to such distress keeps one's sympathetic nervous system charged and activated (Won & Kim, 2016). When activated, the sympathetic nervous system responds to stress by fleeing, fighting, or freezing (Roelofs, 2017). In all three states, humans are not in a state of homeostasis or ease; thus, creating the need to regulate one's emotions. Emotional self-regulation is the body's way of seeking stability. It is a process where one can manage feelings and maintain hope amid stressful situations (De Almondes et al., 2021).

Contrary to the vast literature on the causes and prevalence of depression, there is limited information on why and how treatment resistant depression is caused. One of the bewildering aspects of this type of depression is the prevalence of symptoms despite intervention. Holmes et al. (2006) speak to the presence of co-morbidities, community attitudes, demographic factors, and constraints in social support as possible factors that may cause treatment resistant mental health conditions. Fava et al. (2020) make strong arguments against two neglected aspects of depression diagnostics, which if rectified may help better define and categorise treatment resistant depression. (i) The first aspect constitutes a lack of adequate details in the diagnostic measures used in depression. They critique the absence of clear markers regarding remission in the Hamilton Depression Rating Scale(Hamilton, 1986), a scale very commonly used to diagnose depression. (ii) Second, they emphasise inadequate documentation of the responsiveness to treatment by clinicians. Fava et al. (2020)state that treatment resistant depression could be better understood if a subjective baseline risk of poor responsiveness could be done before treatment is provided. Primarily, they advocate for a more subjective analysis of both the symptoms of depression and outcomes of treatment to better understand the resistant nature of depression. Treating this type of depression is layered and requires further nuanced research.

2.7 Current Treatment Methods for Depression

Current treatment methods for depression can be broadly divided into psychosocial, pharmaceutical, alternate medicine, neuroscience, and embodied interventions.

Psychosocial Interventions

A) Psychoeducation. Psychoeducation provides helpful and relevant information that demystifies mental health conditions, such as their causes, symptoms, potential treatment methods and suggested lifestyle changes (if any). Psychoeducation can often be the first step towards treatment options and not as a stand-alone treatment method. The process can help

facilitate acceptance and help in objectively understanding mental health conditions instead of perceiving them as ‘one’s fault’. There are differing views on the benefit of psychoeducation in depression treatment. While Melin et al. (2018) suggest psychoeducation can help increase treatment adherence and overall improvement from symptoms, Chiesa et al. (2015) suggests that compared to nuanced forms of intervention like mindfulness-based cognitive therapy, psychoeducation itself is somewhat inconsequential in attaining therapeutic psychological outcomes.

B) Psychotherapy. Broadly defined, psychotherapy “refers to the treatment of emotional or physical illness by psychological means, implying a belief in the influence of the mind on the body and of the body on the mind”(Cautin, 2011, p. 3). It is also described as a form of treatment where “the therapist and patient(s) work together to ameliorate psychopathological conditions and functional impairment through a focus on the therapeutic relationship”(Brent & Kolko, 1998, p. 17). Despite the active use of psychotherapy since the 19th century, the long-term benefits of psychotherapy in depression are inconclusive (Berg & Høie, 2010). However, the short-term benefits of psychotherapy have been widely accepted and identified (Berg & Høie, 2010; Choi et al., 2021). Although it is typically practised on a 1:1 basis, group psychotherapy is also a feasible option in treating depression.

Group psychotherapy helps those battling depression to connect and relate with others sharing similar feelings of hopelessness. It directly addresses thoughts like, “Why me?” and enables catharsis. Chida et al. (2016) found group psychotherapy beneficial in treating depressive symptoms in Japanese psychiatric patients. Likewise, this positive impact was also seen in depressed patients in Italy (Giannone et al., 2015). A variation of group psychotherapy titled ‘short-term dynamic group psychotherapy’ has also proved to be effective in reducing symptoms of depression (Bros et al., 2017). Since the onset of COVID-

19, telehealth-based psychotherapy has been practised widely with adequate treatment results, at least in the short-term (Castro et al., 2020).

C) Cognitive behavioural therapy (CBT). Cognitive behavioural therapy, an evidence-based psychotherapy method focussed on facilitating behavioural change through cognitive restructuring or challenging the way one thinks (David et al., 2018), is amongst the most frequently used psychosocial treatments for mental health conditions, including depression. It focuses on cognitive restructuring by finding the link between patients' thought patterns and feelings and expanding their ability to cope and is usually done on a 1:1 basis (Zhang et al., 2018); and is also effective in treating secondary anxiety due to other primary conditions like Parkinson's in adults and depression in adolescents (Reynolds, 2010; Young et al., 2006).

Since CBT focusses heavily on an individual's ability to change their thoughts and consequent associations, one of the shortcomings of CBT that I have seen in my clinical practice is the heavy burden it lays on the person living with depression. The individual onus to initiate and sustain change in their thought patterns while struggling with activities of daily living (like self-grooming, maintaining sleep hygiene and eating) can be a demanding task. This same point of criticism may also be perceived as an advantage to some. The lack of dependency on others may be looked at as an opportunity for individuals to feel empowered and take an active role in their recovery. Despite this, it is plausible that CBT may not be ideal for clients living with severe depression as the mental determination and discipline required for CBT to be successful can be difficult to summon in severe depression. Further, failure to accomplish cognitive restructuring may increase feelings of low self-worth in individuals already experiencing depression. Like psychotherapy, CBT too has proven short-term benefits with unconfirmed long-term benefits (Gauhar, 2016).

D) Eye Movement Desensitisation and Reprocessing (EMDR). Originally introduced in 1989 and intended to treat post-traumatic stress disorder, EMDR is an effective psychotherapeutic intervention to treat depression (Hase et al., 2015; Shapiro, 1989). EMDR emphasises bilateral movements of the eye and body to help activate the different hemispheres of the brain, which ultimately makes processing emotions and distressful memories easier (Landin-Romero et al., 2018). The bilateral eye movements are used to keep the client focussed on two types of stimuli, the external (which refers to the clinician's hand being observed by the client) and the internal stimulus (which is the distressful memory associated with the depression). Shapiro described these eye movements as “dual attention stimuli,” and identified them to help with emotional processing (Shapiro & Forrest, 2001).

“EMDR therapy is an 8-phase treatment approach composed of standardised protocols and procedures. Some of which include processing: (a) a past event/s that set the foundation for pathology, (b) current disturbing situations, and (c) future challenges” (Shapiro, 2014). EMDR proposes that adequate processing of memories linked with the source of pathology will bring about resolution in patients. Bae et al. (2008) highlight case studies of two adolescents successfully treated for depression by EMDR. Although the session frequency differed in both cases, EMDR proved to be effective even after just three months. In another study, 16 persons with a depression diagnosis were treated with EMDR, where 68% of the group showed complete remission and a more significant decrease in depressive symptoms than the control group (Hase et al., 2015).

Having been used and researched for years, EMDR is also effective in reducing hallucinations and anxiety along with symptoms of depression (Van den Berg & Van der Gaag, 2012). The effectiveness of EMDR in reducing depressive symptoms was also reinforced by a randomised study conducted by Gauhar (2016). Not only did she find EMDR

to be effective in managing depressive symptoms but also in increasing the quality of life with lasting effects for three months after the study.

E) Psychotropic Medication. The first pharmacological treatment for depression was discovered only in the last 55 years (Hillhouse & Porter, 2015). A common struggle with this treatment method has been finding the right antidepressant for each individual. Pandarakalam (2018) attributes this to a poor understanding of individual temperaments and their specific neurobiological substrates. If a patient remains unresponsive even after different medications and combinations, augmentation therapy may be used; a second agent may help individuals achieve a favourable clinical response (Fava & Targum, 2007). He further suggests that the combined use of serotonin reuptake inhibitors and novel antipsychotics can be more effective in depression treatment. “The biological or chemical mechanisms for the beneficiary effect of these combinations are not clear. The combination of antipsychotics and serotonin reuptake inhibitors antagonise serotonin receptors and elevate the frontal cortex dopamine levels. These effects could probably explain the additive effects on depression”(pp. 277-278). However, the final success of antidepressants may depend on variables identified as: medication compliance, the patient’s attitude/beliefs towards medication and the doctor-patient relationship (Chatterjee et al., 1981; Martin et al., 2005). Antidepressants have a negative connotation due to side effects and the potential for lifelong dependency (Cartwright et al., 2016; Reid & Barbui, 2010). Increased insurance premiums and suicidal events whilst being on antidepressants are also two heavily critiqued facets of antidepressant use (Courtet & Lopez-Castroman, 2017; Croghan, 2001).

F) Remediation of Deficiency. The term ‘remediation of deficiency’ was used by Shaver in a presentation on non-pharmacological interventions in treating depression (Shaver, nd). He suggests using medications like Hypericum Perforatum (St. John’s Wort) and Rhodiola Rosea to address depressive symptoms. Further, Shaver also indicates that patients

should check and simultaneously address any deficit in Vitamin B-12, and D3 levels and any disruptions in Folate and Methylation cycles. Naturopathy suggests depression may be caused by toxins in the body and vigorously promote a healthy diet and purification of different body parts, specifically the excretory system and the skin (White, 2000).

Homeopathy is another non-pharmaceutical treatment method used in both anxiety and depression treatment (Pilkington et al., 2005, 2006). Other alternative medicines like Chinese medicine and Ayurveda are non-pharmaceutical treatment methods used in depression treatment. However, there is insufficient literature to prove that depression may be adequately treated through these approaches, especially in the long term.

G) Interventions guided by Neuroscience. The nervous system is traditionally divided into the central and peripheral systems, and the latter is further subdivided into the somatic and autonomic nervous systems (Michael-Titus & Shortland, 2022). The autonomic nervous system comprises of the sympathetic and parasympathetic nervous systems, both of which are essential to a balanced emotional state. Neuroscience-based interventions in depression are aimed at addressing the neurophysiological mechanisms of emotions. Although more research is needed to better understand the benefits of this approach, current data on the link between mood variations and the autonomic systems shows promise (Jerath et al., 2015). A leverage that most neuroscience-based approaches have over more traditional approaches to depression treatment (like psychotherapy, and use of anti-depressants) is the comparatively higher rate of benefits in depression treatment (Park et al., 2021). Further, neuroscience-based approaches are able to better address symptoms of treatment resistant depression. A few specific techniques under interventions guided by neuroscience are mentioned below.

i) *Electroconvulsive Therapy (ECT)*. ECT is a form of therapy which uses mild shocks to enhance the production of serotonin in the brain (Ishihara & Sasa, 1999; Meechan

et al., 2022). Since lowered serotonin levels are associated with depressed mood, the mild shocks given in ECT directly address the neurotransmitter deficit by electronically probing the production of serotonin and awakening parts of the brain related to mood. ECT is typically prescribed for patients experiencing treatment resistant depression. ECT is also found to be helpful in other types of depression namely, geriatric depression, psychotic depression, and depression with suicide risk in adults (Park et al., 2021). ECT has also been proven to reduce depressive symptoms, reduce agitation and increase thought organisation in a pooled analysis study with Taiwanese adults admitted in inpatient units with a diagnosis of depression (Lin et al., 2017).

Despite ECT having proven benefits, its use and scope is not widespread. For example, in the United States, only 2.4% of all patients hospitalised in psychiatric facilities underwent ECT between 1975-1980 (Thompson & Blaine, 1987). The reasons for this are the financial burden associated with ECT and side effects like temporary delirium and short-term confusion (Kerner & Prudic, 2014; Park et al., 2021). In the past, there has been a lot of fear associated with ECT, particularly regarding the risk of mortality or brain-damaging seizures during treatment. ECT also faced criticism for the inhuman way it was executed in the 1900s; however, with the advancement of technology coupled with strict ethical protocols the mortality rates have reduced to around 2-10 deaths for every 100,000 people who receive this treatment (Kerner & Prudic, 2014; Park et al., 2021). Regardless, the literature encourages suspension of ECT till strict, universal protocols can be established and monitored (Meechan et al., 2022).

ii) Vagal Nerve Stimulation. Vagal nerve stimulation (VNS) is a non-invasive treatment option that creates stimulation of the vagal nerve through bipolar electrodes (Carreno & Frazer, 2017). Like ECT, VNS is also known to be specifically effective for treatment resistant depression. The ventral vagal system is the most evolved stress response

in mammals (Huttunen & Mednick, 2018). In depression treatment, vagal nerve stimulation is used to gain mastery over the mind and its psychosomatic impacts on the body (Sullivan et al., 2018). For example, using relaxation and breathing techniques that tap into the mind-body nexus and aim to counter the physiological impacts of depression. It has been found that electronic stimulation of the vagal nerve may be helpful as it can “promote neural network activation or reinduction of synchronicity in brain waves or timing of various neural circuits. It has also been found to increase activity in the thalamus and brain stem” (Rosenbaum & Heninger, 2000, p. 275). A portion of this approach’s benefit may be attributed to the large percentage of afferent sensory fibres (over 80%) present in the vagus nerve. In this way, healthy stimulation of the VNS can carry messages of reassurance, safety, and love to different parts of the brain, thus directly addressing the symptom of low self-worth in depression. Although more research is required to understand the duration and exact nature of this treatment type, based on existing data, vagal nerve stimulation is an approved treatment for some conditions, including depression and drug-refractory epilepsy (Conway et al., 2018).

iii) Neurofeedback. Congedo et al. (2004) describe neurofeedback as measuring brain activity by providing patients with real-time feedback of their brain patterns. Since depression has a strong biochemical and genetic component, neurofeedback can be beneficial in its treatment. Neurofeedback works by recording and feeding back brain wave activity to the patient in the form of audio or visual feedback. The most commonly used waves in neurofeedback are alpha, beta, theta and alpha/theta ratio waves (Marzbani et al., 2016). According to Escolano et al. (2014), neurofeedback aims to allow the subjects to self-regulate brain activity. Once a person becomes aware of their patterns of distress, they learn to better manage and monitor their own feelings during times of distress (Marzbani et al., 2016). Further, people are encouraged to control their brain waves consciously which can also be empowering to recipients of care (Marzbani et al., 2016). Marzbani et al. (2016) make a

strong argument for the use of neurofeedback in depression treatment, mainly owing to the neurobiology of depression; they say, “depression is associated with hypo-metabolism in the cingulate cortex and occasionally in the frontal cortex, insula, anterior temporal cortices, amygdala, basal ganglia, and thalamus”(p. 153). Neurofeedback helps address this unequal metabolism in the brain by making the depressed person aware of this pattern.

A type of neurofeedback that has been found to be particularly helpful in treating depression is called Low Energy Neurofeedback System (LENS). It delivers weak electromagnetic signals that help change a patient’s brain waves with their eyes closed (Zandi Mehran et al., 2015). With the patient's eyes being closed, the occipital alpha rhythm is enhanced and decreases depressive symptoms as it is linked to a relaxed mental state in humans (Biswas & Ray, 2019). Empirical evidence supports the efficacy of neurofeedback in depression treatment (Bussalb et al., 2019; Chiba et al., 2019). Finally, one of the most considerable benefits of neurofeedback is its non-invasive nature (Wang et al., 2019).

Irrespective of these benefits, neurofeedback is not commonly used due to the high costs associated with it. The point raised in section 2.5 about depression being an ‘illness of power’ (Neitzke, 2016) can be seen here in a tangible form. Expensive treatment options such as neurofeedback are seldom covered by insurance agents and hence may only be affordable to the rich.

Section II: Exploring Dance/Movement Therapy as a Treatment Approach

2.8 Embodied Approaches to Depression Treatment

Embodied approaches to depression involve healing practices that are based on ‘*embodiment*’ and actively engage energy, body sensations, and the mind towards wellness (Cofield, 2023). Although clear examples of embodied healing principles may exist (such as dance/movement therapy, drama therapy, reiki, yoga, etc.), there are opposing views on the meaning of the term ‘*embodiment*’ itself within social sciences as seen in the variances below.

According to Pezzulo et al. (2011), embodiment is an experience created and shaped by sensorimotor factors in one's environment. Here, the primary emphasis is laid on the somatic component of embodiment. Kiverstein (2012) identified three types of embodiments, all of which also focus on the somatic components of embodiment. They are (i) body-functionalism, where embodied action stems from a specific thought/cognition but is carried out by the body. (ii) Body-conservativism, where embodied/somatic experiences provide information to the brain. (iii) Body-enactivism, where the body can be the source of finding meaning in life. All three types of embodiments are valuable in dance/movement therapy. Another relevant view on embodiment is that of emotional embodiment. Emotional embodiment is a process based on embodied emotion theory which suggests that the way one feels, functions and expresses is connected to how we feel and are aroused within our bodies (Wu et al., 2020). In essence, embodiment is about our body's capacity to hold emotional experiences. Dance/movement therapy is an embodied healing practice that taps into this capacity by fostering an integration of the mind-body unity.

The use of embodied experiences for the treatment of mental health conditions is not a new phenomenon. Embodied healing practices have been an integral part of many nations, for example, in Nepal, the healer embodies the psychological attributes of the distressed individual to be more empathetic and promote treatment (Hitchcock, 1976). Similarly, in ancient China, embodied breathing in the practice of Qi-Gong is actively used as a method to facilitate healing, transformation, and wellness (Carson, 2015). The Rongoā Māori people of New Zealand, are also known to use embodied healing principles to find balance and healing of somatic, spiritual, social and mental wellness (Mark et al., 2017). The Navajo people of North America also believe in embodied healing practices facilitated by the *hataalii*, a diagnostician who works using methods like “crystal gazing, hand trembling or coal gazing” to enable embodied healing (McKendrick et al., 2013, p. 13). Here, the focus is laid on

understanding each individual through their “inter-relationships with other people, the environment, the cosmos and the ancestors”(Csordas, 2000, p. 464). Embodied practices are also often interwoven with an ecological model that focuses on restoring the sacred connection between people and the land, along with storytelling as a healing practice (Ataria et al., 2019). Using the therapeutic benefits of dance for emotional wellness is one such practice that has stood the test of time.

In Eurocentric cultures, tapping into embodied knowledge began only after René Descartes (1596-1650) first challenged the pre-existing view of the body in the 17th century (Leder, 1984). At that time, the body was viewed merely as a mechanical being without any innate capacity of its own. Descartes proposed that the body too held stories, emotions, and great knowledge; and if tapped into could be used to better understand and even prevent illnesses. Similarly, German philosophers, influenced by Gestalt Psychology in the early 20th Century, started to discover that the body has an intelligence of its own, is able to feel, sense, perceive and find meaning in an environment (Leder, 1984). Despite both Western and Eastern schools of thought recognising the power of embodiment, embodied approaches have not occupied mainstream literature or medical approaches. Even today, embodied healing practices are primarily considered ‘allied or complementary’ forms of healthcare and are seldom part of the first line of treatment in healthcare (Tabish, 2008). This is also seen in the way dance therapists are categorised under emerging dance/movement therapy accreditation bodies (such as the Indian Association of Dance Movement Therapy, American Dance Therapy Association, European Association of Dance Movement Therapy, The Australia, New Zealand and Asian Creative Arts Therapy Association, and, The Dance Movement Therapy Association of Australasia).

Embodied approaches, specifically dance/movement therapy, have not received the due they deserve; I suspect some of the reasons for this to be partially due to the unequal

amounts of evidence-based knowledge on embodied approaches in wellness compared to more traditional treatment methods. Further, one of the critique of dance/movement therapy research has been for its lack of methodological rigour which directly impacts the validity and reliability of current research in the field (Chiang et al., 2019). Inconsistencies in research are another factor that propels current criticism of dance/movement therapy. Due to the highly subjective nature of dance/movement therapy in practice, findings from previous studies do not necessarily provide a blueprint for replication in future work. Chiang et al. (2019) directly speak to this gap in the field and suggest that standardisation of research and intervention methods is needed to grow the evidence base of creative arts and embodied healing practices. While there is a clear need to enhance objectivity in research, it must be noted that the subjective nature of dance/movement therapy, is what allows for a person-centred approach in therapy.

Another potential reason for a lack of acceptance of embodied healing practices in mainstream healthcare is racism. Approaches to health that are rooted in Western systems of medicine, such as the medical model are still largely viewed as the gold standard of care. Although embodied healing principles have been accepted in different cultures for many years, they are often perceived as “lesser than” compared to a biomedical approach to wellness. This is seen in the way dance/movement therapy has been primarily categorised as an allied or complementary health therapy, which is arguably a form of micro-invalidating in healthcare. While fighting microaggressions towards embodied healing practices and practitioners may be an ongoing struggle, concurrent movements of racial justice and reclaiming embodied ways of knowing are slowly starting to be acknowledged and appreciated (Hart, 2007).

2.9 Dance/Movement Therapy and Depression

Dance/movement therapy is a psychotherapeutic process that focuses primarily on embodied or kinesthetic empathy (Tokarchuck, 2018). As an allied healthcare profession, it comes under the umbrella of creative arts therapies and is less than 60 years old as an independent formal discipline (ADTA, 2020). Informally, dance has been used for wellness since the beginning of time. It has also been used to mark and acknowledge events like birth, death, marriage etc.(Dunphy, 2020). Movement is natural to all humankind and is indicative of health and vitality. While some treatment methods focus on ‘understanding the problem or reasons’ behind clinical depression, dance/movement therapy is a strength-based model that concentrates on patients' healthy/creative parts that are typically forgotten or neglected, especially in depressed individuals. Embodied empathy, which can be understood as one’s capacity to feel another’s feelings on a somatic level is a specific dance/movement therapy principle that can aid in depression treatment (Kossak, 2021). Depressed people can sometimes feel too overwhelmed to talk. At such moments, dance therapists can use non-verbal cues and actions to help them feel supported and slowly explore the deep-rooted causes of depression.

2.10 Dance/Movement Therapy in Depression Treatment; Relevant Concepts

Therapeutic Movement Relationship

Young (2017) describes therapeutic movement relationship as “a shared presence of body, mind, and spirit between the dance therapist and client where healing occurs within the safe containment of a creative collaboration and results in a resonance” (p.104.). She further explains the therapeutic movement relationship as a concept rooted in kinesthetic attunement. Kinesthetic attunement occurs due to kinesthetic empathy. Thus, emphasising the connection between kinesthetic empathy and the therapeutic movement relationship. Young’s (2017) study suggests that the therapist’s and client’s embodied experience individually and the

collaborative embodied experience between them, together, creates a healthy therapeutic movement relationship.

In depression treatment, the therapeutic movement relationship is integral to creating a safe and collective space during dance/movement therapy sessions. In a recent study on understanding the levels of changes in depressive symptoms after participants engaged in a 10-week dance/movement therapy intervention (meeting twice a week), it was identified that trauma was one of the most common self-identified causes of participants' depressive symptoms. In such cases, a therapeutic movement relationship is the cornerstone that creates a safe base for participants to slowly start overcoming their trauma and eventually foster a reduction of depressive symptoms (Kella et al., 2021).

Mirroring

Mirroring is a technique used in dance/movement therapy focused on facilitating and fostering emotional attunement by participating in synchronous movement during sessions. "Mirroring occurs when two people make similar body movements that are coordinated or slightly echoed in time. The therapist may echo the exact movements of a client, or may imitate the quality of the movement; for example, if a client is moving with a slumped posture, the therapist may adopt these movement qualities as well" (McGarry & Russo, 2011, p. 178). In doing so, the therapist is offered a window into the client's lived emotional experience, which can then be used to deepen empathy and engage in movement with the client (Berrol, 2006).

While mirroring is one of the foundational techniques of dance/movement therapy, it has also been used in traditional psychotherapy. Koole and Tschacher (2016) highlight the benefit of synchronous mirroring that occurs between a client and therapist as one which strengthens the therapeutic alliance; this is also called coupling. Interbrain coupling is a process through which a therapist may gain access to the client's internal state. This concept

from traditional psychotherapy is experienced through the technique of mirroring within dance/movement therapy (Deacon, 2013). Since mirroring actively engages the mirror neuron systems in both the client and the therapist, it creates an environment in which the limbic system is activated and emotional connections can be forged (Kella et al., 2021). Creating new relationships can be a reparative process and has the potential to directly address the symptom of social withdrawal in depression.

Therapeutic Presence

A therapist's ability to stay authentically present while interacting with a client may be understood as their therapeutic presence (Koser, 2010). Therapeutic presence is rooted in empathy and aims to provide a safe holding environment for the client. It is defined as "being fully in the moment and directly encountering all aspects of experience with one's whole being on a multitude of levels including physical, emotional, mental and visceral from a grounded and centred position within oneself" (Greenberg & Geller, 2001, p. 159). Greenberg & Geller (2001) further elucidate that therapeutic presence can be practised in preparation for sessions via self-care and grounding practices and during the therapy session by being aware of one's feelings, countertransference, and transference.

This concept of therapeutic presence was birthed in the Humanistic School of Psychology and is emphasised in the theories proposed by Carl Rogers, who identified therapeutic presence as one of the core values of practicing empathy (Geller & Greenberg, 2002). In the context of dance/movement therapy, therapeutic presence specifically includes "authenticity, genuineness, honesty, confidence and security in one's own being through an awareness of self at the moment" (Young, 2017, p. 106). For people experiencing distress, feeling safe is of critical importance (Allison & Rossouw, 2013). Safety helps patients feel more comfortable to share their vulnerabilities and work towards healing. Much like the value of the therapeutic movement relationship, therapeutic presence also enables the clients

to feel safe within the therapeutic setting which can further enable wellness and arguably a reduction in symptoms of depression over time.

Holding Environment

Therapy can only occur in healthy and contained environments. The holding environment is a non-judgmental space or framework provided by the therapist to have 'id-based' experiences (Girard, 2010). These include unfiltered thoughts that may be socially unacceptable and vocalising deep fears and desires. The holding environment is the space in which the therapeutic alliance plays out (Robbins, 2000). The therapeutic alliance is an agreed-upon way of communication and collaboration decided by the therapist and client, which applies to therapy. The concepts mentioned thus far (mirroring, therapeutic presence, and therapeutic movement relationship) all occur within the holding environment.

Kinesthetic Empathy in Dance/Movement Therapy

Kinesthetic empathy combines aspects of verbal and non-verbal communication and is supported by studies in neuroscience that highlight the role of mirror neurons in empathy (Fischman, 2009). Within the field of dance movement therapy, Miriam Berger is recognized to be one of the first to coin the term kinesthetic empathy (Cruz, 2012). Broadly, kinesthetic empathy can be understood as a therapist's ability to understand their client by engaging in a shared movement experience with them. I argue that kinesthetic empathy is present in all dance/movement therapy sessions and is the catalyst for relationship formation within dance/movement therapy sessions. At present, there is no consensus on whether kinesthetic empathy is used as an 'intervention' or considered to be part of the 'dance/movement therapy process' in treatment resistant depression. There is also a lack of consensus on how it is perceived, both within and outside the dance/movement therapy profession. The first argument to better understand kinesthetic empathy is to explore if kinesthetic empathy is perceived as a process or product. Although my first exposure to kinesthetic empathy was

during formal dance/movement therapy training where I was taught kinesthetic empathy to be a process involving proprioception, awareness, and emotional attunement from the therapist towards the client (Federman, 2011), I now recognise that kinesthetic empathy is not a term specific to the practice of dance/movement therapy alone and may not always be perceived as a process.

Reason and Reynolds (2012) describes kinesthetic empathy as the product of viewing dance performances, namely “kinesthetic pleasures that spectators articulate in response to watching live dance” (p.50.). While this is undoubtedly an interesting perspective, I question if the researchers’ worldview influenced this perspective. Reason is a senior lecturer in Theatre and head of the program for MA Studies in Creative Practice at York St. John University, UK, and Reynolds is a professor and researcher in dance history, theory, dance audience and comparative aesthetics (p. 49). Just as my perspective is heavily influenced by my interests, exposure, and worldview, this can apply to their perspective too. While kinesthetic empathy may be understood as a process by some dance/movement therapists like myself, it is considered a product of dance performance by Reynolds.

Fundamentally, dance/movement therapy uses the body's power to deepen the exploration and expression of the mind. Due to this fundamental use of movement, it is imperative to look at the impact of movement on the brain, specifically on the sympathetic nervous system. Understanding the nervous system and the homeostatic changes associated with it is a critical first step in determining a treatment plan to treat anxiety, stress, and emotional disorders such as treatment resistant depression (Jerath et al., 2015). Along with changes in the autonomic nervous system, emotions also bring various bodily reactions, such as feeling stiff, shortness of breath, tension headaches, sensation of pins and needles etc. In this way, small or large movement shifts in our overall body or specific postures are

indicators of different emotional states and the activation of the autonomic nervous system. These movements can safely occur with kinesthetic empathy.

2.11 Dance/Movement Therapy as an intervention in Depression

A limited but growing pool of literature is available on the impact of dance/movement therapy on depression. Two systematic reviews and a few independent studies have been conducted on this topic. A systematic review by Meekums et al. (2015) included a total of three studies, with 147 participants (107 adults and 40 adolescents) who met the inclusion criteria. There were no sex and gender prerequisites in participant selection (Meekums et al., 2015). All three studies conducted dance/movement therapy in a group format but the duration and time frame varied. Jeong et al. (2005) administered 36 group sessions whereas Xiong et al. (2009) and Röhricht et al. (2013) administered 20 sessions. The frequency of the sessions was two times a week by Jeong et al. (2005), three times a week by Xiong et al. (2009), and between two to five times a week by Röhricht et al. (2013). The sessions lasted between 45-120 minutes long in all three studies. The chosen studies included randomly selected participants living with depression. Certain similarities were seen in the dance/movement therapy intervention used across these studies. They actively used the body as a resource to increase awareness, reclaim individual stories (through the use of metaphors), process narratives of trauma from a somatic lens, foster self-regulation, address negative self-evaluation, and promote an overall boost in mood. The overall findings of the study do not validate dance/movement therapy over other forms of therapy, nor do they prove dance/movement therapy's effectiveness in overall depression treatment. Meekums and colleagues (2015) refer to Claire Schmais (1924-2015), who emphasised the power of dance to vitalise lives as one of the reasons it effectively alleviates symptoms of depression. Further, they suggest that mirroring might be helpful in dance/movement therapy as it

addresses a specific depressive symptom, specifically that of social withdrawal. This proposition requires the support of empirical evidence.

A more recent review conducted by Karkou et al. (2019) analysed eight studies through a qualitative narrative synthesis. The review included 351 participants, “out of which, 192 attended dance/movement therapy groups and 159 were part of control groups” (Karkou et al., 2019, p. 10) Study designs included randomised controlled trials, quasi-randomisation, and systematic methods of data collection. Unlike the review undertaken by Meekums et al. (2015), which could not conclusively speak to the effectiveness of dance/movement therapy on depression, the results from the Karkou et al. (2019) review supported the effectiveness of dance/movement therapy for adults with depression. Karkou et al. (2019)’s review also, suggested that certain secondary symptoms of depression may be addressed via dance/movement therapy, namely self-esteem, quality of life and socio-occupational functioning. Like the previous review, dance/movement therapy sessions were between 45-120 minutes long; and the average duration of the sessions across all six studies was 9.2 weeks. While both reviews specifically included studies where depression was the primary diagnosis, neither of the studies focused on the impact of dance/movement therapy for those living with treatment resistant depression. In the review by Meekums (2015), depression was based on the clinical judgment of the researcher, supported by standard methods of diagnosis including the ICD-10 or DSM IV TR, and no mention was made of resistance to treatment that participants may have faced. Although the Karkou et al. (2019) review specifically identified most participants to fall in the range of ‘moderate depression,’ details about the length of depression along with any treatment resistance were not mentioned.

In an independent study conducted by Jeong et al. (2005) to assess the impact of 12 weeks of dance/movement therapy intervention on middle school seniors with mild

depression in South Korea; researchers found increased plasma serotonin and decreased dopamine levels following the 12-week dance/movement therapy intervention, ultimately improving the psychological distress associated with mild depression. The plasma serotonin and dopamine levels were electrochemically measured. While the researchers note this to be a preliminary study with limitations, it provides interesting data to inform future research. In this study, the weekly dance/movement therapy sessions were 45 minutes long.

In a meta-analysis of 23 primary trials including a combined sample size of 1078 carried out by Koch et al. (2014), they identified dance/movement therapy to have minor but consistent effects on patients' mood and overall quality of life. Although most literature is based on the direct link between dance/movement therapy and elevating low mood, Pylvänäinen et al. (2015) argue that dance/movement therapy might also have indirect effects on a patient's overall mood by aiding in increased psychological flexibility (Pylvänäinen et al., 2015).

From the current literature, the scope of dance/movement therapy as a treatment intervention can be somewhat envisioned; however, no consistent information about specific techniques of dance/movement therapy that reduce symptoms of treatment resistant depression has been identified. Tavormina and Tavormina (2018) highlight the use of Bachata, a Latin American dance style, as a helpful intervention for depression treatment. It is important to note that this is not generalisable since it is a single case study. However, this study points to an essential aspect of dance/movement therapy that transcends technique, which is the ability to feel empowered, connected to others and feel 'jovial' amidst distress.

Further to the paucity of literature on dance/movement therapy and depression, literature and evidence on the impact of dance/movement therapy sessions on clients experiencing treatment resistant depression is even more scarce. In fact, no published studies have been found that specifically explore/examine dance/movement therapy for treatment

resistant depression. The data obtained from the studies and systematic review conducted in this thesis are my attempts to reduce this current gap and increase accessible literature on the impact of dance/movement therapy in clients experiencing treatment resistant depression.

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Chapter 3: Bridging Material

In the previous chapter, I discussed current literature on depression, treatment resistant depression, and dance/movement therapy. In the upcoming chapter, I will present the methodological decisions taken in order to conduct the studies of this doctorate research. As mentioned in the introduction, I align with the philosophy of pragmatism. Adopting a pragmatic methodology, I conducted two preliminary studies before conducting my third study which addressed the central aim of this thesis exploring the use of dance/movement therapy in adults with a diagnosis of treatment resistant depression.

Each study's method will be discussed in the relevant chapters:

- Study I: Chapter six
- Study II: Chapter 10
- Study III: Chapter 14

As a research paradigm, pragmatism is rooted in using best-suited practical methods to investigate real-world problems (Allemang et al., 2022; Brierley, 2017). As a result, a pragmatic research methodology accommodates varied types of data to answer the research question (Allemang et al., 2022). This principle is evident in the method I use in Study III (Chapter 12) and in my decision to conduct preliminary studies with varied methods in order to address the aim of this doctorate research. In the next chapter, I will elaborate on this rationale, providing practical insight into the research process.

3.1 Relevance in Global Discourse

Since dance/movement therapy is a relatively new field, many dance/movement therapists and researchers will likely be conducting novel research. By discussing my research design process in the next chapter, I aim to contribute to the current gap in dance/movement therapy academia, where the decision-making processes involved in formulating studies are not equally highlighted as efficacy studies.

This publication includes two parts. Part I is specifically relevant to novice researchers in dance/movement therapy academia looking for guidance on how to conduct a first-of-a-kind study of their interest. The relevance of Part II is discussed in Chapter 11 (before the reproduction of Part II in Chapter 12).

3.2 Relevance in Doctorate Research

The upcoming chapter (Chapter four) comprises an original, published article that has been partially reproduced. This solely authored publication is titled “*Developing an intervention protocol for adults living with treatment resistant depression*”. This article was published in the American Journal of Dance Therapy (Christopher, 2024). The online version of the article has been linked [here](#). The remainder of the publication has been reproduced later in Chapter 12. No edits have been made to the content of the publication. Headings, subheadings, tables, and figures have been numbered in conjunction with the rest of this thesis, as shown in the table of contents.

I acknowledge the support of Associate Professor Janette Tamplin (The University of Melbourne, Australia), Dr Ella Dumaresq (The University of Melbourne, Australia), and Professor Emerita Sharon Goodill (Drexel University, USA) as I undertook the processes discussed in the publication.

3.3 Terminology

The terminology used in the upcoming publication is consistent with the term in this thesis, ‘dance/movement therapy’. Conversely, the phrase ‘adults living with treatment resistant depression (TRD)’ has been used instead of ‘adults with a diagnosis of treatment resistant depression’ (used in this thesis). This was done to adhere to the journal's word count requirement. American English has been used based on the journal’s requirements. Lastly references (relevant to part I) have been added after the chapter and there are no additional supplementary materials in relation to this publication.

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Chapter 4: Problem Solving in Dance/Movement Therapy Research; Developing an Intervention Protocol for Adults Living with Treatment Resistant Depression (partially reproduced)

4.1 Abstract

Dance/movement therapy (DMT) research requires creative and innovative thinking; this paper includes two parts demonstrating this. Part one describes and delves into the creative problem solving process undertaken over two and a half years. Four main steps were followed towards developing an intervention protocol for a first-of-its-kind DMT study in treatment resistant depression: (i) Examining pre-existing knowledge: Reviewing insights gained from clinical practice and formal literature. (ii) Assessing the need for preliminary studies: This step demonstrates how to determine and navigate the potential need for preliminary studies in novel research. (iii) Integrating existing and new research: I discuss Watson's (2020) braiding technique and how it may help integrate insights from steps one and two. (iv) Reviewing outputs: This includes examining the developed protocol by conducting a fidelity and biases check. Each step presents reflective questions that enabled my progression to the next step, ultimately contributing towards protocol development. The questions listed may also be a beneficial guide to novice DMT researchers embarking on novel research. Part two of this paper presents the DMT protocol developed through the creative and reflexive processes described in part one.

4.2 Keywords

Dance/Movement Therapy, Intervention Protocol, Braiding, Research Planning, Creativity

4.3 Introduction

Creative problem solving and research planning go hand-in-hand. In the last fifty years, dance/movement therapy researchers have embraced the ambiguities of our growing profession whilst actively problem solving and contributing to knowledge in and about our field. Within depression research, this includes exploring the use of dance/movement therapy (DMT) along with anti-depressants (Hyvönen et al., 2020) and psychedelics, precisely ketamine (Marcantoni et al., 2020). Likewise, researchers in the field of mental health have also attempted to understand and treat depression in novel ways, such as through transcranial magnetic stimulation (Sehatzadeh et al., 2019) and theta-burst stimulation (Liu et al., 2023). Some side effects like headaches, scalp pain, muscle twitching, and gastrointestinal and eye problems have been reported from these treatments (Sehatzadeh et al., 2019). This indicates a need for further research to help identify the appropriate dosage of these interventions to obtain therapeutic benefits without adverse effects. Further, such findings also compel researchers to consider other non-invasive treatment options with potentially lesser side effects, with DMT being one such option.

Treatment-resistant depression (TRD) has not yet been explored in our field. While this scarcity of research is understandable in a nascent profession (DMT), when critically examined from a social justice lens, this is not justified and must be addressed to enable equitable care for all. Although socioeconomic status is a commonly discussed factor in social justice driven research (Amaddeo & Jones, 2007), barriers to equitable care are not limited to financial access. Gaps in the literature may also cause inaccessibility towards treatment. Having identified a gap in DMT literature, where TRD is yet to be explored, gave impetus to my research project on studying the effect/s (if any) of DMT on treatment resistant depression. Creative problem solving was a core component of my research planning process and was crucial in helping me develop a targeted intervention protocol in this area.

Creswell and Clark (2017) proposed four key areas in research planning aimed at identifying: 1) the research paradigm (e.g., axiology, epistemology, ontology, etc.); 2) the theoretical lens of the researcher and the research (e.g., radical, medical, social etc.); 3) methodological approach (e.g., mixed methods, quantitative, ethnography etc.); and 4) the method of data collection (e.g., questionnaires, interviews, recordings etc.). While an interplay between these four areas may suffice in some research, novel and niche topics often require pioneering thinking, mainly when designing the ‘intervention’ for a given study. Unlike other topics where researchers are informed by pre-existing data that either sets a precedence for argumentative reasoning (Greene et al., 2016) or offers an opportunity for replication of some nature, this is not the same for novel and niche topics. In this two-part manuscript, I will first highlight the processes I undertook and explore the traditional key areas of research (Creswell & Clark, 2017) in part I. Next, I will outline a 12-week DMT intervention protocol for adults living with treatment resistant depression developed through the creative and reflexive processes in part II of this manuscript.

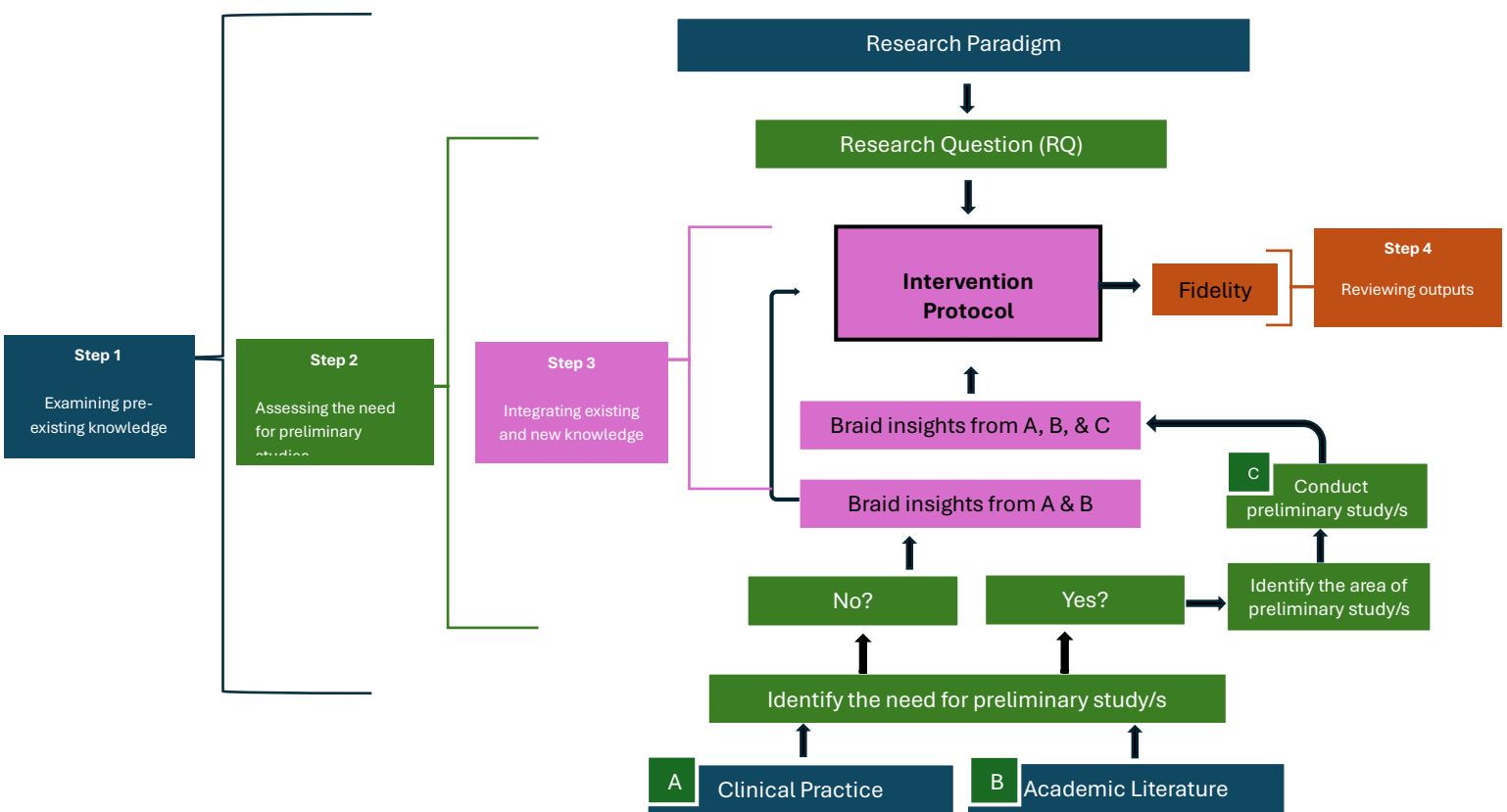
4.4 Part I- Four Step Creative Problem Solving Process

Treatment resistant depression (TRD) is a type of depression where one’s symptoms do not reduce despite intervention (Al-Harbi, 2012). Specific theoretical underpinnings of DMT, precisely that of the mind-body nexus (Berrol, 1992), embodiment, and kinesthetic empathy (Barrero González, 2019; Christopher & Tamplin, 2022) show promise for symptomatic relief if used in treating resistant depression. However, considering the vulnerability of the population (Gaynes et al., 2020), the mere theoretical potential from a few studies did not provide sufficient knowledge-based insights to help develop the intervention protocol in my research project. Additionally, the emerging literature on treatment resistant depression (TRD) emphasises a prevalence of comorbidities and possible intersections of race (Liu et al., 2021), which further marginalised potential research

participants. This re-emphasised the duty of care required through the research planning process to develop an intervention protocol for a first-of-its-kind research study with DMT and TRD. I engaged in a four-step creative problem solving process to develop the intervention protocol in my project. This has been graphically represented in Figure 4.1 below.

Figure 4.1

An Illustrative Depiction of a Four-step Creative Problem Solving Process Used to Help Develop a DMT Intervention Protocol over Two and a Half Years



4.4.1 STEP 1: Examining Pre-existing Knowledge

Knowledge is perceived and understood differently across the world. To me, knowledge is best described as the oral or visual understanding that enables us to

comprehend the world around us (Cameron, 2020). While examining pre-existing knowledge in step 1 of my problem solving process, I retained this description of knowledge. I consciously considered both formal and informal forms of knowledge, as seen in the questions I sought answers to in this step:

“What do I already know about this topic from my clinical experience?”

“What does the literature say about this topic?” and,

“How does the ‘self’⁶ of the researcher play a role in influencing the research interests?”

In addition to a traditional literature review process, I reflected on the inception of my research interests, which were birthed from my clinical practice.

Clinical Practice. In the early years of my career, I worked as a dance/movement therapist with older adults living with severe and persistent mental health conditions at an outpatient clinic for 18 months. During this time, I worked with Dina⁷.

Dina was a 66-year-old African-American woman admitted to an outpatient clinic directly after her discharge from an adult in-patient psychiatry ward. She enjoyed the music of Johnny Cash and grooving to disco. Dina was diagnosed with depression and had a history of psychosis and interpersonal conflict. The clinic offered various services, including dance therapy, cognitive behavioural therapy, support groups, housing support, psychopharmacology, and recreational groups. Most of which Dina proactively used/participated in five days a week. Dina roughly participated in two group DMT sessions a week and one individual DMT

⁶ Here, ‘self’ suggests Jung’s concept of self.

⁷ Dina is a pseudonym.

session every two weeks, amounting to monthly direct contact hours of 7.5 hours with me across 18 months. My work required robust documentation on the client's experience of sessions. Some of her feedback that struck me includes, "I feel good", "I enjoy it. You don't get to do things you enjoy when you get to my age", "It is so lovely to dance with you", "Dancing with you is different" and, "these sessions help me get my stress out sometimes". Dina often reported experiencing significant stress in her life, including a fear of homelessness and loss of health insurance. Although Dina continued to take her medications as prescribed by the psychiatrist, participate in therapy sessions, and attend services offered at the clinic regularly- she still expressed dissatisfaction with her mood. She reported not feeling the benefits of the various interventions despite active participation.

Revisiting Dina's story helped me reconnect with my curiosity about kinesthetic empathy and the therapeutic movement relationship in DMT. I was also keenly aware that the process of DMT juxtaposed the treatment resistance she experienced at the clinic. Concurrently, I reconnected with my somatic cues of frustration that stemmed from a dissonance between my value of justice-based equitable care that evolved with clients' needs and structural limitations of support in the outpatient healthcare system in the USA.

The Self of the Researcher and Research Paradigm. The 'self' of the researcher is an undeniable part of research planning and warrants similar reflexive exploration as aspects of the research paradigm (as mentioned on p.1). Here, I refer to 'self' as the paradoxical being which is both the essence and the totality of one's personality, as Jung (1875-1961) described it (McGehee et al., 2017).

A) Axiology. Our values play a significant role in justifying our rationale in research. Further, our choices are “influenced by the type of person we are, our experiences, culture, background, social, and economic status”(Roots, 2007, p. 20). Understanding our values from an embodied lens can help clarify research interests and inform the study design and intervention protocol. For instance, awareness and curiosity of my embodied cues (of discomfort and tension) while witnessing the dysregulation my clients experienced due to sub-optimal intervention effects clarified the scope of my research and the focus of the intervention protocol. They were (i) generating systematic knowledge on DMT and TRD and (ii) focussing on emotional regulation in the intervention designed for TRD, respectively. Another example of the influence of my axiology is seen in my use of interviews in data collection and active inclusion of storytelling, meaning-making, and dance stories in the DMT session plan, which stem from the personal value I place on multiple perspectives and oral narratives.

B) Epistemology. Another core aspect of identifying a research paradigm is to clarify the researcher’s understanding of knowledge and its creation. By recognising my embodied response of feeling energised at the thought of combining scientific inquiry with my research participants’ lived experiences, I discovered the importance I laid on knowledge being congruent with social realities (Park et al., 2020). I gained further clarity that my perception of knowledge is “relative to particular social and historical arrangements”(Scott, 2007, p. 5), amounting to epistemic relativism. Like my axiology, these insights also influenced my research's design and data collection method.

C) Ontology. Growing up in a mixed-caste family in India, I was exposed to differences and diversity at a young age. This helped me recognise how social, economic, and cultural factors can affect the perception of one’s reality. My ontological stance is that of a critical realist stance, where one’s perception of reality is affected by their social reality and

context (Alele & Malau-Aduli, 2023). For me, my ontological stance was crystalised through my interoceptive awareness. While reviewing different ontological stances, I noticed my body ‘tense up’, namely in my breath, gut, and diaphragm. As I educated myself on the critical realist stance, I noticed these functions to be restored to their natural state. I also noticed that I was no longer clenching the inner muscles of my chest and that my diaphragm had eased back into its resting state. In this way, interoceptive awareness (Khalsa et al., 2009) helped me confirm my ontological stance and create an embodied link between the ‘self’ of the researcher and key steps in research planning.

D) Methodology. To me, the mind-body nexus inherently symbolises the convergence of two forms of knowledge. Just as DMT embraces both cognitive and somatic processes, similarly, I noticed being intuitively drawn to converging two types of data sets by adopting a mixed methodology. From a philosophical perspective, a mixed methodology is rooted in the complexity of reality and seeks to lay a necessary emphasis on different vantage points on a given topic (Watson, 2020). Thus, a mixed methodology could embrace the complexity of TRD and the need for various data sets due to the novelty of this study. Here, I noticed and relied on my embodied felt sense of discerning between ‘alignment vs. fragmentation’ to ensure a clear, logical link between my chosen research paradigm, research interests and the ‘self’ of the researcher. An equally important consideration is the relevance of the intended methodology with the research question; however, I do not reflect on this in this manuscript, as this is more commonly discussed in the literature (Tashakkori & Creswell, 2007)

4.4.2 STEP 2: Assessing the Need for Preliminary Studies

This is similar to the steps followed in common research topics. First, I formulated the research question using my insights from step one, as suggested by McFerran and Silverman (2018). The research question had a cascading effect on the rest of the research planning process. Next, I revisited the literature reviewed in step one from the lens of the research

question. This aimed to ascertain if I had access to enough literature or oral knowledge to develop a protocol that would directly answer the research question. Here, oral knowledge can be best understood as a broad term covering varied lived experiences and stories. Here, the following questions contributed to me successfully navigating this step:

“Can I develop an intervention protocol based on existing information (of varied forms)?” or

“Do I need to generate more knowledge on these topics before I can develop an intervention protocol that can answer the research question?”

These questions helped me determine the need for preliminary studies to develop an intervention protocol based on adequate evidence. Once the need for preliminary studies was established, I identified the area of focus of these studies, which was directly informed by the gaps in the literature. Upon identifying the missing links in the literature, I recognised the need to conduct two preliminary studies. The first was a systematic review and meta-analysis on using DMT to treat common symptom clusters in TRD (manuscript in review) (Christopher, 2023). The second was a survey study collating practice-based knowledge on how dance movement therapists practised with their clients with TRD (Christopher & Tamplin, 2022). While the availability of funding and human resources may directly affect the type of preliminary studies that can be carried out, it is unlikely that preliminary studies can be avoided altogether in novel research areas.

[Note: This publication continues as Chapter 12 of this thesis].

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Chapter 5: Bridging Material

As identified in the previous chapter, treatment resistant depression (TRD) is a complex diagnosis to live with. Considering that 3.8% of the world's population currently experiences depression (WHO, 2022), 45 to 99 million individuals are at risk of developing treatment resistance. Along with this high prevalence, treatment resistant depression also involves higher treatment costs, which is an estimated £22124 in societal costs in the UK (McCrone et al., 2018) and \$3,000 per year in individual costs in the United States alone (Sussman et al., 2019). Although more country-specific data is needed to confirm the global economic impact of treatment resistant depression; factoring in common comorbidities like chronic pain, inflammation, suppressed immune system etc., make it probable that a diagnosis of treatment resistant depression potentially causes an economic burden on individuals in addition to symptomatic concerns.

From the perspective of healthcare workers, limited research on treatment resistant depression makes it difficult to understand and, hence, treat. Thus, emerging studies must not only educate clients on potential treatment options but also prioritise research that informs healthcare workers on the efficacy and processes involved in varied treatment options. Despite research recommendations made by Mala et al. (2012) for more reviews on dance/movement therapy and depression over a decade ago, current literature (Bradt et al., 2015; Goldbeck et al., 2014; Karkou & Meekums, 2017; Meekums et al., 2015), does not illuminate or discuss the findings from a lens of better understanding treatment resistant depression.

5.1 Relevance in Global Discourse

The upcoming chapter is designed to collate and present data on the potential effectiveness of dance/movement therapy and discuss '*how*' it is carried out. My aim was to contribute to the foundations of this discourse by determining any baseline difference in

adults with treatment resistant depression after engaging in dance/movement therapy sessions. At first, I aimed to conduct a systematic review that directly focused on treatment resistant post-natal depression, in the absence of a universal definition for treatment resistant depression and considering the persistent nature of depression and increasing evidence of stress as a significant lived experience, the criteria were modified and expanded to understand how dance/movement therapy was practised with clients who experience both stress and depression. Choosing this combination, which are the main symptom clusters of stress and depression within treatment resistant depression, was a pragmatic way to navigate and understand this under-researched topic.

As identified earlier, merely efficacy studies do not provide adequate information for the intervention to be replicated. Arguably, each study's facilitator's theoretical approach may have influenced the findings. Hence, from a perspective of clinical practice, it is helpful to know more about the theoretical framework followed in current studies with adults experiencing both stress and depression in order to understand how to design an intervention.

5.2 Relevance in Doctorate Research

The upcoming systematic review and meta-analysis were conducted as a preliminary study in this doctorate research. As mentioned in Chapter four, there was insufficient data to design the intervention for a client study (Study III in this thesis). I was keen to gather information on '*how*' dance/movement therapists were conducting sessions with this population. Hence, this is one of the focal points of the upcoming publication. The narrative findings largely influenced the protocol developments of Study III in this doctorate research.

The following chapter comprises an original research article that has been reproduced in full in this thesis. No edits have been made to the content of the publication. Headings, subheadings, tables, and figures have been numbered in conjunction with the rest of this thesis, as shown in the table of contents. The publication is titled "*Dance therapy as an intervention*

for stress and depression: A systematic review and meta-analysis'. This article was published in The Body, Movement and Dance in Psychotherapy Journal (Christopher et al., 2024). The online version of the article has been linked [here](#). Following the online publication of this article, one correction was made:

- In the results section, it was noted that the study by Bräuninger (2012) indicated the effects of dance therapy to last *three* weeks; this should read *six* months.

The upcoming publication includes the updated version (i.e., with the corrected statement). This article was co-authored with my supervisors, with my contribution being significant (including study conceptualisation, initial search, full text review, finalising suitable methodology, consulting with the Statistician for the meta-analysis, data extraction, data analysis, documentation and writing the original draft), this was agreed upon by my co-authors. Hence, adhering to the requirements of including the publication in this doctorate thesis.

5.3 Terminology

Lastly, in order to adhere to the journal's word count requirement, the term 'dance therapy' has been used instead of dance/movement therapy in the upcoming publication. Supplementary material associated with this publication has been added in the appendix of this thesis and references have been added after the publication.

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Chapter 6: Dance Therapy as an Intervention for Stress and Depression: A Systematic Review and Meta-Analysis.

6.1 Abstract

Currently, no systematic review exists on dance therapy studies for treatment resistant depression. We conducted this systematic review and meta-analysis to determine the effects of dance therapy on the primary symptom clusters of treatment resistant depression, that is, co-morbid stress and depression PROSPERO(CRD42022309685), and identify common dance therapy practices in this population.

We searched six databases between January 2001 and March 2024 using the primary key terms: “dance therapy”, “stress”, “depression”, “study”, “treatment resistance”, and “adults”. Reference list checks and citation tracking were conducted. The Downs and Black checklist was used to assess risk of bias.

Our search yielded 68 records. Five articles were included (N= 613, 91.2% female), and dosage varied between 15-24 hours over 3-12 weeks. Results indicated an increase in management strategies rather than symptom reduction. Meta-analyses revealed no statistically significant results for stress and depression. Common dance therapy practices were improvisation, shared rhythm, and structured movement.

6.2 Keywords

Dance therapy, treatment resistance, stress, depression, adults

6.3 Introduction

Stress and depression are distinct experiences with symptomatic overlap like chronic fatigue, hypervigilance, and medically unexplained pain, etc. (Gros et al., 2012), likely due to their shared biochemistry, such as increased cortisol levels, slower functioning of reproductive hormones, and insulin resistance (Gold et al., 2015). Further, stress and depression have a compounding effect on one another (Koutsimani et al., 2019) and activate the sympathetic nervous system in diverse ways. Acute stress can cause hyper-arousal motivation and irritation (Blechert et al., 2007). In contrast, chronic stress and depression can cause hypo-arousal, presenting as rumination, numbness to emotions, and disinterest in social engagements (De Mutiis et al., 2015).

Treatment resistant depression (TRD) is a condition where the dominant symptom clusters can be categorised under depressive and acute stress disorders (Gold et al., 2020). The persistence of depressive symptoms in TRD typically aggravates stress, creating a vicious cycle of comorbidity, thus creating a barrier to productivity, employability, and healthy quality of life, along with amplifying psychological burden (Rosen et al., 2020). Consequently, this creates the need for a regulated nervous system in TRD. Dance therapy (also synonymously used with Dance/Movement Psychotherapy and Dance/Movement in healthcare) can help ease such psychological stress by regulating the nervous system based on key neurobiological underpinnings (Grasser & Javanbakht, 2021) that enable its use to promote sustained aerobic activity, neuroplasticity, cardiovascular health (Wu et al., 2022), improvements in memory and cognition (Wu et al., 2021), spatial effort synchrony, and stress management (Bräuninger, 2014). Psychological flexibility (Ramaci et al., 2019), embodied self-expression, emotional resilience (Serlin, 2020) and self-regulation (Seoane, 2016) have also been identified as potential benefits of dance therapy, all of which can help support a dysregulated nervous system in TRD.

At the time of conceptualising this study, we noted a growing body of literature on dance therapy for stress and/or depression but no registered or published systematic reviews with our keyword combination. For depression, we found three unpublished reviews registered with PROSPERO and the following Cochrane reviews, indicating inconclusive effects (Goldbeck et al., 2014; Meekums et al., 2015); no effect (Bradt et al., 2015) and slight positive effect (Karkou et al., 2023) of dance therapy on depressive symptoms. Another review found no effect of dance therapy on stress (Bradt et al., 2015); two reviews were deemed empty due to a lack of eligible studies (Broderick & Vancampfort, 2019; Karkou & Meekums, 2017), and another (Goldbeck et al., 2014) obtained insufficient results to make any conclusions. Further, we did not find systematic reviews that specifically collated/reviewed the types of dance therapy practices relevant to the comorbidity of stress and depression but instead primarily focussed only on determining the effectiveness of dance therapy on stress and depression reduction. We therefore conducted a systematic review and meta-analysis on dance therapy practices with adults experiencing comorbid stress and depression (critical aspects of TRD) to answer the following research questions:

- (i) Does dance therapy reduce actual or perceived stress in adults experiencing depression?
- (ii) Does dance therapy reduce depressive symptoms in adults experiencing depression?
- (iii) What common practices are used by dance therapists while working with adults experiencing both stress and depression?

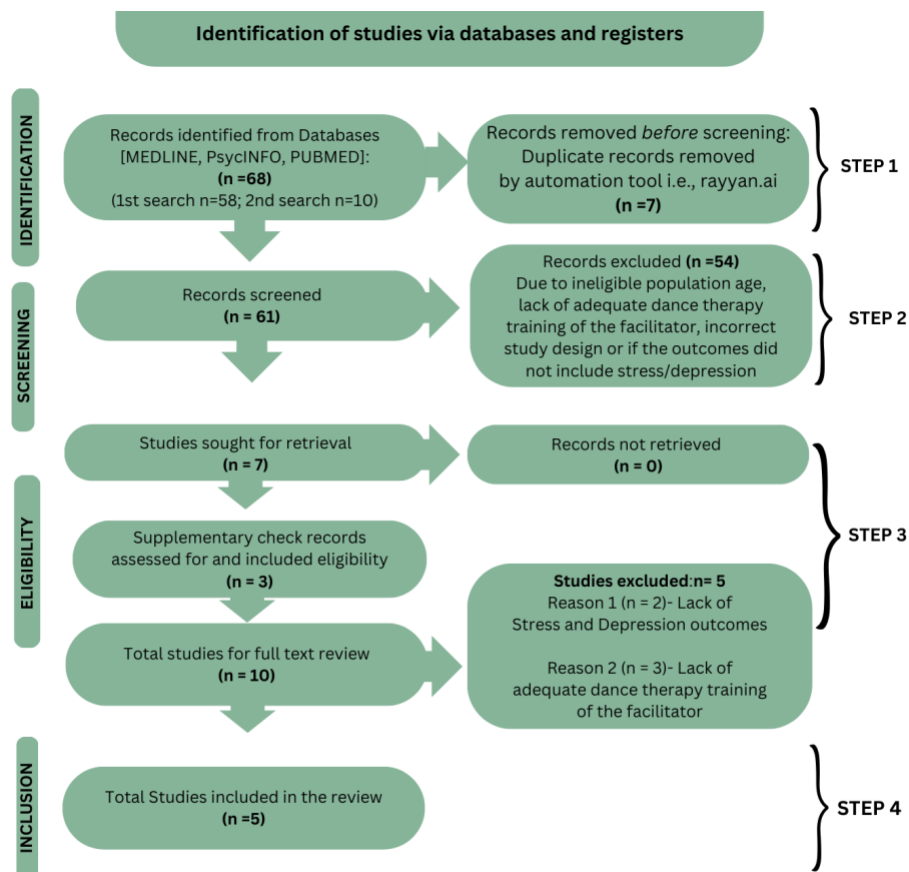
6.4 Methods

The protocol for this systematic review was registered with PROSPERO on 15/03/2022 [CRD42022309685] with two amendments. Our methodology followed Popay et al. (2006)'s five key steps: (i) identifying the review focus, (ii) specifying the research

questions, (iii) data extraction and quality appraisal, (iv) narrative synthesis, and (v) reporting on the results obtained, closely following the PRISMA checklist (see Figure 6.1 below).

Figure 6.1

PRISMA Study Selection Flow



Abbreviation: PRISMA; Preferred Reporting Items for Systematic Reviews and Meta-Analyses

Only material published in English between January 2001 and March 2024 was considered for inclusion. We conducted a systematic, advanced literature search on six databases: (i) MEDLINE, (ii) PsycINFO, (iii) the Allied and Complementary Medicine Database, (iv) the World Health Organization's International Clinical Trials Registry Platform, (v) Google Scholar, and (vi) ProQuest (for grey literature). The following journals were manually

searched: Arts and Health, The Arts in Psychotherapy, and the American Journal of Dance Therapy.

Search Terms

The Boolean search terms included six primary keywords and their variations: (i) “dance therap*” or “dance movement therap*,” AND (ii) “stress*,” AND (iii) “depress*,” AND (iv) “study” or “studies,” AND (v) “treat* resist*,” AND (vi) “adult*.” See Supplementary Document I⁸ for the full search strategy. Supplementary hand searches (through citation tracking and reference checks) were also carried out. A complete list of search key terms and criteria filters can be seen in Supplementary Document I⁸.

Eligibility

A summary of the eligibility criteria established for this review has been displayed in Table 6.1 below.

⁸ See Appendix A of this thesis or view supplementary material directly in the publication [online](#).

Table 6.1*Eligibility Criteria*

<i>Domain</i>	<i>Description</i>
Participant group	Adults from any clinical population who experienced depression and stress and participated in a dance therapy intervention.
Intervention (a) Facilitation: (b) Dose:	The dance therapy intervention was facilitated by a university-trained dance therapist. No restrictions were applied on the intervention dosage.
Study Design	No restrictions were applied on the methodology.
Outcome Measures	Quantitative measurement of both stress and depression.

Selection Process

A total of 61 records were identified across three search time points after removing duplicates. Titles and abstracts were reviewed independently by two authors using Rayyan.ai (Ouzzani et al., 2016), and disagreements were resolved via discussion. In total, 54 studies were excluded (see Table B & C in Supplementary Document I⁹), and ten studies proceeded to full-text review (independently by two authors).

Full-text & Quality Review

Five studies were excluded at this stage. Quality assessment of the remaining included studies (five) was conducted (by two reviewers) using the Downs and Black (1998) checklist

⁹ See Appendix A of this thesis or view supplementary material directly in the publication [online](#).

(Supplementary Table A¹⁰). Varied measurements of stress were noted in the included studies: perceived stress, biochemical stress, and global stress.

We made one exception to our criteria and included the study by Ho et al. (2020) despite some sessions being led by a dance therapy trainee. Since the study reported appropriate direct supervision with a university-trained dance therapist and obtained a high-quality rating score (10 out of 11), this study was included.

Data Extraction

We developed a form to extract the following data: author and year, population, sample size, recruitment, description of the intervention, dance therapy theory or approach, design, comparator, and outcomes (primary and secondary).

6.5 Meta-Analysis

We conducted a meta-analysis of data from the three studies that used a randomised control trial design using RevMan (Review Manager v 5.4.1). Two studies were excluded from the meta-analysis due to being a secondary analysis of an included data set (Ho et al., 2016) and for not following an RCT design (Pylvänäinen et al. 2015). We used mean change scores and pooled SD to calculate group effect sizes ($d = (M1-M2)/\text{pooled SD}$). We then calculated standardised mean differences (SMD) with a random effects model to combine results from varied measures. No subgroup analyses/meta-regression was done.

6.6 Results

Figure 6.2 (below) is a graphic presentation of the results obtained from this systematic review as per the PICO format (McInnes et al., 2018). A tabular version of Figure 6.2 (including the quality assessment scores), can be seen in Supplementary Table A⁸.

¹⁰ See Appendix A of this thesis or view supplementary material directly in the publication [online](#).

Figure 6.2

Graphic Overview of Results

STUDY	POPULATION		INTERVENTION		MEASURES & DATA COLLECTION TIMEPOINTS	RESULTS	
Study: Bräuninger, I, 2012 Location: Germany	Adults who considered themselves to be experiencing stress based on self-selection	N=162 Randomized into: DMT Group (n=97); Waitlist group (n=65).	Frequency & Duration 10 sessions of DMT group intervention over 3 months 90-minutes each, once a week - Total hours of DMT intervention: 15 hours	DMT Approach(s) or Theory(s) Referenced - No specific DMT approaches were - Attunement was briefly alluded to	Comparator/ Control - Standard care (daily life routine) - The wait list control group received no treatment	- Brief Symptom Inventory (BSI) - Stress Management Psychopathology - Data Collection Timepoints (T): T1- Pre, T2- Post, T3- 3 month follow up	Stress: DMT significantly reduced both short-term and long-term stress in the therapeutic group while diminishing emotional distress and promoting new coping strategies. Depression: Social isolation, mental retention, resignation, self pity, and self blame significantly reduced in the therapeutic group but remained stable in the waitlist group.
Study: Pylvänäinen et al., 2015 Location: Finland	Adults with a dx. of major depressive disorder (in outpatient treatment). Additionally, anxiety, eating disorder & personality disorders were noted in the DMT group.	N= 25 Non-randomised (self-selection): DMT group (n=18); Waitlist Control group (n=7).	Frequency & Duration 12 sessions of DMT group intervention over 3 weeks 90-minutes each, Twice a week - Total hours of DMT intervention: 18 hours	DMT Approach(s) or Theory(s) Referenced - A Chance approach to DMT (emphasis on rhythm, group cohesion and mirroring) - Authentic Movement	Comparator/ Control - Standard care (daily life routine) - The non-intervention group in this study was termed, treatment as usual (TAU).	- The Clinical Outcomes in Routine Evaluation- Outcome Measure (CORE-OM) - The Symptoms Check List-90 (SCL-90) - The Hospital Anxiety and Depression Scale (HADS) - Becks Depression Inventory (BDI-II) - Data Collection Timepoints (T): T1- Pre, T2- Post, T3- 3 month follow up	Stress: DMT fostered better global stress management in the intervention group compared to the control. Depression: Negative and low-mood reduced in the dance therapy group more compared to the control.
Study: Ho et al., 2016 Location: Hong Kong	Adults experiencing symptoms of stress & depression secondary to breast cancer.	N= 139 Randomized into: DMT group (n=69); Waitlist control group (n=70).	Frequency & Duration 12 sessions of DMT group intervention over 3 weeks 90-minutes each, Twice a week - Total hours of DMT intervention: 18 hours	DMT Approach(s) or Theory(s) Referenced - Active use of rhythms & spontaneity - Group dances & improvisation - Structured & planned movements (like stretching, relaxation exercises).	Comparator/Control - Standard care (daily life routine) - The wait list control group received radiotherapy & standard nursing care in the hospitals.	- The Perceived Stress Scale (PSS) - Saliva samples for cortisol analysis - Data Collection Timepoints (T): T1- Pre, T2- Post, T3- 3 month follow up	Stress: The DMT group displayed a slightly steeper diurnal cortisol curve at Time 2 indicating better functioning of the HPA regulatory feedback system in participants. Depression: Participation in DMT with increased social connection, support, and subsequently healthier coping responses
Study: Ho et al., 2018 Location: Hong Kong	Adults experiencing symptoms of stress & depression secondary to breast cancer.	N= 121 Randomized into: DMT group (n=63); Waitlist control group (n=58).	Frequency & Duration 12 sessions of DMT group intervention over 3 weeks 90-minutes each, Twice a week - Total hours of DMT intervention: 18 hours	DMT Approach(s) or Theory(s) Referenced - Active use of rhythms & spontaneity - Group dances & improvisation - Structured & planned movements (like stretching, relaxation exercises).	Comparator/Control - Standard care (daily life routine) - The wait list control group received no treatment	- The Perceived Stress Scale (PSS) - Saliva samples for cortisol analysis - Data Collection Timepoints (T): T1- Pre, T2- Post, T3- 3 month follow up	Stress: The DMT group displayed a slightly steeper diurnal cortisol curve at Time 2 indicating better functioning of the HPA regulatory feedback system in participants Depression: No clear direct effect on depression was seen.
Study: Ho et al., 2020 Location: Hong Kong	Adults diagnosed with dementia (DSM-IV) or mild neurocognitive disorder (DSM-V) receiving psychogeriatric outpatient care.	N= 166 Randomized into: DMT group (n=66); Exercise group (n=56); Control group (n=55).	Frequency & Duration 24 hrs of DMT intervention spanning over 12 weeks. 60 minutes each, Twice a week - Total hours of intervention: 24 hours	DMT Approach(s) or Theory(s) Referenced - Use of rhythms, improvisation, & contralateral movements in sessions - Simple group dances & movement interactions, Movement games & Verbal processing	Comparator/Control - Exercise was a comparator; it was offered over 24 one-hour sessions held twice a week for 3 months. - The waitlist control group received treatment as usual (i.e., pharmacological).	- Combined analysis of five psychosocial tests (The deJong F Loneliness Scale, Visual Analogue Mood Scale, The Instrumental activities of daily living scale, Behavioural and psychological symptoms of dementia); and Salivary Cortisol - Data Collection Timepoints (T): T1- Pre, T2- Post, T3- 6 month follow up, T-4 12 month follow up.	Stress: A reduction in mean cortisol levels was seen in the DMT group. Depression: Short-term benefit for decreased depression, loneliness, negative mood & neuroendocrine functioning compared with waitlist control, which dissipated by T-4. "Considerable rebounds" in negative mood and loneliness were seen in the DMT group at T-4. Exercise: Exercise did not help alleviate any psycho-social symptoms

The descriptive statistics of all studies have been presented in Table 6.2 below.

Table 6.2

Descriptive Statistics for the Outcome Variables Pre-and Post-Intervention for All Groups in the Included Studies

Outcome	DMT group			Control group			Comparator		
	n	Mean (SD) Pre	Mean (SD) Post	n	Mean (SD) Pre	Mean (SD) Post	n	Mean (SD) Pre	Mean (SD) Post
Study: Bräuninger (2012)									
Stress [Positive Symptom Index on the BSI]	63	1.6 (0.5)	1.4 (0.4)	43	1.5 (0.5)	1.6 (0.6)	x	x	x
Depression [Depression scores on the BSI]	84	0.9 (0.8)	0.7 (0.8)	54	0.7 (0.8)	0.8 (0.7)	x	x	x
Study: Pylvänäinen et al., (2015)									
Depression [BDI-II]	18	25.0 (11.7)	14.9 (13.6)	7	32.5 (7.6)	29.0 (8.7)	x	x	x
Depression [HADS]	18	20.8 (8.0)	13.4 (10.2)	7	24.6 (4.7)	23.5 (6.5)	x	x	x
Stress [SCL-90]	18	1.4 (0.8)	1.0 (0.7)	7	1.6 (0.4)	1.6 (0.4)	x	x	x
Stress [CORE-OM]	18	17.0 (6.6)	12.0 (8.0)	7	20.7 (3.6)	20.1 (4.6)	x	x	x
Study: Ho et al., 2016									
Stress [Positive Symptom Index on the BSI]	69	19.4 (4.3)	18.4 (4.6)	70	19.2 (4.8)	19.5 (4.0)	x	x	x
Depression [Depression scores on the BSI]	69	5.5 (3.4)	5.5 (3.7)	70	5.8 (4.0)	5.5 (3.4)	x	x	x

Study: Ho et al., 2018									
Stress [Positive Symptom Index on the BSI]	63	19.6 (4.5)	18.0 (4.4)	58	19.6 (4.4)	19.8 (4.2)	x	x	x
Study: Ho et al., 2020									
Stress [Cortisol levels]	56	5.0 (3.0)	4.8 (2.8)	55	5.6 (3.8)	4.4 (2.1)	56	4.7 (3.2)	4.3 (2.5)
Depression [From the combined analysis of five psychosocial tests: The de Jong F Loneliness Scale, Visual Analogue Mood Scale, The instrumental activities of daily living scale, Behavioural and psychological symptoms of dementia]	56	0.8 (1.1)	0.7 (1.0)	55	0.9 (1.1)	1.0 (1.0)	56	1.1 (1.2)	1.2 (1.4)

Legend for Table 6.2

DMT: Dance/Movement Therapy (referred to as ‘dance therapy’ in this manuscript)

BSI: Brief Symptom Inventory

CORE-OM: The Clinical Outcomes in Routine Evaluation-Outcome Measure (CORE-OM)

HADS: The Hospital Anxiety and Depression Scale (HADS)

BDI- II-: Becks Depression Inventory (BDI-II)

SCL-90: The Symptoms Check List- 90 (SCL-90)

The total sample comprised 613 adult participants presenting with symptoms of depression and stress (303 in the dance therapy group and 310 in the control or comparator group).

Clinical populations included women receiving breast cancer treatment (n=139), adults living with dementia/neurodegenerative disorder (n=166), adults with depression (n=25), and adults living with self-perceived stress (n=162). Three studies were carried out in public hospitals in Hong Kong (Ho et al., 2016; Ho et al., 2018; Ho et al., 2020); one was implemented across 12 private practice centres in Germany (Bräuninger, 2012), and another was carried out in an outpatient clinic in Finland (Pylvänäinen et al., 2015). The mean age across the sample was 52 years (15.24), with 91.2% of whom were female. No further information about nuances of gender or ethnicity was reported.

All but one study used a randomised controlled trial design. Pylvänäinen et al. (2015), invited participants (n=44) to self-select between the intervention (n=21) or treatment as usual (n=12) to increase participant retention. Despite this attempt, the study had “fairly high” dropout rates (intervention group, 16% and treatment as usual, 33%) with no specific reasons reported. While the Bräuninger (2012) study was designed to be a randomised control trial, low recruitment in three (of 12) cities affected randomisation at those specific sites. From the total sample of 162 participants, 97 were allocated to the intervention group and 65 to the waitlist control groups. This study reported no dropouts, and nine cities maintained a randomised control trial study design.

Ho et al. (2016) recruited 147 participants, with a dropout rate of only 5.4% (8 participants), resulting in a total analysed sample of 139; treatment (n=69) and waitlist

control (n=70). The reasons for dropout were logistical. Since Ho et al. (2018) was a secondary analysis of Ho et al. (2016), the original sample size was the same, i.e., n=139. Eighteen participants dropped out (12.9%), leaving 121 participants for analysis, of whom 26 participated partially (18.7%). Reasons for dropouts were not specified. Ho et al. (2020) recruited 204 participants with a 21.4% dropout rate (n=38) due to hospitalisation, refusal to continue, death, logistical challenges, and evenly distributed dropouts between groups. Analysed participant numbers were dance therapy (n=56), exercise (n=56), and standard care (n=55).

All studies measured the intervention effect by comparing standardised self-report outcome measures pre-and-post-intervention (see Table 6.2). In addition, Ho et al. (2018) also collected saliva samples to calculate diurnal cortisol slopes, which helped determine dance therapy's effect on biochemical stress levels. The total dosage of dance therapy ranged from 15 to 24 hours with varied frequencies. Two studies offered a 12-week intervention (Bräuninger, 2012; Pylvänäinen et al., 2015), and three studies offered a 3-week intervention (Ho et al., 2016; Ho et al., 2018; Ho et al., 2020). Four of the five studies offered 90-minute sessions (Bräuninger, 2012; Ho et al., 2016; Ho et al., 2018; Pylvänäinen et al., 2015) , and one offered 60-minute sessions (Ho et al., 2020).

6.7 Meta-Analysis Results

The meta-analyses of the three studies did not provide evidence for a reduction in stress ($p=0.12$) or depression ($p=0.49$) due to dance therapy compared to standard care in our selected studies. However, dance therapy may still have clinical/experiential benefits as the diamonds in the forest plots cross the line of null effect, as seen in Figure 6.3 (a) and (b) below.

Figure 6.3

Forest plots of meta-analysis results for stress (a) and depression (b)

Figure 6.3(a). Dance Therapy vs Wait-list Control, Post-Intervention: Outcome - Stress

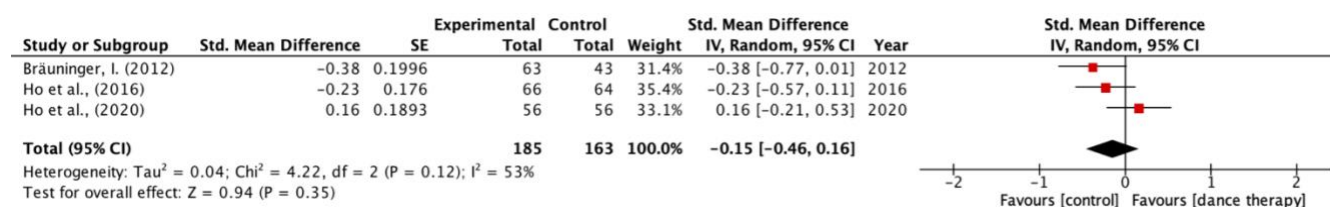
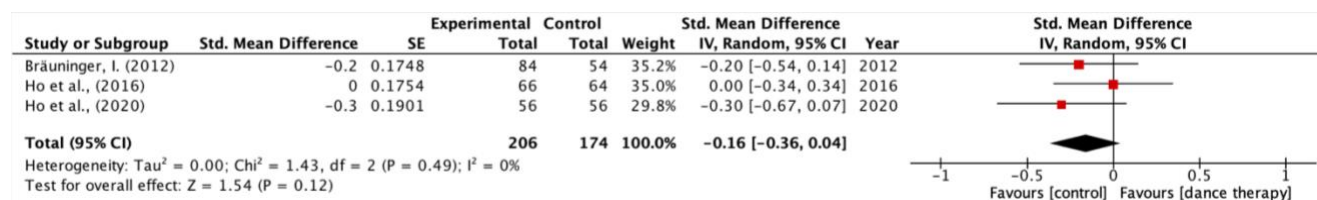


Figure 6.3(b). Dance Therapy vs Wait-list Control Post-Intervention: Outcome - Depression



6.8 Narrative Results

We adapted our narrative synthesis from Impellizzeri and Bizzini (2012) as shown in Supplementary Figure B¹¹

Although perceived stress levels did not reduce in all studies, dance therapy enabled better stress management through illness acceptance, motor learning, and increased recognition of functional skills and strengths (Ho et al., 2020). Pylvänäinen et al. (2015)'s study demonstrated a medium effect on stress reduction in the study, measured through the Clinical Outcomes in Routine Evaluation-Outcome Measure ($d=0.76$) and the Symptom Checklist-90 ($d= 0.57$) (Pylvänäinen et al., 2015). Self-report measures considered different manifestations of stress, such as activities of daily living, somatisation, interpersonal sensitivity, and better stress management, with a parallel increase in capacity to engage in activities of daily living. Similarly, a small effect of dance therapy on reducing perceived

¹¹ See Appendix B of this thesis or view supplementary material directly in the publication [online](#).

stress was seen in the 2016 study by Ho et al. ($d=0.33$). A lesser, non-significant effect was found in the secondary analysis by Ho et al. (2018), where cortisol slope regression estimates were used. In the latter study, the treatment group demonstrated steeper cortisol slopes than the waitlist control group, indicating a healthier hypothalamic-pituitary-adrenal axis, typically correlated with emotional resilience (Mikolajczak et al., 2008). The study by Bräuninger (2012) reinforced this, suggesting emotional resilience and problem-oriented coping after dance therapy sessions.

Comparator

Only one study used a comparator (exercise) and found that exercise did not alleviate any psycho-social symptoms of dementia (Ho et al. (2020)). In this study, mean cortisol levels reduced across the study period, revealing an initial reduction in depression. Still, these effects dissipated by the end of the study. The exercise and dance therapy sessions were equal in frequency, duration and structure (containing four 15-minute sections for warming up, stretching, exercising with towels, and cooling down) and were led by a qualified professional. Portable heart rate monitors were used to help maintain a similar exercise exertion level across the dance therapy and waitlist-control groups.

Longevity

Two studies indicated a lasting effect of dance therapy sessions at six months (Bräuninger, 2012), and three months (Ho et al., 2016) post-intervention. Pylvänäinen et al. (2015) found benefits to isolated aspects of depression (low mood, arousal of the autonomous nervous system, and reduced social interaction) sustained until the 3-month follow-up timepoint. Only one of the studies (Ho et al., 2020) included a one-year follow-up post-intervention and found the positive effects of dance therapy on depression in adults with dementia to have dissipated by this time point. Hence, the answer to our second research question is ‘no’. Further evidence is needed to determine if dance therapy can enable a direct

reduction in stress and depression symptoms; however, the results indicate increased management strategies.

To answer our third research question about common practices used by dance therapists with adults experiencing stress and depression, we analysed each study's theoretical approach. Pylvänäinen et al. (2015) identified five principles guiding their intervention: (i) supporting safety in the body, (ii) supporting a sense of agency, (iii) supporting mindfulness skills, (iv) being attentive to interaction, (v) fostering interaction from the therapist (Pylvänäinen et al., 2015, p. 5). Evidently, their intervention was rooted in Chace's (1896-1970) and Whitehouse's (1911-1979) relational approaches to therapy. The authors' language indicated partnership and collaboration between the facilitator and participants. This prompts consideration of a correlation between a relational approach in dance therapy and positive outcomes in treatment (Lykou, 2018; Young, 2017). The study by Bräuninger (2012) did not specify an overarching approach, instead highlighting the importance of responding to the emergent movement needs of their group, indicating the active use of attunement and Chace's (1896-1970) method of 'feeding off' of the group's movement patterns (Levy, 2014) Improvisation, as seen in the work of Blanche Evan (1982-1974) and Trudi Schoop (1904-1999) was also used.

Three studies conducted in Hong Kong (Ho et al., 2016; Ho et al., 2018; Ho et al., 2020) reported adapting dance therapy to the values of Chinese culture ('modesty' and 'respect'), however, did not elaborate on how this adaptation was actualised. In addition, authors described sessions as "specially tailored" to alleviate stress by incorporating a predictable session outline and structured movements, like stretching, relaxation exercises, movement games, improvisational dance, and free movement of body extremities. The authors emphasised adapting dance therapy based on participants' capacity, energy, and

needs, including offering choices to sit or stand in sessions, reinforcing the importance of agency in treating comorbid stress and depression (Ho et al., 2016; 2018).

Ho and colleagues (2016; 2018) described using props to invite and expand participants' movement pathways. Scarves, ribbons, elastic bands, and small musical instruments were used to help create expansive and non-restrictive movement. Here, the value of props is contextualised by the participants' diagnosis and physical capacity. In a way, the props offered to create movements that may not be possible due to illness or otherwise.

Ho and colleagues (2016; 2018) also described creating simple group dances as part of the intervention, alluding to choreography in sessions to enhance communication and connection among participants. These group dances can be perceived as a way of storytelling through movement. Specific to this study's cultural context, storytelling and meaning making aligned with Chinese culture's social norms and folkways (Shepherd, 2007). The use of group dance in the studies by Ho et al (2016; 2018) is consistent with previous research on the favourable effects of creative engagement and meaning making (Kaimal et al., 2020; Nilsen et al., 2021).

Therefore, the answer to our third research question regarding common practices reported by dance therapists working with adults experiencing stress and depression included improvisation, mirroring, shared group rhythms, structured movement, structured sessions, and storytelling through movement.

6.9 Discussion

Our meta-analysis of depression outcomes supports previous Cochrane reviews indicating inconclusive effects of dance therapy on depression (Bradt et al., 2015; Goldbeck et al., 2014; Karkou & Meekums, 2017; Meekums et al., 2015). Hence, the optimal dosage of dance therapy sessions required to achieve a decrease in depressive symptoms for this population is, therefore, yet to be determined. The studies in our review do not report

comprehensive details about how the interventions were carried out. However, available data has been summarised and presented in Figure 6.2 and Supplementary Table A.¹² Other factors, such as the choice of outcome measures, are also worth further exploring. Specifically, assessment tools need to be sensitive and specific enough to measure dance therapy's potential effects adequately.

Language and semantics can influence cognition (Goddard & Wierzbicka, 2011), self-perception, and outcomes of self-report measures (Carroll et al., 2020). The use of pathologising language and negative phrasing such as “poor appetite”, “loss of sexual interest,” past failure”, and “unwanted thoughts” from the Becks Depression Inventory-II (BDI-II) can influence the outcome of self-report measures (Carroll et al., 2020). The Hospital Anxiety and Depression Scale (HADS) and the Clinical Outcomes in Routine Evaluation (CORE-OM) use language that is comparatively less pathologising but not entirely strengths-based. Such language may cause reluctance to complete measures and challenge self-report accuracy (Jeong et al., 2018). The study by Pylvänäinen et al. (2015) demonstrates the importance of using a sensitive measure as they used four and gained varied results based on the sensitivity of each measure.

Our meta-analysis results on dance therapy’s effect on stress contrast with a recent review by Tomaszewski et al. (2023), in which authors ascertain that dance therapy is beneficial in reducing stress for adults with psychological trauma. The authors attribute group quality and intervention stability as essential structures for an optimal outcome. This propels further questions on ‘how’ the intervention was carried out and what moderators caused different outcomes across the studies in Tomaszewski et al. (2023)’s and our review. Likewise, our review supports the emotional benefits of dance therapy sessions in better

¹² See Appendix A of this thesis or view supplementary material directly in the publication [online](#).

managing depression treatment. As mentioned by (Hyvönen et al., 2020) dance therapy can be an effective way to support ongoing or standard treatment by increasing meaning-making and motivation in treatment (Karkou et al., 2019).

Finally, these findings are yet to be contextualised within treatment resistant depression (TRD). Future dance therapy studies could use these insights to adapt and tailor these practice-based findings to TRD populations.

6.10 Practice Implications

Individuals with TRD can experience compromised body awareness and limited movements. This may manifest as stiff, rigid, and limited movements (Dieterich-Hartwell, 2017). Hence, a vital practice implication is encouraging diverse and expansive movement patterns to increase psychological flexibility and stress management (Sampath, 2019). Here, props may be used to facilitate this due to their projective quality ‘surrogate movement expression’ as a possible movement pathway with this population. Ho et al. (2016) suggest that the psychotherapeutic component of dance therapy is one reason for its beneficial effect on reduced stress. Thus, including techniques such as verbalisation and verbal metaphors (Koch, 2020; Levy, 2014) may be useful as a clear therapeutic choice with this population. Beyond movement, props may also propel sensory exposure and identification in adults. These skills could be foundational in helping individuals get familiar with different sensory experiences both outside and within their body, serving as a step towards recognising one’s sensorial cues of dysregulation. This is specifically relevant in adults with TRD, where dysregulation can be a presenting concern.

6.11 Limitations

The included studies varied in population characteristics, intervention duration, and outcome measures, introducing heterogeneity into the analysis and decreasing the generalisability of our review findings. We could not obtain and report further details about

the individual dance therapy intervention in Bräuninger (2012)'s study nor the specific intervention adaptations to Chinese culture in the studies by Ho et al. (2016; 2018).

6.12 Research Recommendations

We recommend more detailed reporting on 'how' dance therapy sessions are carried out to enable replication. We also recommend further exploration of in-depth neuro-biochemical changes (such as the hypothalamic-pituitary-adrenal axis). Longitudinal studies should be conducted to determine any lasting effects of dance therapy and determining the optimal 'dose' of dance therapy for sustained improvements when working with persons with complex conditions will be invaluable. Further, it may be valuable to investigate the cultural adaptations of dance therapy interventions and co-occurring interdisciplinary treatments as potential moderators of dance therapy treatment effects. Finally, we recommend the use of self-report measures that avoid pathologising language.

6.13 Conclusion

Efficacy reviews for TRD predominantly study pharmacological (Bavaresco et al., 2020) and neuro-modulatory interventions (Liu et al., 2023). Despite this bio-medical focus, the prevalence of TRD has increased in the last two decades (Sousa et al., 2022). There is thus a need for research to consider a biopsychosocial or holistic treatment focus, such as dance therapy. In this review, we examined the effects of dance therapy on the primary symptom clusters in TRD. We found beneficial effects of dance therapy on developing emotional resilience, problem-oriented coping, and stress management in adults with both, stress and depression. Specifically, storytelling, meaning making, and a predictable session structure were possible intervention elements that obtained these experiential outcomes. Interventional examples most frequently referenced were participant led improvisation and exploring shared rhythm. Our synthesised findings on dance therapy practices can be a formative guide while working with these populations. Despite the lack of significant results

from the meta-analysis of three studies, there is an emerging body of literature supporting the need for further research on dance therapy to enhance standard care practices in stress and depression treatment (Hyvönen et al., 2020; Karkou et al., 2019); these must be considered while treating resistant depression, where both conditions are comorbid.

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Chapter 7: Bridging Material

Whilst conducting the traditional literature review (Chapter two) and the systematic review (Chapter four) on treatment resistant depression and dance/movement therapy I recognised my disappointment with the underrepresentation of non-Western practices in the literature. With the prevalence of depression and suicidal ideation being higher among Black, Indigenous, and People of Colour (B/I/POC) (Ross et al., 2018); this underrepresentation is problematic especially since oral narratives and storytelling are known to be used within B/I/POC communities to promote vitality and enable psychological wellbeing.

Being acutely aware that the under-representation of oral narratives has its roots in power disparity, where power has been allocated to empirical evidence, I chose to redirect my dissatisfaction with mainstream literature by critically reflecting on my own clinical practice of using oral narratives.

7.1 Relevance in Global Discourse

The aim of writing the upcoming publication was to support the equitable accommodation of oral narratives from Eastern cultures alongside Eurocentric ways of practising dance/movement therapy. The publication contributes towards the larger discourse of understanding culturally informed practice in this population.

7.2 Relevance in Doctorate Research

The following chapter (Chapter eight) comprises an original, published article that has been reproduced in full in this thesis. No edits have been made to the content of the publication. Headings, subheadings, tables, and figures have been numbered in conjunction with the rest of this thesis, as shown in the table of contents. The publication is titled, *“Treatment resistant depression: A critical reflection on missing oral narratives in dance therapy literature”*. This article was published in *The Body, Movement and Dance in Psychotherapy Journal* (Christopher, 2024). In this solely authored article, I draw on

examples from my personal life as a South Asian woman and the contradictions between my individual and structurally imposed ways of thinking. The two main anecdotal reflections that I highlight in this paper are a) embodied storytelling as a way of building emotional intelligence and b) intuition as a way of trusting one's somatic cues. The online version of the article has been linked [here](#).

I acknowledge my supervisory team for their guidance in helping me articulate the complex topic covered in the upcoming chapter: Dr Ella Dumaresq (The University of Melbourne, Australia), Professor Emerita Sharon Goodill (Drexel University, USA) and, Associate/ Professor Jeanette Tamplin (The University of Melbourne, Australia).

7.3 Terminology

Lastly, based on the journal's requirement, the term 'dance movement psychotherapy' (DMP) has been used instead of dance/movement therapy in the upcoming publication and the term 'dance therapy' has been used in the title of the publication. The publication includes three main sections: introduction, materials and discussion. This narrative is based on the journal's requirements. References have been added after the chapter and there are no additional supplementary documents in relation to this article.

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Chapter 8: Treatment Resistant Depression: A Critical Reflection on Missing Oral Narratives in Dance Therapy Literature

8.1 Abstract

South Asian narratives are underrepresented in dance movement psychotherapy academia. Systematically supporting more anecdotal literature on utilising the body's innate wisdom in illness prevention and treatment is essential to support equitable accommodation of oral narratives. In this critical reflection, I have integrated my emerging perspectives as a member of the South Asian diaspora, a clinician who has trained and worked within the medical model and an early career researcher. I present two anecdotal themes and brief case examples relevant to contemplating the value of oral narratives within dance movement psychotherapy. They are: 1) embodied storytelling as a way of building emotional intelligence, and 2) intuition as a way of trusting one's bodily cues in individuals.

8.2 Keywords

Dance movement psychotherapy, oral narratives, South Asia, critical review

8.3 Introduction

‘Oral narratives’ is an umbrella term that covers various types of storytelling (Hühn et al., 2009), which may contribute towards education, preserving culture, recreation, and passing on intergenerational knowledge. Hence, oral narratives may be structured or unstructured based on their purpose and geo-political context. For instance, in many South Asian cultures, including mine, oral narratives sometimes include a clear format and rehearsal of folktales before being shared in social contexts when practised with educational intent. This is seen in the vast descriptions of Singh’s (2007) compilation that highlights South Asian heritage through oral narratives and dance formats. Alternatively, oral narratives can also be more spontaneous, naturalistic, and emergent when practised with the intent of building intergenerational connections, as I witnessed in my own South Asian upbringing. Hence, oral narratives being an umbrella term for various types of storytelling seems justifiable given its vast applicability and emphasises its relatability to the field of dance movement psychotherapy (henceforth: DMP). Since DMP similarly embraces both improvisational and planned use of movement and verbalisation, the direct use of oral narratives through embodied storytelling and intuition may be valuable methods in DMP practice, which are scarcely documented in current formal DMP literature.

Although oral narratives are commonly discussed in the context of South Asia, they are not unique to South Asian countries; they are a global phenomenon. However, dominant philosophical underpinnings, tolerance of diversity, socio-political allegiance, race, gender, and privilege typically influence oral narratives in different contexts. Hence, it is important to critically reflect and examine the reality of scarce DMP literature on the active use of oral narratives that emphasise the body’s wisdom, particularly in literature on DMP as an intervention in treating complex mental health concerns, like treatment resistant depression.

Treatment resistant depression (TRD) occurs when depressive symptoms do not reduce despite intervention which could be psychotherapeutic or pharmacological (Voineskos et al., 2020). So far, cross-disciplinary approaches like psycho-social, psychological, biological, and neurological approaches have been used to help clinicians and patients alike recognise optimal ways to navigate life with TRD (Voineskos et al., 2020). Yet, amidst this seemingly abundant growth of knowledge, there are still notable gaps in DMP literature, specifically on the parallel between South Asian cultural practices and DMP methods in our field's dominant academic discourse.

I wrote this reflection to highlight my insights on the power of oral narratives as potential DMP methods and further the development of DMP literature by bringing together my cultural lived experiences and two glimpses of my professional work across the years. As mentioned, this topic is not unique to South Asia, yet I deliberately focus on this geographical context as I specifically illustrate my experiences as a member of this Diaspora. Like Mackay (2022), who draws on his frustrations that stemmed from a fragmentation between his cultural identity as a mixed indigenous sociology scholar and his professional work, I also channelled the frustrations I experienced while searching for records about DMP practices in TRD into this reflection. These frustrations were specific to a systematic review and meta-analysis conducted on this topic (Christopher et al., under review) during which only Westernized theoretical treatment models were identified in the results. One of the contributing factors to these findings was the very nature of systematic reviews and meta-analyses, since they are the gold standard for collating, critiquing, and summarising best practices in healthcare (Munn et al., 2018). Further, practitioners often rely on systematic reviews and meta-analyses findings to influence their referral and interventional suggestions decisions. Consequently, there is tremendous inherent power in the format of such research where rigorous and robust standards are understandable; considering the dynamic nature of

oral narratives, it is unlikely that personal accords will be included in such reviews as they may seldom fit the inclusion criteria. This proposes a unique dilemma for DMP researchers who may value both the methodological rigour required in such research within medical contexts and the healing components of oral narratives and dance embedded in the practice of DMP. Recognising these pragmatic challenges and being driven by my somatic cues of frustration, I wrote this manuscript to emphasise literature on using oral narratives to co-exist with other more Westernised methods of DMP and not undermine the currently dominant models (Voineskos et al., 2020). This is synchronous with a global shift from a lateral and arguably pathologising view of mental health concerns to a more inclusive and holistic lens (Syed & Bhardwaj, 2020).

It is beyond the scope of this reflection to reflect on the myriad of ways in which oral narratives have been retained as a core tool for mental health management across cultures. Instead, the following question will be explored: How do oral narratives contribute to the practice of DMP, specifically in treating resistant depression? First, I will emphasise the missing link in DMP research by highlighting the power imbalance stemming from expert models and epistemic cognition in the sciences (Greene et al., 2016). Next, I will discuss two ways my culture has centred my body's wisdom, which has also been relevant in my clinical practice. Taking a social justice stance, where the onus of comprehensive education is not on the marginalised person (in this case, on myself as the person of colour) (Downey & Kierr, 2022), I took a mindful decision not to educate the readers on the entirety of this topic but to foster argumentative reasoning (Greene et al., 2016), hence encouraging readers to question the lack of oral narratives and take actionable steps towards its equitable accommodation in DMP literature.

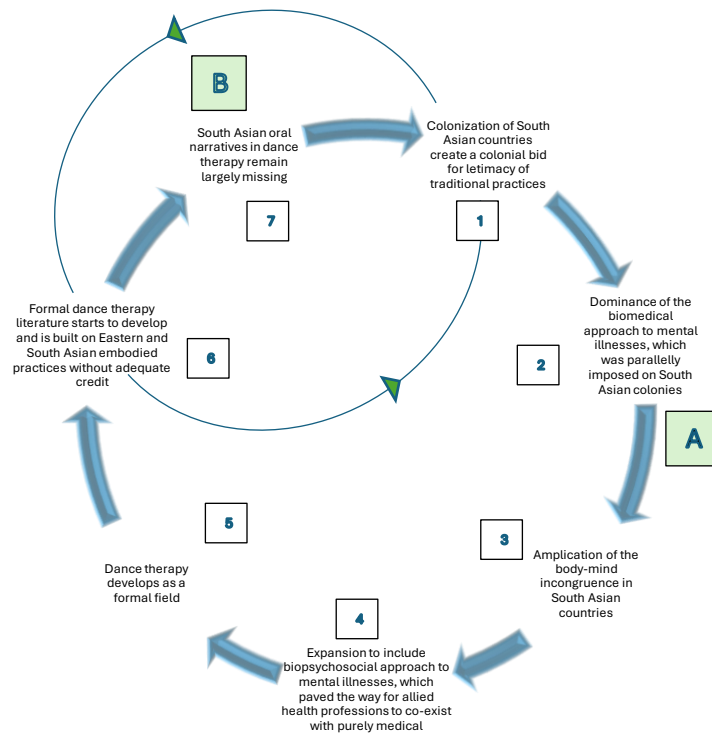
8.4 Materials

The under-representation of oral narratives has its roots in power disparity, where power has been allocated to certain types of ‘evidence’. Additionally, what constitutes ‘evidence’ is closely linked to the notions of a Western scientific worldview that do not equally accept pluralism in their epistemology. And, then, naturally, do not accept a somatic lens as an explanatory model (Tirodkar et al., 2011) of health and illness (both common in many South Asian cultures).

Members of the South Asian diaspora who work within the medical model (Hill et al., 2007) offer a unique perspective that holds the dichotomy of belonging to a culture that values oral narratives whilst working within a model that may not. However, this impetus to share should not be confused with the inception of awareness regarding this dichotomy. These contradictions between the personal and structurally imposed ways of thinking have been at the forefront for many South Asian families and peaked under British colonisation. Starting with the British invasion in the 1600s (Bose & Sen-Den Han, 1934), many South Asian countries witnessed an erasure of local ways of life. For instance, embodied healing practices and ayurveda faced what Mishra et al. (2018) describes as ‘a colonial bid for legitimacy’. Such whitewashing birthed many British colonies' large incongruence of the body and mind nexus. Therefore, I propose the following visual (Figure 8.1) as a formative depiction of the systematic removal of South Asian oral narratives from scientific literature in the past, which is mirrored in DMP literature in the present.

Figure 8.1

Oral Narratives of The Body's Wisdom – A Critical Reflection of Missing Dance Therapy Literature on Treating Resistant Depression.



Note:

A: The Past: The socio-political history of South Asia causing a systemic absence of oral narratives.

B: The Past and the Present: An iterative cycle of South Asian oral narratives lacking in dance movement psychotherapy literature.

Although the shift from a biomedical (Hill et al., 2007) to a bio-psycho-social (Borrell-Carrió et al., 2004; Farre & Rapley, 2017) lens (as seen in Figure 8.1) has been beneficial, it is insufficient to create a systematic space for oral narratives in DMP academia.

8.5 Discussion

8.5.1 Emotional Intelligence and Embodied Storytelling

Emotional intelligence is the ability to perceive, understand, express and regulate feelings (Gayathri & Meenakshi, 2013). Mayer et al. (2004)'s model focuses on four aspects of emotional intelligence: perception, assimilation, understanding, and management which

have been seen in South Asian folktales. Some examples that demonstrate both the exploration and resolution of various emotions include the four components proposed by Mayer and Salovey's model (2004) are seen in Kunzang Chode's Folktales of Bhutan (which teaches emotional perception through exposure and identification of diverse emotions through the story). Similarly, The Puranas, Vedas and Sutras from ancient India teach both emotional perception and emotional understanding through the demonstration of complex emotions of jealousy, pride, and revenge. This is also seen in more recent adaptations of ancient texts like The *Panchatantra* (which is a set of stories covering five themes about emotions, friendship (*Mitra labha and Mitra bheda*), the importance of presence-oriented life (*Apariksitakarakam*), problem solving (*Labdhapranasam*), and even politics and strategy (*Kakolukiyam*) that demonstrate emotional regulation despite complex conditions. And the Legend of Sigiriya in Sri Lanka (which teaches emotional expression by emphasising the importance of clear communication). In this way, oral narratives can be seen as integral to building emotional intelligence from a macro-social and ecological lens.

Having experienced storytelling through dance (like *Kathakali and Yakshagana*), exaggerated puppet shows, and physical theatre throughout my life, I inherently believe storytelling can be an embodied practice (Heavey, 2018) . Formally, embodied storytelling (Letherby & Davidson, 2015) is understood as the practice of using the body as part of the narration and communication processes in the story. It elevates stories from mere words to an opportunity to activate our sensory experiences and offers the opportunity to problem-solve through the lens of the characters.

In my family's culture, embodied storytelling introduced me to different scenarios through which I could visualise, sensorily understand, and familiarise myself with various emotions. While storytelling is a way of helping children familiarise themselves with a wide range of emotions (Dujmović, 2006), has been ongoing for over a millennium in South Asian

cultures (Chkhikvadze et al., 2019; Dujmović, 2006). A similar familiarisation process of psychoeducation was suggested only as recently as the 1980s (Anderson et al., 1980) is a behavioural intervention where individuals are educated on the signs and symptoms of a mental illness.

As a South Asian who has worked within the medical model, I have seen familiarisation being used as a pathway to psychoeducation. I have witnessed both psychoeducation and embodied storytelling be equally successful in developing the foundations of increased illness awareness and emotional intelligence in my clients. Written below is a case overview to illuminate one such experience:

A 45 Y/O Indian female who identified with the social roles of a daughter, wife, community leader and entrepreneur was diagnosed with depression for a year before being referred to me. Previously, she had tried psychotherapy and psychotropic medication as interventions. In our work together, we utilised our shared cultural background and revisited some of the stories we were both told as a child. Through this exchange, I invited her to think about and describe the nuance of each character's emotion and pay attention to her sensory feelings whilst exploring the nuances. With time, we had the opportunity to expand this exploration to embodied storytelling, which served as a way for her to feel socially and culturally connected with extrinsic parts of her identity whilst also repeatedly familiarising herself with various emotions through characters.

Remembering the felt experience of mixed emotions in her body ultimately increased her ability to identify, name, and describe her feelings. In doing so, she developed emotional intelligence not via traditional psychotherapy

but by maintaining the tradition of embodied stories within a therapeutic space.

Relevance in Treatment Resistant Depression. While arguments on the best way to foster emotional intelligence as a predictor of mental health (Davis et al., 2019) continue, there is a consensus that personality traits and learned abilities are critical in its development. An unfortunate reality of the healthcare system is an imbalance between the time and resources needed versus those available to create an effective treatment plan for adults living with treatment resistant depression (Voineskos et al., 2020). Since emotional intelligence includes emotional identification and expression, embodied storytelling can be a way to build the needed vocabulary for individuals to advocate for themselves in limited time frames. In this way, I see integrating embodied storytelling practices in DMP with adults with treatment resistant depression to be one way of fostering emotional intelligence, which in turn may be one way of circumventing a shortcoming of the fragmented medical system. Although this cannot guarantee recovery, it is essential to remember that neither do Western interventions in the medical model, yet these interventions are dominant in the literature.

8.5.2 Intuition, Trusting Bodily Cues and Somatic Awareness

Our bodies have a memory of their intracorporeal memory, which is implicit, unconscious, and primarily influenced by non-verbal interactions (Fuchs, 2003). Closely linked with this form of body memory is intuition. While researchers have often demanded evidence or justification for intuition, it has been an organic part of many South Asian homes, including mine. Our innate capacity as humans to understand social realities, predict patterns and calibrate safety in social situations provides a strong rationale for us to trust intuition. Intuition can also be misunderstood as an irrational thought without a specific reason. Such perspectives stem from the 18th century, believed to be the Age of Reason in the West (Haidt et al., 2000). Only recently has intuition been better understood and even linked with

neuroception (Porges, 2004) and interoceptive awareness. (Hindi, 2012) While ongoing, DMP research is starting to uncover the potential of interoceptive awareness and intuition. It is yet to be accepted as a valid approach to decision-making. Finally, I agree with Goodin (2010), that intuition has been primarily rejected in Western research due to the rigidity and rationale dominance held in the Western context, along with a lack of awareness of the nuanced ways in which intuition is used in different cultural contexts.

Conversely, intuition has been understood and recognised as a skill in many South Asian cultures. For instance, through oral narratives, I was taught to be intuitive and pay close attention to my bodily cues. Like me, many others were instructed to use their body as a signpost for social safety. Likewise, in ancient Vedic philosophy, (Raju, 1952) intuition was described as a non-discursive perceptive skill that stemmed from lived experience. Understanding intuition as a keen skill expands its usefulness in mental health treatment. Intuition, as I have experienced it, offers a pathway to trusting one's bodily cues. Written below is a case overview to illuminate one such experience:

A 35 Y/O Nepali male who identified with the social roles of the eldest son was diagnosed with depression and social anxiety for two years before being referred to me. Apart from a few infrequent counselling sessions, the client had not tried any other interventions, the reason for which he reported “feeling overwhelmed and confused by his depression and anxiety”. In our work together, we focussed on emphasising his felt experiences, his pattern of bodily cues, and his inner senses. Over one year, I gathered that this process made him feel more connected with himself. Through verbal feedback, I learnt that he had also begun to trust his bodily sensations as “messengers” that gave him an “indication” about his emotions rather than agents of confusion. His confidence levels had

increased, and confusion about his sensory feelings had been reduced. With time, he was able to tap into his learned skill of intuition, which gave him an indication of how he was feeling rather than being blanketed by confusion and anxiety.

Relevance in Treatment Resistant Depression. Delayed intervention can exasperate symptoms. Here, I see sharpened intuition and sensory awareness as a powerful and preventative tool that allows clients to use intuition as a signpost that warrants further medical assessment. This can also help with the early detection of somatic symptoms of other comorbid conditions, which are also common in treatment resistant depression.

8.6 Challenges of Oral Narratives

Since ‘oral narratives’ is an umbrella term that covers various types of storytelling, it is also consequentially complex. Drawing from my own experience, I recognise researchers' difficulty in tracing and validating oral narratives. Next, a particular challenge I see is the issue of referencing and ownership. Since oral narratives include stories that often surpass ownership, they may not always be a viable option for researchers to cite in their work reliably. Next, with DMP being a nascent field, there is systemic pressure to develop ‘evidence-based’ literature. Lastly, the time needed to discover, verify, and ascertain patterns from oral narratives might be too time-consuming based on the relatively small field of researchers in DMP.

8.7 Future Direction

As a South Asian dance therapist and researcher, I sense the dichotomous tension between promoting oral narratives and the traditional notion of evidence. Letherby and Davidson (2015) speak to a similar pressure faced by academics and encourages researchers to try new ways of writing and contributing to knowledge, including “blurring the tenuously constructed boundaries...between the academic and the personal.” Similarly, I believe oral

narratives can be preserved by encouraging naturalistic forms of practice while parallelly documenting them. One might argue that this is a form of falling prey to Western standards of knowledge generation. Conversely, due to the erasure that has already occurred (as mentioned in Figure 8.1), documenting oral narratives helps reclaim power while filling a gap in current knowledge.

8.8 Conclusion

The potential value of oral narratives in DMP is under-researched. We are at a pivotal time in DMP's development and history, where we can broaden the literature by drawing parallels between cultural experiences and DMP practices, as done in this reflection.

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Chapter 9: Bridging Material

As mentioned in Chapter four, there was insufficient data to design the intervention for a client study exploring how dance/movement therapy influences emotional regulation in adults with a diagnosis of treatment resistant depression (Study III in this thesis). Hence, I conducted two preliminary studies to gather more information and data on this topic. The upcoming chapter includes one of the preliminary studies.

Based on the introduction (Chapter one), the upcoming study was based on my clinical experience. Additionally, this study gained impetus from my conversations with other dance/movement therapists who centred kinesthetic empathy in their approach to sessions while working with adults who are diagnosed with treatment resistant depression.

9.1 Relevance in Global Discourse

Like other publications in this thesis, this publication is a stand-alone study addressing a gap in dance/movement therapy academia, specifically addressing the paucity of data on ‘how’ dance/movement therapists address dysregulation in their clients with a diagnosis of treatment resistant depression. I envisioned the readership of the upcoming publication to be dance/movement therapists interested in learning how fellow professionals were fostering regulation in clients through kinesthetic empathy.

9.2 Relevance in Doctorate Research

The upcoming chapter (Chapter 10) comprises an original, published article that has been reproduced in full in this thesis. No edits have been made to the content of the publication. Headings, subheadings, tables, and figures have been numbered in conjunction with the rest of this thesis, as shown in the table of contents. The publication is titled, “*The use of kinesthetic empathy with adults living with treatment resistant depression: A survey study*” and has been published in the American Journal of Dance Therapy (Christopher & Tamplin, 2022). The online version of the article has been linked [here](#). This article was co-

authored with my principal supervisor Associate/Professor Jeanette Tamplin, with my contribution being significant (including study conceptualisation, applying for ethics approvals, finalising suitable methodology, recruiting participants, data collection, data analysis, documentation and writing the original draft), this was agreed upon by my co-author. Hence, adhering to the requirements of including the publication in this doctorate thesis. Supplementary material associated with this publication has been added in the appendix of this thesis and references have been added after the publication.

9.3 Terminology

The terminology used in the upcoming chapter is consistent with the term used in this thesis, that is, ‘dance/movement therapy’. Conversely, the phrase ‘adults living with treatment resistant depression’ has been used instead of ‘adults with a diagnosis of treatment resistant depression’ (used in this thesis). This was done to adhere to the word count requirement of the journal. Similarly, American English was used to adhere to the journal’s requirement. Lastly, I acknowledge and thank Professor Katrina Skewes McFerran for her guidance during the conceptualization phase of the upcoming study (Chapter 10).

References

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Chapter 10: The Use of Kinesthetic Empathy with Adults Living with Treatment Resistant Depression: A Survey Study

10.1 Abstract

Dance/movement therapy is an embodied healing practice which has been found to foster recovery from depression and boost quality of life. Although kinesthetic empathy holds great potential for addressing emotional dysregulation, it is an under-utilized dance/movement therapy intervention in health optimization, especially in adults living with treatment-resistant depression. The aim of this study was to collect data from dance/movement therapist on how they use kinesthetic empathy to foster self-regulation in adults living with treatment-resistant depression. A survey design was used to obtain this data. Eight dance/movement therapists (practicing in India, Philippines, Barbados, and the United States of America) were recruited. The participant demographics of the survey challenges the centrality of master's level trained dance/movement therapists primarily practicing in Eurocentric cultures. The survey included open answer questions, and responses received were grouped into four categories: (i) dance/movement therapists' rationale for using kinesthetic empathy (ii) therapist-described client responses to kinesthetic empathy, (iii) changes in self-regulation patterns of clients, and (iv) potential links between employing kinesthetic empathy as an intervention and witnessing emotional regulation in clients. Overall, kinesthetic empathy was described as a core part of the participants' dance/movement therapy practice with this population. The identified client responses to kinesthetic empathy were categorized based on DeWitte's and colleague's (2021) therapeutic factors of change. 'Observable client responses', such as, use of metaphors, verbalization of body sensations and engaging in mirroring were categorized under specific therapeutic factors of dance/movement therapy. Alternatively, 'emotionally felt client responses' such as,

increase in safety and trust within the therapeutic alliance were categorized under both ‘specific’ and ‘mixed-type’ factors based on the model. Finally, this article discusses movement interventions that maybe incorporated by dance/movement therapists while working with this population. Further research is required to identify the long-term effect/s of kinesthetic empathy as an intentional intervention to foster self-regulation in adults living with treatment-resistant depression.

10.2 Keywords

Kinesthetic Empathy, Treatment-Resistant Depression, Dance/movement Therapy, Regulation, Interoception

10.3 Introduction

As an embodied healing practice, dance/movement therapy has been shown to alleviate symptoms of clinical depression (Karkou et al., 2019; Olmedo, 2020; Pylvänäinen et al., 2015). Within the last decade, there has been a steady increase in the global emergence of dance/movement therapy (Capello, 2016). Joining this momentum of robust and upcoming discoveries in dance/movement therapy, this article highlights a study aimed to explore dance/movement therapists' *understanding*, and *use* of kinesthetic empathy while working with adults living with treatment-resistant depression in their practice.

While extensive research to discover the most effective treatment methods for depression has been ongoing for decades, a large component of this research remains to be on major depressive disorders. In comparison, little is known about the prognosis of treatment resistant depression (TRD). Currently, TRD still lacks a standardized and consensual definition (Rybak et al., 2021; Souery et al., 2006). Regardless of the scientific headway in mental health, depressive disorders continue to heavily burden the global public healthcare system, especially since the onset of the COVID-19 pandemic (Santomauro et al., 2021). Distinctive research about the use of a non-invasive and relational intervention like kinesthetic empathy towards symptom reduction and health optimization in adults living with TRD is crucial and necessary, especially with the expected rise in levels of global depression, post-traumatic stress, anxiety, and dysregulation following the COVID-19 pandemic (Ćosić et al., 2020).

The standardized use of dance/movement therapy in healthcare is in its nascent stages. Within depression treatment, prior research suggests that dance/movement therapy interventions can increase vitality and overall quality of life in adults (Karkou et al., 2019; Koch et al., 2007). Along with this, dance/movement therapy has also been found to address certain biochemical deficits in depression by modulating neurohormones like, serotonin and

dopamine in teens with mild depression (Jeong et al., 2005). Current literature also suggests that clients have also benefited from dance/movement therapy's positive effect on social symptoms of depression as it has been found to nurture a secure attachment style and increase emotional awareness in adults (Punkanen et al., 2014).

One of the lived experiences of depression is a difficulty in regulation (Joormann & Gotlib, 2010). Within TRD, dysregulation may be of emotional, social or of somatic nature. Trends in research and funding of healthcare suggest a disproportional distribution of resources between emotional and social dysregulation and somatic dysregulation. However, the risk that accompanies somatic dysregulation is no lower than that of emotional or social dysregulation. Consistent exposure to triggers causing subsequent dysregulation can even result in somatoform disorders like chronic fatigue or dissociative disorders (Bailer et al., 2017). While using somatic aptitude to address these forms of dysregulation may seem judicious from a theoretical framework in dance/movement therapy; it is not yet evidence based or well-researched. Somatic aptitude, like TRD, lacks a universally accepted definition. In practice, the authors understand somatic aptitude to include recognizing, navigating, and coping with sensory experiences and cues. Common somatic cues include, tingling, stomach churning, muscle tightness, chronic pain, etc., typically in response to emotional triggers (Friedrichsdorf et al., 2016; Trivedi, 2004).

Although kinesthetic empathy is a central aspect of dance/movement therapy, it is not unique to the field. Kinesthetic empathy is also experienced in social interaction, in performance studies, and in several creative practices across the world (Reynolds & Reason, 2012). A motif across these diverse areas is the affirmation that kinesthetic empathy is both a relational and somatic experience. A key aspect in understanding kinesthetic empathy is acknowledging its roots in *emotioncy*, which in-turn refers to emotional awareness through sensory intelligence (Pishghadam et al., 2013). This, both justifies the union of kinesthetic

empathy and sensory intelligence and highlights a new avenue to potentially nurture emotional awareness and self-regulation. The link between them is under-researched in dance/movement therapy. In this study, present how kinesthetic empathy is being used as an intervention by dance/movement therapists, specifically to foster self-regulation in individuals living with TRD.

10.4 The Complexity of Treatment Resistant Depression (TRD)

Based on the medical model, treatment resistant depression (TRD) is best understood as a state where depressive symptoms do not decrease despite at least two completed rounds of antidepressants (Al-Harbi, 2012). It involves periods of low mood with physiological and psychological symptoms (Pandarakalam, 2018, p. 280-281). Due to the complex nature of depression, reasons for treatment failure differ on an individual case-by-case basis. McIntyre et al. (2020) acknowledge the lack of time psychiatrists can offer versus the time needed to identify a well-rounded health plan as a plausible cause for treatment failure. This, along with an overall lack of illness acceptance, poor doctor-patient relationship, and medical non-compliance are other factors noted for failure in treatment (Hirschfeld, 2001; McIntyre et al., 2020). The lack of a strength-based and client-centred treatment model is evident in these research studies. On the contrary, although dance/movement therapy is a strength-based approach (Okamoto, 2017), more research is required for the anticipated benefits of this approach to be researched to address the multi-layered needs of adults living with treatment resistant depression.

10.5 Kinesthetic Empathy and Regulation

Based on one's theoretical framework, kinesthetic empathy maybe either perceived as intentional intervention or everyday social phenomena. In this study, kinesthetic empathy has been positioned to be an intervention actively used by dance/movement therapists to foster self-regulation. Theories that support kinesthetic empathy as a naturalistic process occurring

in the milieu such as in, theories of intersubjectivity where in “the co-presence of bodies in intersubjective situations can give rise to processes of kinesthetic empathy”. Alternatively, kinesthetic empathy may also be perceived as an intentional movement imitation process that can be facilitated in certain settings such as in dance classes (Koehne et al., 2016).

Despite differences in ways of understanding kinesthetic empathy, certain similarities include kinesthetic empathy being relational in nature and including embodiment. The former might include relational or interpersonal exchanges between two or more individuals or, between performers and their audience or, between therapists and their clients. Similarly, embodiment can also be a relational experience and be perceived differently based on one’s chosen worldview. However, a difference between the two is that unlike kinesthetic empathy, embodiment can occur in the absence of another individual whereas kinesthetic empathy cannot. Beaudoin and MacLennan (2021) describe embodiment as tangible knowledge that is gathered through the body-brain connection. Embodiment plays a vital role in dance/movement therapy as it is through embodiment that a therapist might gain insight into their clients’ emotional state and via embodiment that clients might also begin to identify and comprehend the emotional cues coupled with their sensory experiences. This section deliberately highlights differing viewpoints on, embodiment and kinesthetic empathy. While they might add richness of information in some disciplines, this lack of consensual information also serves as an added challenge in the use of non-invasive somatic practices like embodiment and kinesthetic empathy in treatment planning for adults living with treatment resistant depression (TRD). The authors of this article have also chosen not to refer any one central definition of kinesthetic empathy and in doing so pointing readers towards the clear impetus for future dance/movement therapy research in this area.

As mentioned above, depressive disorders, both treatment responsive and resistant, can include significant social, emotional, or somatic dysregulation. Dysregulation can occur

though hypo or hyper arousal; both of which include somatic components (such as breath, touch, temperature, etc.) which may be unique to each person. The aspect of self-regulation being focussed on in this study include is that of emotional self-regulation. Emotional self-regulation is the body's way to seek stability. It is a process where one can manage feelings and maintain hope amid stressful situations (De Almondes et al., 2021). Currently, no dance/movement therapy technique has been identified to aid in this process of self-regulation in treatment resistant depression. Fundamentally, dance/movement therapy uses the body's power in deepening both the exploration and expression of the mind. Due to this fundamental use of movement, it is imperative to look at the impact of movement on the brain, specifically on the sympathetic nervous system. Understanding the nervous system and the homeostatic changes associated with it is a critical first step in determining a treatment plan to treat anxiety, stress, and emotional disorders such as treatment-resistant depression (Jerath et al., 2015). Along with changes in the autonomic nervous system, emotions also bring various bodily reactions, such as feeling stiff, shortness of breath, tension headaches, sensation of pins and needles etc. In this way, small or large movement shifts in our overall body or specific postures are indicators of different emotional states and the activation of the autonomic nervous system. These movement can safely occur within kinesthetic empathy.

As mentioned above, depressive disorders, both treatment responsive and resistant, can include significant social, emotional or somatic dysregulation. A wide range of complexities arise due to this. They include inflammation, unspecified emotional distress, stress and obesity (Bakal et al., 2008; Beurel et al., 2020; Van Strien, 2018). According to Kovacs et al. (2008) one's neurobiological infrastructure plays a key role in regulation, specifically in processing and understanding sadness. Both responsive and resistant depression are often co-morbid with anxiety, thus only further complicating the series of symptoms needing to be managed (Hirschfeld, 2001; Pericleous, 2011; Zhiguo & Yiru,

2014). Holmes et al. (2006) speak to the presence of co-morbidities, community attitudes, demographic factors, and constraints in social support as factors that may obscure the treatment path in resistant mental illnesses. This distressing cluster of symptoms not only diminishes patients' quality of life but also increases the financial burden on them (Olchanski et al., 2013). Patients often go from one doctor to another in search of suitable treatment for such varied comorbidities, only further increasing stress and ultimately causing dissatisfaction in treatment (Trevino et al., 2014). Recurrent exposure to such distress keeps the sympathetic nervous system (SNS) charged and activated (Won & Kim, 2016). When activated, the SNS responds by commanding the body to flee, fight, or even freeze (Roelofs, 2017). In all three states, the body experiences dysregulation and may require vagarious co-regulation and rehearsal of self-regulation interventions to attain a state of homeostasis or ease. Factoring-in the lived experience of stress in TRD with the relational with the sensory aspects of kinesthetic empathy in dance/movement therapy; the rationale for utilizing sensory intelligence in self-regulation is made apparent. The authors propose that kinesthetic empathy maybe one of the ways in which clients can learn to better comprehend somatic cues, practice somatic intelligence and cope in difficult environments.

10.6 Dance/movement Therapy as Treatment for Depression

As an art form, Coubard et al. (2011) identified the benefits of dance to focus on prevention rather than remedy of illnesses. This is also consistent in current dance/movement therapy literature (Koch et al., 2019). Research suggests that dance/movement therapy can be an effective adjunctive tool to traditional approaches by reducing symptom related distress and, subsequently, increasing overall treatment satisfaction (Chase, 1953; Haller et al., 2019; Laws & Conway, 2019). Main factors contributing to this include: incorporation of structured dance and music as ways of self-expression and coping (Tavormina & Tavormina, 2018), enhancing socialization via participation in group therapy sessions (Hagensen, 2015),

promoting vitality (Levy, 1988; Meekums et al., 2015), and placing emphasis on therapeutic movement relationship between the dance/movement therapist/s and client/s (Meekums et al., 2015). Of these factors, the therapeutic movement relationship is unique to the practice of dance/movement therapy.

Young (2017) describes therapeutic movement relationship as “a shared presence of body, mind, and spirit” between the therapist and client. She places further emphasis on safety and collaboration as essential components that create “resonance in the relationship” (p.104.). She explains therapeutic movement relationship as a concept rooted in kinesthetic attunement, which in-turn occurs due to kinesthetic empathy. Thus reinforcing a conceivable connection between kinesthetic empathy and the therapeutic movement relationship in dance/movement therapy.

Two systematic reviews have been conducted on dance/movement therapy and depression Karkou et al. (2019) and Meekums et al. (2015). The review by Meekums et al. (2015) includes a total of three studies, with 147 participants (107 adults and 40 adolescents). The review conducted by Karkou et al. (2019) includes eight studies through a qualitative narrative synthesis with 351 participants (192 dance/movement therapy participants and 159 control participants). Similarities were evident in the dance/movement therapy intervention used across both reviews (i.e., all 11 individual studies). They both actively used the body as a resource to increase awareness, reclaim individual stories (through use of metaphors), process narratives of trauma from a somatic lens, foster self-regulation, address negative self-evaluation, and promote an overall boost in mood. Despite the overall findings of the review by Meekums et al. (2015), where the effectiveness of dance/movement therapy (DMT) as a primary depression treatment intervention is inconclusive. In a more recent review by Karkou et al. (2019) they suggest that secondary symptoms of depression such as self-esteem, quality of life and socio-occupational functioning could be alleviated via active participation in

dance/movement therapy sessions. However, it is unknown if this conclusion can be applied to various populations, ages and cultural groups. Additionally, current literature does not adequately focus on understanding the long-term effects of dance/movement therapy in depression treatment; including the studies mentioned above. The nascency of the field (of DMT), along with limited evidence-based literature on dance/movement therapy as a treatment for depression poses a strong challenge for its intentional use with clients. With respect to the focal population of this study (individuals living with treatment resistant depression) there is currently no published study conducted on learning the effects of dance/movement therapy as a treatment intervention in resistant depression. This scarcity of literature has also been briefly discussed in the paragraph below.

10.7 Gap in Research

At present, the pool of dance/movement therapy literature more broadly faces two main difficulties. One, a large pool of studies focus on dance while acknowledging dance/movement therapy theories in their literature reviews. For example, the use of OULA®, a dance fitness program in depression treatment (Hellem et al., 2020), the use of dance activations like Rumba, Vals and Aerobics in depression treatment (Akandere & Demir, 2011) and, the use of ballroom & contemporary dance in recovery chronic illnesses including chronic depressive symptoms (Bruyneel, 2019). These studies make make rich contributions to understanding the effect of dance in depression treatment and the use of dance as an intervention is supported by dance therapy theory. However, the lack of a clear, reliable dance therapy intervention led by a trained dance therapist limits them from being considered in the pool of dance therapy literature in depression treatment. Two, studies that do include a dance/movement therapy intervention, are not always carried out by a dance/movement therapist, reducing the internal validity of the studies, Here, again

dance/movement therapy literature is not strengthened and continues to lack reliable, direct, and adequate data on its use and effect.

These two factors drastically limit the research that becomes applicable in treatment. With regards to TRD, there is an even loftier gap in dance/movement therapy research. Currently no published article or dance/movement therapy intervention has been identified to specifically address dysregulation in adults TRD.

10.8 Relevance of Study Participants

The country of clinical practice of each participant is relevant within the larger socio-cultural dynamics of the field of dance/movement therapy. With dance/movement therapists actively moving towards operating from a space of social and restorative justice, the implicit assumption that dance/movement therapy outside of Eurocentric cultures is primarily practiced as part of the social milieu or integrated with other magico-religious and spiritual practices needs to be questioned. Although this was not the intended aim of this study, the participant demographics of this study contributes towards de-centring master's level trained dance/movement therapists as belonging to and practicing in Eurocentric cultures. The findings also provide formative data on the clinical use of dance/movement therapy in treatment of resistant depression in India, Philippines, and Barbados. The relevance of the study participants did not disturb data analysis.

10.9 Methodology

Among the different theories of depression, understanding depression as an illness of impaired regulation is still to be fully grasped (Joormann & Gotlib, 2010, p. 281). Yet, evidence propels us to explore the feasibility of symptoms reduction and overall depression treatment from a lens of regulation (Compare et al., 2014; Kong et al., 2019; Sloan et al., 2017). This survey study was designed to gather data to help answer two specific research questions:

- (i) How is kinesthetic empathy used in dance/movement therapy sessions with people living with treatment-resistant depression?
- (ii) What (if any) are the key factor/s in supporting the link between kinesthetic empathy and self-regulation within dance/movement therapy?

Aim

The survey study aimed to understand how kinesthetic empathy is used to foster self-regulation in adults living with treatment-resistant depression by formally trained dance/movement therapists across the world.

Design

Data was obtained from surveys conducted online with formally trained dance/movement therapist. The survey included eleven questions, seven of which were closed and four of which were open-ended questions. The first seven questions ensured that interested dance/movement therapists were eligible to participate in the study. The next four questions were designed to gain information on the use of kinesthetic empathy. The survey was built in Qualtrics and circulated via a Qualtrics link.

Ethics

This study was approved by The University of Melbourne's Human Rights and Ethics Committee (HREC) in August 2021¹³. Approval from the Human Research Ethics Committee (HREC) ensured that the study guidelines and practices complied with the National Statement on Ethical Conduct in Human Research. A copy of the informed consent, data storage plan, distress protocol, recruitment advertisement, and plain language statement were submitted and approved in support of this study.

Participants

¹³ See Appendix C of this thesis.

The participants of this study were master's level trained dance/movement therapists from anywhere in the world. Study advertisements were circulated via member directories of various dance/movement therapy associations. Informed consent was obtained from all participants included in this study. No identifying information is presented in this article.

Inclusion Criteria. The eligibility criteria for this study includes clinicians who: (i) Hold a master's degree in dance/movement therapy, (ii) Have worked for a minimum of two years in the field of dance/movement therapy (There was no specific setting requirement; settings can vary from in-patient psychiatry, long term clinical settings, private practice, etc), (iii) Have clinical experience with adult clients living with treatment-resistant depression for at least six months (overall), (iv) Have used/use kinesthetic empathy to foster self-regulation in clients with treatment-resistant depression.

Exclusion Criteria. The exclusion criteria for this study includes (i) Individuals who consider themselves to be dance/movement therapist but do not have formal masters level training in dance/movement therapy and (ii) Dance/movement therapists who have formal masters level training but do not either 2 year of work experience or have not worked with individuals living with treatment-resistant depression for at least six months (overall).

Recruitment Strategy

Considering COVID-19 protocols during the planning and recruitment stages of this study, advertisements and correspondence were only carried out electronically. The invitation to participate was shared with potential participants by via newsletters and monthly emailers of various professional dance/movement therapy associations across the globe. Since this study is aimed to understand the use of kinesthetic empathy by trained dance/movement therapists, recruitment via dance/movement therapy associations was a viable way to seek participants representation of the population in this study. Additionally, the survey was

designed to ensure eligibility of each therapist who participated. The email advertisement clearly indicated the eligibility criteria, and expectations of participants.

Data Collection and Analysis

The full survey is presented in the supplementary material¹⁴. Since the first seven questions were screening questions to confirm eligibility, these questions were not analysed categorically. However, the four open-ended questions were grouped into four categories. The rationale for this type of analysis is in line with the study aim to learn from dance/movement therapists' experiences. The findings of this study contribute knowledge on the nature in which kinesthetic empathy is used with a specific population and is not intended to make clinical generalizations.

Data Storage

Once the surveys were completed on Qualtrics, the responses were alphabetically coded based on random letters and stored securely on Media Flux (and deleted from Qualtrics). Participants were informed of this in a plain language statement provided via email at the time of recruitment.

10.10 Results

Participant Characteristics

The recruitment advertisement and an invitation to participate was sent to 140 dance/movement therapists via email and shared with 135 members of a local dance/movement therapy association in their monthly newsletter for November 2021. Of the 275 dance/movement therapists who received information about this study, 13 commenced the survey. One participant attempted to complete the survey twice but was not eligible based on the inclusion criteria. Three other dance/movement therapists stopped completing the survey midway. Upon correspondence with them, they shared their inability to complete the

¹⁴ See Appendix D of this thesis or view supplementary material directly via the publication [online](#).

survey due to being overworked and busy. From the 13 surveys commenced, five were not included in the analysis (one duplicate, one ineligible and three incomplete). Eight survey responses from India (n=3), Barbados (n=1), Portugal (n=1), the Philippines (n=1), and the USA (n=2) were included in the data analysis.

Overall, the survey received a 4.72% response rate. Possible causes for this are difficult to name. However, some speculations include highly demanding work hours from therapists during COVID-19, professional exhaustion and/or lack of using kinesthetic empathy as an intervention for treatment-resistant depression. The first response was obtained in November 2021, and last response was obtained in March 2022. Although the sample is small, it provides introductory information that can be built upon in both, dance/movement therapy and allied healthcare research. This study is unique as data has not been obtained only from countries like Europe and the United States, where most of the research in TRD has been previously conducted.

Summary of Results Obtained

Four open ended questions were asked in the survey. The results of which have been outlined below and discussed in the next section.

1. The first narrative question stated, *could you mention any specific ways in which you used kinesthetic empathy in your work?* Four participants alluded to interoception, three mentioned rapport development and two participants mentioned using kinesthetic empathy as a pathway to regulation.
2. The second narrative question stated, *in your experience, how do clients respond to kinesthetic empathy in dance/movement therapy sessions?* Four participants named observable responses and four participants named perceived client-felt emotional responses to kinesthetic empathy in dance/movement therapy sessions.

3. The third narrative question stated, *please specify how you are able to attribute any mentioned changes to kinesthetic empathy?* Five participants mentioned client self-report to attribute observed and emotionally felt responses to kinesthetic empathy. Three survey participants mentioned clinician's observation of movement pathways in their clients as a plausible link between the observed changes noticed by therapists and kinesthetic empathy.
4. The fourth narrative question stated, *based on your experience, are there any key factor/s that support the potential link between kinesthetic empathy and self-regulation?* Four survey participants mentioned co-regulation and four survey participants mentioned increased attunement with self as potential links between kinesthetic empathy and self-regulation within dance/movement therapy sessions.

The narrative responses have been discussed in four categories in the discussion section below.

10.11 Discussion

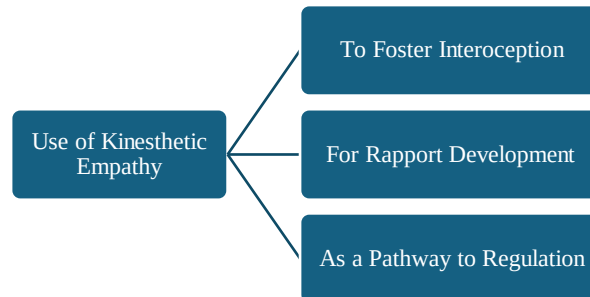
Narrative Responses

Category 1: Rationale for using kinesthetic empathy in dance/movement therapy

The responses obtained suggest that kinesthetic empathy was actively used by dance/movement therapists with the rationale to foster interoception, for rapport development, and as a pathway to regulation in dance/movement therapy sessions with adults living with treatment resistant depression (as seen in Figure 10.1). These three uses have been discussed below.

Figure 10.1

Use of Kinesthetic Empathy



A) *To Foster Interoception.* Interoception is the process of gathering information through sensory experiences (Craig, 2003). As described by Marshall et al. (2022), “The human body is the seat of our self-awareness” and relies on the process of interoception to identify and express emotions (p. 1.). Four of the eight survey participants alluded to this process in their answer to the question, ‘how do you use kinesthetic empathy in your dance/movement therapy practice with people living with treatment resistant depression?’ The phrases, “to gather information” and, “to better understand” were used in the responses. Participants also touched upon the organic nature of interoception to better understand another’s emotional state. This is validated by the anatomical functioning of interoception which has neuroscientific evidence linking it to emotional processing and to development of a self-concept (Craig, 2008; Hindi, 2012)

Until the first decade of the 21st century, interoception was understood merely as a physiological function; one that mainly included activation of the fascia (or connecting tissues) and caused muscular movements (Ceunen et al., 2016). However, with the increased neuroscientific studies on interoception, Chen et al. (2021) discovered that interoception not only activates the connecting tissues in the human body but also activates the unmyelinated nerve endings of the brain related to

emotions. This finding is particularly helpful as depression is considered to be an interoceptive disorder (Paulus & Stein, 2010). Particularly, moderate/severe depression has been found to be inversely proportional to interoceptive indicators like body listening, body noticing, and emotional awareness (Dunne et al., 2021). Since sensory experiences have emotional, motivational, and behavioural aspects which are directly related to homeostasis (Schleip et al. (2012); tapping into the power of interoception in depression treatment seems justified and it's use is corroborated in the survey responses.

The value of interoception in contributing to a stronger self-concept was also found in the responses to this first survey question. One of the participants described using kinesthetic empathy to understand the “embodied culture” of their client. This is a key finding as it illuminates the use of kinesthetic empathy in a relational way and to understand clients’ lived experiences. Likewise, two other participants reinforced the use of kinesthetic empathy to deepen their understanding of their clients’ “whole self” and “inner experiences”. Some examples of interoception mentioned by the participants include observation of posture, facial expression, gesture, and muscle tension. Hindi (2012) also notes muscle tension to be an example of interoception.

An aspect of interoception that maybe beneficial to depression treatment is the process of tracking. Tracking is one of the five step sequential interventions to optimize the use of interoception in dance/movement therapy sessions as proposed by Hindi (2012); tracking is a process that engages embodied awareness, by identifying and tracking physical sensations (p.136). It is not an action-oriented state that demands more from clients but instead, creates a space for being attuned with oneself. In relation to treating resistant depression, one pilot study on understanding the effects of deep brain stimulation on interoceptive processing has been conducted (Waters et

al., 2020); the results show that deep brain stimulation affected interoceptive processing in the cortex however no statistical evidence of change in depressive symptoms was found. (Waters et al., 2020) note the need for further research on the possible benefits of interoception in depression treatment this topic. Similarly, the results of this survey study also support this.

B) For Rapport Development. Three survey participants highlight using kinesthetic empathy to develop a rapport and “meet clients where they are at”. Meeting clients “where they are at” is a common dance/movement therapy phrase rooted in Chace’s (1993) philosophy of dance/movement therapy. Chace believed in the power of rhythmic movement to support non-verbal expression or use ‘dance for communication’ (Chace et al., 1993). Similarly, one of the survey participants pointed to using kinesthetic empathy to help their clients non-verbally communicate with one another. These three participants described using kinesthetic empathy to ultimately engage better and more actively with clients.

As part of the rapport development, participants also highlighted kinesthetic empathy’s foundational role in building a therapeutic alliance with their clients. Aligning with current literature (Crooks & Mensinga, 2021; Fischman, 2009; Young, 2017), this finding is valuable in identifying the continued benefits of kinesthetic empathy in the specific context of dance/movement therapy with people with resistant depression. Two participants emphasised the importance of kinesthetic empathy in maintaining a rapport through the duration of the therapy process. One survey participant noted using kinesthetic empathy specifically in the “warm-up stages” and towards the “end of client’s therapy journey to offer grounding”. Other survey participants described it as, ‘the core of their work” and, “integral in all phases of

dance/movement therapy”; the rationale for which was the importance of kinesthetic empathy in “devising appropriate and client centred interventions in therapy”.

Three specific ways of using kinesthetic empathy for rapport development were noted: to create a safe space, mirror, and attune with clients. Embodied attunement in dance/movement therapy is a shared emotional experience of, “connecting with patients on an empathic level that reaches deeper than verbal connection” (Lacson, 2020, p. 8.). One of the participants attributed reaching a “continuous and consistent state of kinesthetic empathy with long term clients” to attunement and moving with clients. The authors believe that the therapist’s attunement with their client may help deepen the therapeutic alliance. This potential co-relation between the two is rooted in mutual trust, appropriate self-disclosure, communicative intentions and has been widely cited in scholarly literature in attachment-related psychotherapy and interpersonal communication research (Erskine, 1998; González et al., 2019; Talia et al., 2019). Likewise, one of the participants directly spoke to using kinesthetic empathy as it plays an “integral role in fostering relational connections” between the client and the therapist.

C) A Pathway to Regulation. Two therapists attributed their use of kinesthetic empathy as a pathway to regulation in people living with treatment resistant depression. One of the survey participants said, “Connecting via kinesthetic empathy, helps me attune to others, which in turn lends itself beautifully to the process of co-regulation”. Another participant described using kinesthetic empathy to offer grounding and self-regulation. Although this is a small sample to ascribe emotional regulation to kinesthetic empathy; it is pioneering data in the specific population of treatment resistant depression.

The experiential knowledge of co-regulation shared by dance/movement therapists is corroborated by a developmental understanding of emotional regulation within family systems. Murray and Rosanbalm (2017) identify three aspects of co-regulation a) providing a warm, responsive relationships, b) structure and c) teaching/coaching self-regulation skills. The first and third aspects have been also identified through these survey study results.

Although the direct causal factors to link kinesthetic empathy and emotional regulation remain ambiguous. The survey results suggest a safe holding environment (Winnicott, 1960) and movement within the therapeutic alliance as a possible link between kinesthetic empathy and emotional regulation. One of the participants directly spoke to “safety” as an important factor in their use of kinesthetic empathy. The authors believe that expressive movement within a safe space creates the opportunity for emotional self-regulation. Imus (2020) aptly uses the term, ‘creative courage’ to describe the result of experiencing safety and trust in therapy. Since ‘creative courage’, is rooted in trust and safety which, are in-turn rooted in kinesthetic empathy, creative courage may also be understood as a mechanism of change in learning or rehearsing ways to emotionally self-regulate (Imus, 2020). Another significant aspect of creating safety in dance/movement therapy sessions is through mirroring. Mirroring can be understood as a process that “occurs when two people make similar body movements that are coordinated or slightly echoed in time. The therapist may echo the exact movements of a client, or may imitate the quality of the movement; for example, if a client is moving with a slumped posture, the therapist may adopt these movement qualities as well” (McGarry & Russo, 2011, p. 178). It is through the process of mirroring that a therapist is offered a window into their client's

lived emotional experience, thus fostering and deepening empathy within the therapeutic alliance.

Based on neuroscientific data, the right brain hemisphere is home to affect recognition and processing. According to Lacson (2020) when emotional processing is facilitated by engaging the body and it's vitality, it can enable rewiring of neural pathways towards emotional regulation. (p.164). Vitality is an essential aspect of dance/movement therapy and has been identified as such across human culture by both by both formally trained dance/movement therapists and indigenous teachers of therapeutic dance (Barnstaple, 2016). Vitality in dance/movement therapy is commonly seen in its potential to offer joyful or cathartic experiences to clients (Karkou et al., 2019; Lauffenburger, 2020; Tillberg, 2012). It should be noted that vitality is the symptomatic opposite to depressive symptoms of low mood and thus maybe highly beneficial with this population.

Category 2: Therapist-Described Client Responses to Kinesthetic Empathy

The results suggests that survey participants' client responses to kinesthetic empathy can be categorised in two broad categories, that is, observable, and emotionally felt responses (Figure 10.2).

Figure 10.2

Client Response to Kinesthetic Empathy



A) Observable Responses. Five participants named observable responses to kinesthetic empathy in dance/movement therapy sessions. These included increased

eye contact and touch, exploring movements, use of metaphors, verbalization of body sensations during movement, engaging in observing, following, and mirroring of large movements in group settings, ease in embodiment. Like kinesthetic empathy, mirroring is also not unique only to the process of dance/movement therapy and can also occur in the social milieu. The process of mirroring is rooted in affective neuroscience and the mirror neuron network (MNS), this system enables individuals to view and embody another's facial expressions, posture, and muscular patterns which can also influence and illicit a visceral feeling in the person. The survey responses received did not include specific examples of the "exploring movement" and "ease in embodiment", however, a common way to explore movement is to experience different effort qualities, in different levels of space in the kinesphere (Bartenieff & Lewis, 2013).

One of the participants, distinguished their client's response to kinesthetic empathy based on the type of setting (i.e., group vs individual). Reinforcing the results from the previous question, participation in "mirroring and shared rhythm" were named as common ways of responding to kinesthetic empathy in groups. Alternatively, "active engagement in subtle and gentle movements" were noted as a more common response to kinesthetic empathy in individual sessions.

These observable responses provide imperative information that can be used towards creating measurable tools within dance/movement therapy. However, a challenge with this data set is the difficulty of attributing these observable responses purely to kinesthetic empathy in dance/movement therapy sessions.

B) Emotionally Felt Responses. Four participants named perceived client-felt emotional responses to kinesthetic empathy. These included an increase in trust, sense of safety, and connection. Emotionally felt responses are rooted in emotions

and may not be easily noticed or observed by all. Instead, a strong therapeutic presence is needed to monitor and note these emotional nuances as a response to kinesthetic empathy.

Like the distinguishing factor of group versus individual setting mentioned earlier; a participant divided their perception of client responses in terms of conscious and unconscious states of mind. They identified an “increase in responsiveness” to a conscious state and a “welcoming attitude” to an unconscious state of mind. One survey participant particularly validated an “increase in comfort and safety which ultimately strengthened the therapeutic relationship and reduced emotional resistances” within the session.

Two specific sub-themes emerged under emotionally felt responses:

- i) Connection with Therapist.* Survey responses suggest an increase in connection with the therapist to be a distinct response to kinesthetic empathy. Mirroring is one of the ways in which this connection was felt. This aligns with Rova (2017)’s identification of mirroring as one of three thematic developments of kinesthetic empathy.
- ii) Safety and Trust.* In the context of treatment resistant depression, studies highlighting the importance of safety and trust within therapeutic movement relationship (Young, 2017) are missing. While there are studies on evaluating the safety of drugs in treatment resistant depression (Al-Harbi, 2012; Karp et al., 2014; Palhano-Fontes et al., 2019), little is known regarding the specific potential of emotional safety and trust in treating resistant depression through dance/movement therapy. The results of this survey point to clients’ essential need to feel emotionally safe. One of the participants emphasized the importance of kinesthetic empathy by stating,

“I cannot imagine setting up a working alliance, rapport or trust without kinesthetic empathy”. Another participant added, “In my years of experience as a dance/movement therapist and working mostly with groups, I have found patients to be especially responsive to the concept of kinesthetic empathy. I often will spend time speaking about it and teaching them to develop their own sense of kinesthetic empathy.” From this response, it can be ascertained that clients’ gaining insight into their own embodied experience or kinesthetic abilities may also be an emotionally felt response to kinesthetic empathy.

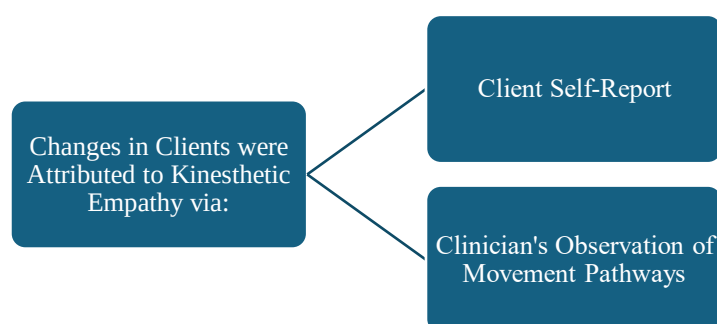
Embodied experiences are those in which individuals are not only intellectually engaged but are also involving the different senses of their bodies to understand and make meaning of their environment and interactions, Johnson (2015) suggests that embodied experiences not only includes, physical experiences (like touch, body posture) but also includes interpersonal (like felt sense of comfort) and larger collective cultural experiences. Likewise, kinesthetic abilities are skills rooted in kinesthetic intelligence. Kinesthetic intelligence is one of six types of intelligence according to Howard Gardner’s Theory of Multiple Intelligence (Gardner, 2011). Kinesthetic intelligence uses the body to problem solve in a given situation through keen sensory perception, dexterity, balance, a robust body-mind connection, and/or bodily expressiveness (Gardner, 2011; Singh et al., 2017). Similar to the survey participant’s response about ‘teaching kinesthetic empathy’ to clients, an earlier study validates the increase in recognizing one’s kinesthetic abilities with an increase in taught empathy (Federman, 2011). Based on these survey results, experiencing safety and trust within the therapeutic alliance can contribute to learning and living in a more embodied manner.

Category 3: Changes in Self-Regulation Pattern in Clients

The survey results indicate that dance/movement therapists attribute changes in self-regulation to intervention of kinesthetic empathy in two main ways, that is via the (Figure 10.3).

Figure 10.3

Attributing Changes in Patterns of Self-regulation to Kinesthetic Empathy



A) Client Self-Report. Given that mental health struggles are subjective, self-report has been an invaluable way to understand client experiences in mental health treatment. Five survey participants mentioned self-report to attribute the above-mentioned responses (observed + emotionally felt) from their clients to kinesthetic empathy.

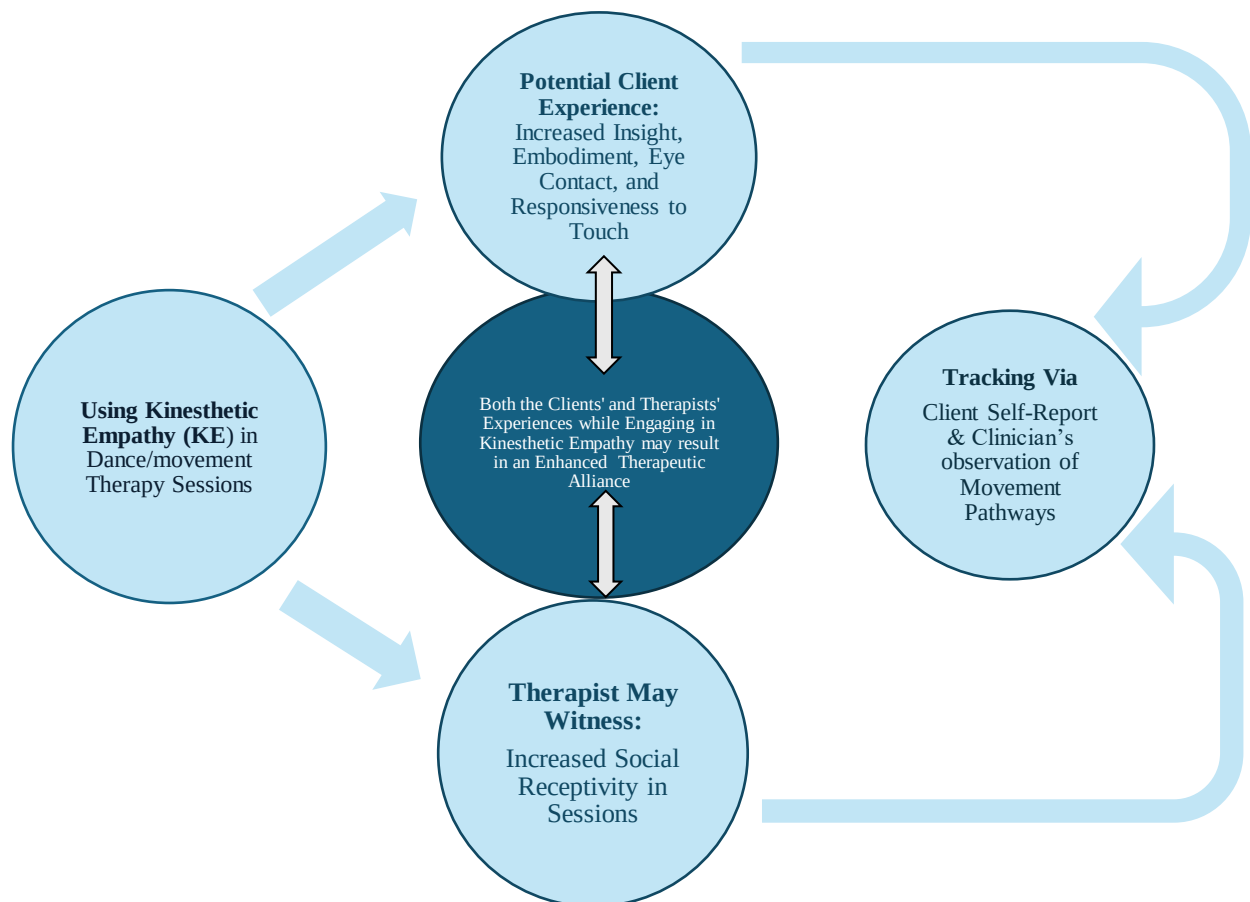
The survey results indicate the nature of self-report to primarily include, “verbal sharing”, which was identified to relate with “emotional release”. In two instances, the verbal sharing of the clients provided the therapist with “insight” into the client’s experience. One of the survey participants said, “I learn that the patient has found the process of kinesthetic empathy to be beneficial ... or to have contributed to some shift within them.” Another participant reinforced this by stating “insight and reflection within the therapy space” as possible due to kinesthetic empathy.

B) Clinician's Observation of Movement Pathways. Three survey participants mentioned observable movement pathways in their clients as a plausible link between the observed changes noticed by therapists and kinesthetic empathy. This was described as “increased movement pathways across space and their kinesphere expanded after experiencing authentic embodied empathy.” One of the survey participants named, “observable body postures and movement patterns shifts”. Specially eye contact and “smiling” while moving were also named by another participant. Participants also named observing movement pathways when clients didn't seem “as cautious as they did when we first began”. From a social psychology lens, these non-verbal responses maybe considered as indicators of a willingness to socially engage. Hence, the observed pathways have been termed as, ‘increased social receptivity in sessions’ in Figure 10.4 below. Movement pathways were also observed when clients didn't seem “as cautious as they did when we first began”.

Hence, based on the survey findings, kinesthetic empathy may result in changes for both the client and the therapist, which may have a beneficial effect on the therapeutic alliance. The following is a visual representation of the patterns of change and tracking of (any) progress (Figure 10.4).

Figure 10.4

Visual Representation of the Cycle of Change and Tracking while Using Kinesthetic Empathy in Dance/Movement Therapy Session

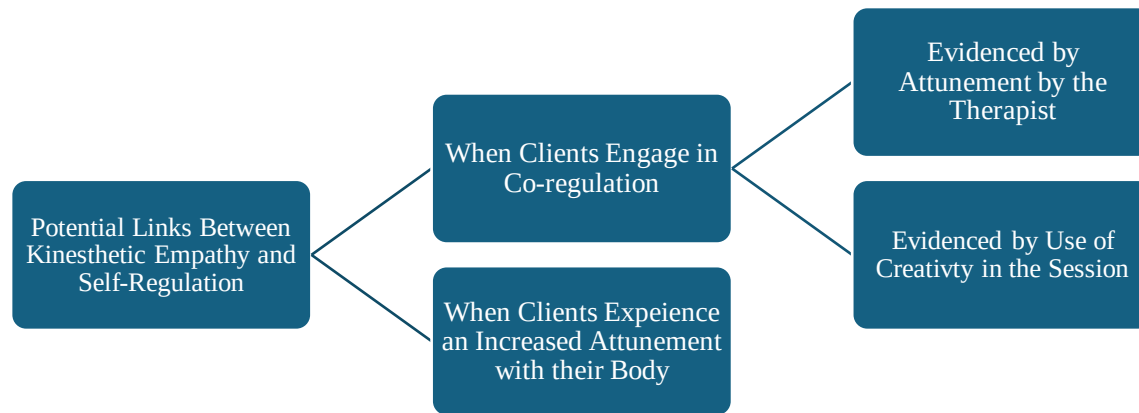


Category 4: Potential Links Between Kinesthetic Empathy and Self-Regulation

The responses obtained suggest the potential link between kinesthetic empathy and self-regulation to mainly be, co-regulation between the therapist and client and increased client attunement with self.

Figure 10.5

Potential Links Between Kinesthetic Empathy and Self-Regulation



A) Co-regulation. Four survey participants mentioned the occurrence of co-regulation as the potential link between kinesthetic empathy and self-regulation in dance/movement therapy sessions. Survey participants alluded to process of self-regulation as marked by active engagement in co-relation between the client and therapist. One participant said, “co-regulation seems to be key in being able to link kinesthetic empathy and self-regulation”. Mindfulness and being in the “here and now” were also noted as a potential link. The process of teaching, learning, and practicing self-regulation within the safety and familiarity of the therapeutic alliance was also emphasized. One of the responses indicated the long duration of time that this process can take; they used the phrase, “after many months” in the context of kinesthetic empathy fostering self-regulation. Based on the answers, the process of co-regulation was associated with the following:

- (i) ***Attunement from Therapist.*** Closely linked to co-regulation is attunement. three participants highlighted the benefit of the therapist’s attunement to the client. They said attunement helps “better offer movement interventions designed to support or initiate self-regulation or co-

regulation” and fostering a feeling of being connected with the therapist, “being seen/matched which creates a stronger bond/alliance between in the partnership”.

- (ii) ***Creativity Within the Session.*** Risk taking and creativity within the session and active engagement in non-verbal expression was also closely associated with being able to self-regulate over time.

B) Increased Attunement with the Body. Four survey participants mentioned increased attunement with self for clients as a potential link between kinesthetic empathy and self-regulation within dance/movement therapy sessions. One participant described this process of increased attunement with clients as a gentle unfolding of movement coinciding with mirroring. An increased use of the body was reinforced in another participant’s response, where they described, “deeper, embodied, meaningful and authentic connection with the body” and how understanding the meaning of their non-verbal expression paves the way for regulation. Another participant felt that the key factor in the link between kinesthetic empathy and self-regulation was, “understanding and engaging with the client's unique body presentation and movement language to understand what self-regulation means in their context.” Although adequate evidence on the link between increased attunement with one’s own body and one’s increased emotional capacity is not yet available, the authors suggest this possible link based on previous literature describing the positive benefits of symbolic play in emotional development and regulation (Wieder, 2017). Concurrently, Greenspan and Wieder (2007) attributed the positive benefits of engaging in symbolic activities (like dance or play) to the diverse, unique meanings that could be derived from symbols. Further, they identified symbolic engagement to help individuals separate reality from fantasy, which eventually assisted in self-regulation.

Therapeutic Factors

To better understanding the nature of kinesthetic empathy within treatment resistant depression, results were examined based on the therapeutic factors and mechanisms of change in creative arts therapies as outlined by De Witte et al. (2021). De Witte et al. (2021) emphasize the importance of conceptualising change practice research to understand the “factors that lead to therapeutic change” (p. 2). Based on the survey responses, kinesthetic empathy can be associated with both dance/movement therapy specific factors and mixed-type factors. These have been identified and tabulated in Tables 10.1 and 10.2 below.

Table 10.1

Categorizing Kinesthetic Empathy into Therapeutic factor of Change

Use of Kinesthetic Empathy		Type of Therapeutic Factor of Change (2012)
Aim	Mechanism	
To Foster Interoception	Via Sensory Awareness	DMT*-SF
For Rapport Development	Via Embodied Attunement	CAT- JF
A Pathway to Regulation	Via Emotional processing though Active Body Engagement	Common Factors of Psychotherapy from DMT Studies

Key (De Witte et al., 2021) :

DMT-SF: Specific therapeutic factors related to dance/movement therapy.

CAT-JF: Joint therapeutic factors shared by the creative arts therapies.

MF: therapeutic factors mixed factors from creative arts therapies and psychotherapies

Table 10.2*Categorizing Client Responses to Kinesthetic Empathy*

Client Responses to Kinesthetic Empathy		Type of Therapeutic factor of Change (2012)
Observable client responses to kinesthetic empathy	Touch	Not specified
	Exploring movement	Not specified
	Ease in embodiment	DMT-SF
	Use of metaphors	CAT- JF
	Verbalization of body sensations	DMT-SF
	Engaging in mirroring	DMT-SF
Emotionally felt responses to kinesthetic empathy	Strengthening the therapeutic alliance (increase in connection, safety, and trust)	MF

Key (De Witte et al., 2021) :

DMT-SF: Specific therapeutic factors related to dance/movement therapy.

CAT-JF: Joint therapeutic factors shared by the creative arts therapies.

MF: therapeutic factors mixed factors from creative arts therapies and psychotherapies.

10.12 Recommendations for Clinical Practice

The following table presents formative movement interventions that maybe incorporated by dance/movement therapists while working adults living with treatment resistant depression based on survey results (Table 10.3).

Table 10.3*Movement Intervention Recommendations for Use in Dance/Movement Therapy Practice*

Population: Adults living with treatment resistant depression				
Potential Goals	Movement Recommendation	Type of Setting		Tracking
		Groups	Individual	
Co-regulation	1. Mirroring	✓	✓	Information from client self-report and clinician's observation of movement pathway
	2. Sharing rhythms	✓	✓	
	3. Use of metaphors	✓	✓	
Attunement with self	4. Exploring movement	✓	✓	is recommended to track the potential benefits of kinesthetic empathy.
	5. Verbal discussion about developing one's own sense of kinesthetic empathy	✓	✓	

10.13 Study Limitations

This study has a few acknowledged limitations.

- (i) The semantics of question 10, which is framed as: "Could you mention any specific ways in which you used kinesthetic empathy in your work?" suggests kinesthetic empathy to primarily be an "intervention" which is "used" in dance/movement therapy. Data on if or how this language impacted survey participants is unknown.

- (ii) While a strength of this study is that it includes perspectives of therapists-of-colour, the small sample size in this study does not allow for generalization of results across cultures.
- (iii) The recruitment strategy was designed to be a representative of the larger participant population. However, due to the low response rate, these findings do not provide adequate information to be representative of the participant population. Additionally, since the recruitment occurred during the COVID-19 pandemic, if and how environmental factors like contracting COVID-19, fear of infection, isolation and/or grief experienced by each participant maybe considered an independent variable is undetermined. This is relevant as the survey responses were received from geographical location with high infection and transmission rates during data collection. Future surveys that report on symptoms reduction and client responses based on the formative recommendations for dance/movement therapy practice mentioned above is encouraged.

10.14 Conclusion

This paper presents the results of a survey study examining dance/movement therapists' use of kinesthetic empathy when working with people living with treatment-resistant depression (TRD). The aim of the survey was to collect data on if and how kinesthetic empathy is used to foster self-regulation in adults living with TRD by formally trained dance/movement therapists across the world. Based on the findings, kinesthetic empathy was similarly described by all participants as a core element of dance/movement therapy practice with this population. The importance of kinesthetic empathy was noted in connecting and attuning with the client, creating safety, and initiating co-regulation within the session. The longitudinal use of kinesthetic empathy throughout therapy was also highlighted.

Participants mentioned using kinesthetic empathy to both initiate rapport development and foster/ actively engage in the therapeutic alliance across the duration of therapy.

While the four categories of data obtained from this study, provide practice-based insights on the use of kinesthetic empathy to foster self-regulation in dance/movement therapy, the findings of this study also shed light on discrepancies and differences of opinion on kinesthetic empathy as an intervention. It should be noted that universal agreement on whether kinesthetic empathy is a concept, principal or element in dance/movement therapy is yet to be attained both in the larger field of dance/movement therapy as well as in this sample. For example, even within this small sample, the diversity of responses and words used to describe kinesthetic empathy include, ‘concept’, ‘mechanism of change’ and ‘process’. Irrespective of this, the centrality of kinesthetic empathy in dance/movement therapy sessions was clear in these findings. However, a collective decision to either converge or openly accept divergent views on kinesthetic empathy should be addressed in the field. Special training and emphasis on the separation between the performative and relational aspects of kinaesthetic empathy should be focused on in teaching and training spaces. This is especially important as most dance/movement therapists also have a background of performance, thus opening them up to experience kinesthetic empathy in more than one way or contexts.

Although kinesthetic empathy is positioned as an intervention in this survey, the study findings suggest that kinesthetic empathy is experienced by both the therapist and client and is hence maybe a relational, participatory intervention rather than a more conventional and directive intervention. The visual representation of the patterns of change and tracking (Figure 10.4) within dance/movement therapy propels researchers to also study how intentional use of kinesthetic empathy may be a successful adjunctive tool in overall treatment by keeping clients motivated and engaged in their long treatment plans. Since

dissatisfaction with treatment is a common demotivating factor that can also exacerbate symptoms of TRD, utilizing kinesthetic empathy can be envisioned as an ‘enhancer’ to the treatment process and client experience.

The need for tracking symptoms or change in patterns was also reinforced by this survey study. As kinesthetic empathy is a novel intervention in healthcare, it is essential for therapists to create more standardised ways of capturing the effects of kinesthetic empathy so that it may be used to advocate for dance/movement therapy in healthcare. This is even more necessary for vulnerable populations, such as individuals living with treatment-resistant depression. The survey results also suggest that future research on unearthing the use and impact of kinesthetic empathy may be guided by the relational process factors type of Change Practice Research (Elliott, 2011).

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Chapter 11: Bridging Material

In Chapter four, I discussed my rationale for conducting preliminary studies, that is, to help develop an evidence-informed protocol for Study III. This sole-authored publication is titled; *“Developing an Intervention Protocol for Adults Living with Treatment Resistant Depression”* published in the American Journal of Dance Therapy (Christopher, 2024). The online version of the article has been linked [here](#). No edits have been made to the content of the publication. Headings, subheadings, tables, and figures have been numbered in conjunction with the rest of this thesis, as shown in the table of contents.

To recontextualise, I identified a four-step creative problem solving process to develop an intervention protocol that could help me achieve the aim of this doctorate research, which is, exploring the use of dance/movement therapy in adults with a diagnosis of treatment resistant depression. The first two steps have already been discussed in chapter four of this thesis. They were (i) Examining pre-existing knowledge: reviewing insights gained from clinical practice and formal literature and (ii) Assessing the need for preliminary studies: determining and navigating the potential need for preliminary studies in novel research.

11.1 Relevance in Doctorate Research

In the upcoming chapter, I will share the outcome of steps three and four of my creative problem solving process. They are: (iii) Integrating existing and new research and (iv) reviewing outputs. I will also present the intervention protocol developed through these processes. In the interest of recontextualising this publication, the abstract of this publication has been included again prior to the remainder of the publication in the next chapter.

I acknowledge the support of Dr Ella Dumaresq who witnessed my reflexive movement practices whilst integrating the findings of Study I and II (during ‘*dancing with the data*’) to develop the protocol presented in the next chapter.

11.2 Relevance in Global Discourse

This solely authored publication includes two parts. The relevance of part-I is mentioned in the bridging material that constitutes Chapter three (prior to partial reproduction of part-I in Chapter four of this thesis). Part-II is relevant to dance/movement therapists interested in appraising an evidence-based intervention protocol for use with adults experiencing treatment resistant depression.

11.3 Terminology

A section of part-I and the entirety of part-II of the publication have been reproduced in the upcoming chapter. The terminology used in the upcoming publication is consistent with the term used in this thesis, that is, ‘dance/movement therapy’. Conversely, the phrase ‘adults living with treatment resistant depression’ has been used instead of ‘adults with a diagnosis of treatment resistant depression (TRD)’ (used in this thesis). This was done to adhere to the journal's word count requirement. American English was used based on the journal's requirements. Lastly, references were added after the chapter, and there are no additional supplementary documents related to this publication.

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Chapter 12: Problem Solving in Dance/Movement Therapy Research; Developing an Intervention Protocol for Adults Living with Treatment Resistant Depression (partially reproduced)

12.1 Abstract

Dance/movement therapy (DMT) research requires creative and innovative thinking; this paper includes two parts demonstrating this. Part one describes and delves into the creative problem solving process undertaken over two and a half years. Four main steps were followed towards developing an intervention protocol for a first-of-its-kind DMT study in treatment resistant depression: (i) Examining pre-existing knowledge: Reviewing insights gained from clinical practice and formal literature. (ii) Assessing the need for preliminary studies: This step demonstrates how to determine and navigate the potential need for preliminary studies in novel research. (iii) Integrating existing and new research: I discuss Watson's (2020) braiding technique and how it may help integrate insights from steps one and two. (iv) Reviewing outputs: This includes examining the developed protocol by conducting a fidelity and biases check. Each step presents reflective questions that enabled my progression to the next step, ultimately contributing towards protocol development. The questions listed may also be a beneficial guide to novice DMT researchers embarking on novel research. Part two of this paper presents the DMT protocol developed through the creative and reflexive processes described in part one.

12.2 Keywords

Dance/Movement Therapy, Intervention Protocol, Braiding, Research Planning, Creativity

12.3 Part I- Four Step Creative Problem Solving Process (continued from Chapter four)

12.3.1 STEP 3: *Integrating Existing and New Knowledge*

Integration is the central action in this third step of creative problem solving. Here, I asked myself the following questions:

“How can I integrate new and existing information on this topic?” and

“How does the integrated information inform the intervention protocol?”

Using the study by Shim et al. (2021) as a guide, I integrated the findings of both my preliminary studies and my clinical practice experience using Watson’s (2020) technique of braiding (the findings have been schematically shown in Figure 12.2). Braiding was a suitable option as it can combine more than just quantitative or qualitative data. Instead, braiding draws on visual, temporal, and sensorial integrations and is not bound to any one step in the research (Watson, 2020). Although braiding is typically used when two or more methods are sequentially employed across different research phases, I adapted this technique. I used it across different studies to suit my research needs. Watson (2020) also recommends a creative review process that usually has an exegetical output. Here, I used dance as my creative exegesis and termed it ‘dancing with the data’. This was my way of processing and reviewing the insights from the preliminary studies via the steps mentioned below. I involved the participation of another dance/movement therapist (one of my PhD supervisors) in this step, who is referred to as the observer below.

Steps I followed in ‘dancing with the data’:

1. I reviewed the findings of the systematic review (the first preliminary study in this research project), after which I:

- (i) Noted down the words that described or alluded to different dance movement therapy techniques from the systematic review findings. (E.g. improvisation, active choice-making, collaboration, props, etc.).
 - (ii) Wrote down all words that warranted consideration regarding study design (e.g., standard care, 12 weeks, 16 weeks, attrition, etc.).
 - (iii) Read the written words and used these as a prompt for an initial dance exploration, ‘Dancing with the Data-1’ while being witnessed by another dance/movement therapist.
2. Repeated steps (i), (ii), and (iii) with a second dance exploration, which I termed ‘Dancing with the Data-2’ after reviewing the findings of the survey study (the second preliminary study in this research project).
3. The observer shared verbal feedback on any repetitive or striking movement patterns they saw in steps 1 and 2.
4. I then danced in response to the verbal feedback from the observer. This was termed ‘Dancing with the Data-3’.
5. Lastly, after my final movement exploration (which I termed ‘Dancing with the Data-3’) was complete, I reflected on ‘Dancing with the Data 1, 2, and 3’ and made a note of the following:
- (i) Any movement-based need I noticed in myself (that may be a consideration for the dance therapy session plan in the protocol).
 - (ii) Any standard DMT techniques I noticed across ‘Dancing with the Data 1, 2, and 3.’

In this novel research, the benefit of using braiding and creative exegesis was that it helped centralise multiple research outputs (Watson, 2020, p . 77.). The multiple research outputs

obtained from step 5 (as mentioned above) were then ‘braided’ to form the outline of the protocol. This has been schematically depicted below (Figure 12.2).

Figure 12.2

The Braiding Process Contributing to the Development of the Intervention Protocol

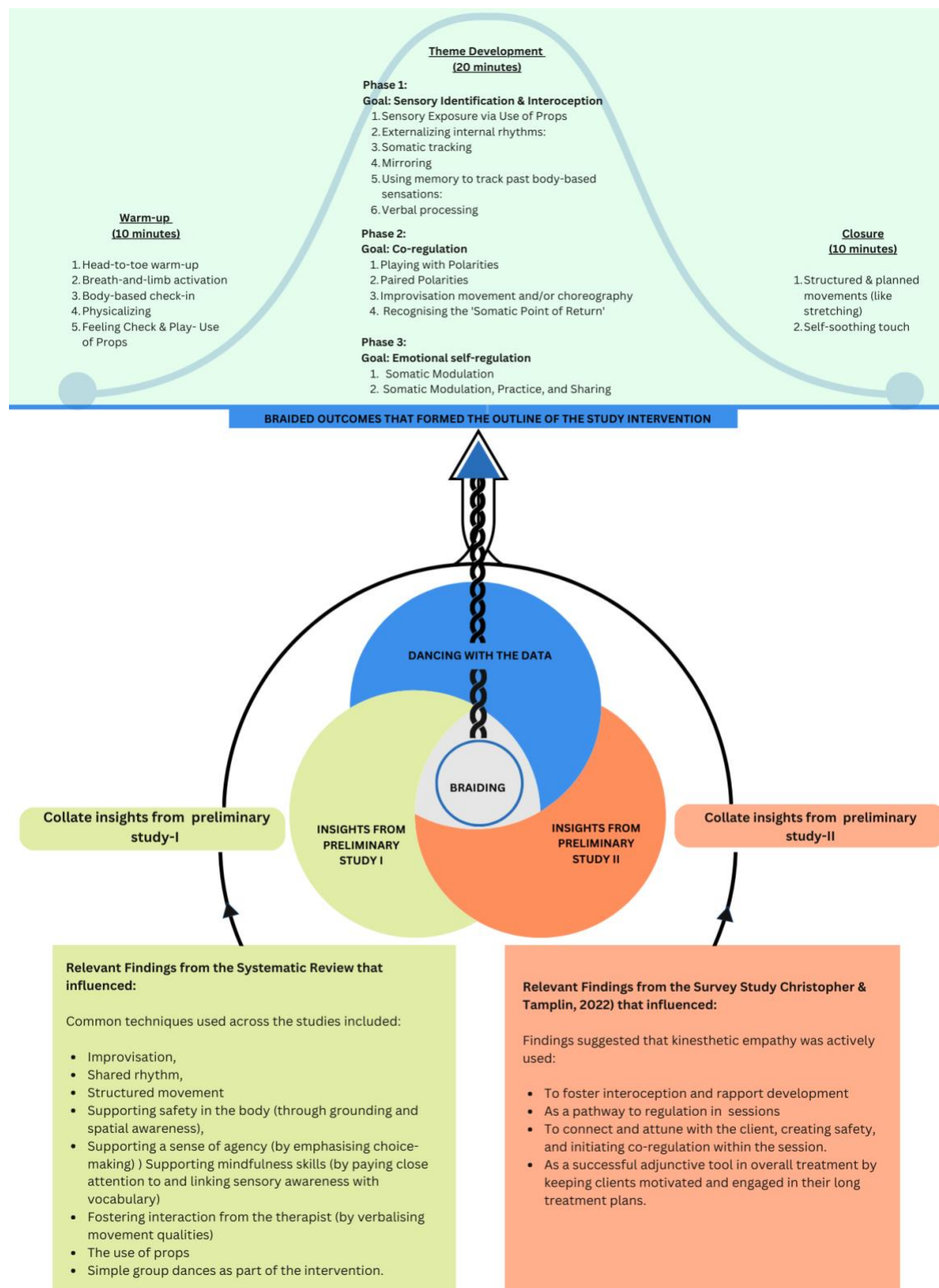


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12.3.2 STEP 4: Reviewing Outputs

Maintaining the fidelity of an intervention is part of the ethical duty of care. Since this manner of protocol development involves integration between varied facets, such as the researcher's self, research paradigm, existing knowledge, and findings from preliminary studies, it was necessary to check my implicit biases that may have clouded my four-step process. I did this by asking the following questions:

Does this protocol directly answer the research question? and,

Is there a clear rationale for each component of the intervention?

If yes, Can I ascertain the links between the preliminary studies, existing literature, and my intervention protocol?

If not, What changes do I need to make to ensure the intervention is built on practice knowledge, new knowledge, and principles of DMT?"

A fidelity check may also help maintain the internal validity of the intervention. Here, I sought a 'content fidelity check' by one of my supervisors, who read the intervention protocol and provided narrative feedback on the following: (i) any concerns regarding biased use of language and misalignment between the planned intervention protocol and research question of the project, (ii) DMT recommendations in the context of emergent literature on related topics, and, (iii) any further recommendations to enrich research integrity and reduce confirmation or publication biases, if relevant. In some instances, developing an implementation fidelity checklist may also be relevant. In my research, I developed an implementation fidelity checklist adopted from Rolvsjord et al. (2005) framework for research rigour in music therapy, which included four main categories: (i) Essential and Unique, (ii) Essential and Not Unique (iii) Acceptable but not Essential and (iv) Unacceptable. I designed this checklist to be completed after each intervention session of the research project. This also served as a documentation format for any patterns of deviation that

emerged during implementation. Any patterns in deviation may also be considered formal inclusions in a second iteration of the intervention protocol if there is one.

Engaging in the aforementioned steps re-emphasised the need for resourceful problem solving while developing a novel intervention protocol—particularly the importance of drawing on multi-faceted resources and forms of knowledge beyond academic literature. Further, recognising my clients' lived experiences and insights from clinical practice as core forms of knowledge is also symbolic of the mindset of integration, which was seen in the process of braiding (Watson, 2020). Here again, braiding (Watson, 2020) relied on interweaving multiple facets of information (cognitive, emotional, sensorial, etc.) that helped me obtain the outline of the intervention. This four-step process helped me navigate the muddy waters of novel research by prioritising research integrity and personal reflexivity. Having discussed this process, I will present the DMT session plan from the 12-week intervention protocol developed through the abovementioned processes.

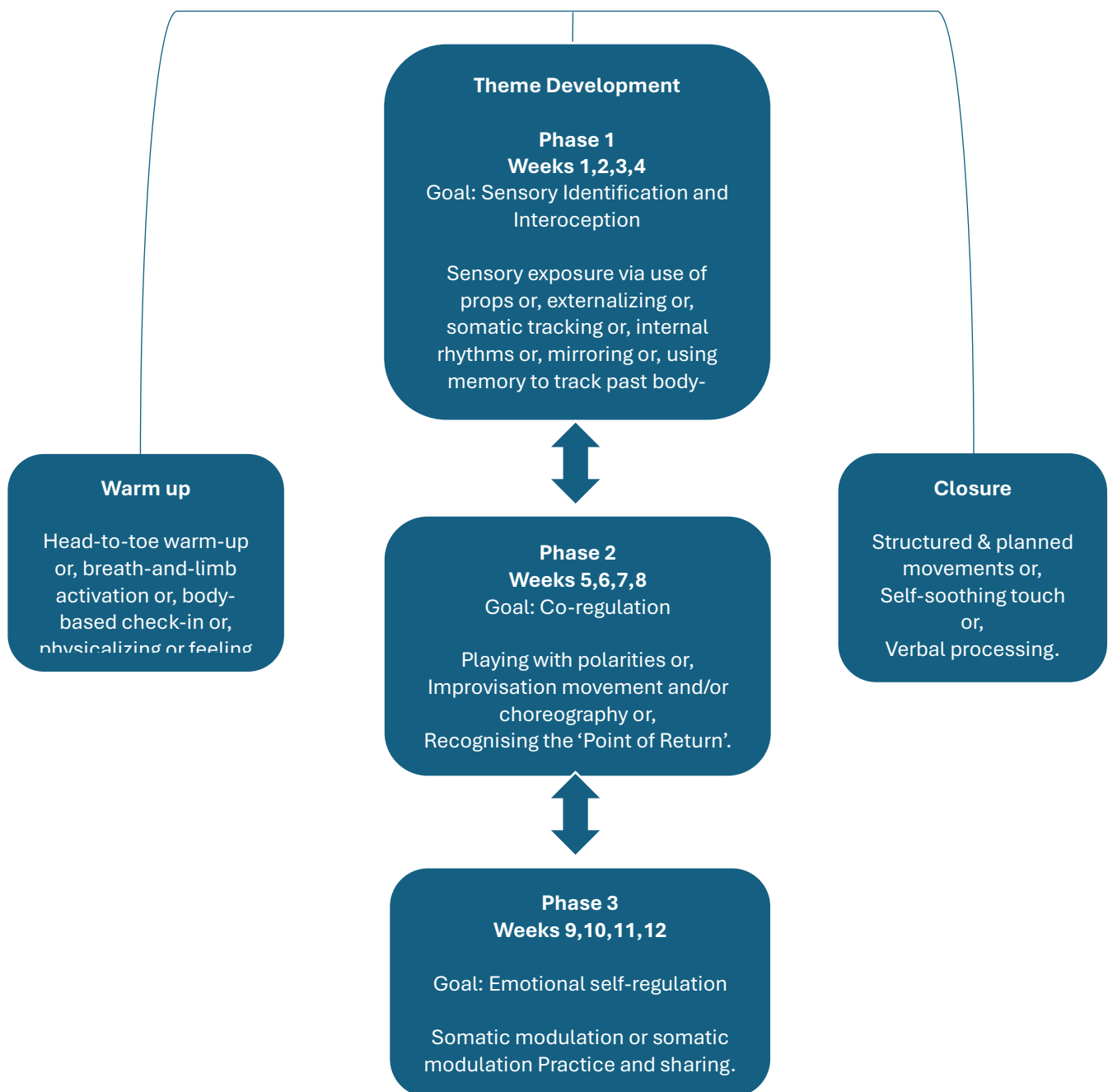
12.4 Part II – The DMT Intervention

12.4.1 Dance Therapy Session Plan

Session Structure. In the interest of predictability for participants, all sessions were divided into three main parts: a warm-up, theme development, and closure. Each session was planned to be 45 minutes long with the following time division: warm-up – approx. 10 minutes, theme development – approx. 20 minutes, and closure - approx. 15 minutes. A summary of the session plan has been depicted below (Figure 12.3).

Figure 12.3

A Summary of the DMT Session Plan



Legend: Figure 12.3 begins at the top and is designed to be reviewed in a vertical manner (top-to-bottom)

12.4.2 Warm Up

The warm-up was designed to prepare participants for the DMT session, both physically and emotionally. This dual purpose of warm-ups was also seen by the pioneers of

the DMT(Levy, 1988), who believed the structured and systematic movements of the warm-up parallelly prepared participants to physically engage in the movements of the sessions while developing a sense of psycho-social flexibility that prepared them for the socio-emotional components of the session(Levy, 1988; Nieman, 2002). I designed the warm-up to include the following options:

- (i) **Head-to-Toe Warm-Up.** This warm-up focused on mindful stretching one muscle group at a time. Movements were typically done in clockwise, and anti-clockwise directions, and each stretch was held for five to eight counts. If music was used, music with precise rhythms or melodies (percussion or strings) was played. Music with multiple harmonies and complex melodies was avoided. This was adapted from the systematic review (manuscript in review) (Christopher, 2023), which revealed the use of structured and planned movements (like stretching and relaxation exercises) to offer predictability and to enhance the effectiveness of the functional movements (Ho et al., 2016; Ho et al., 2018; Ho et al., 2020).
- (ii) **Breath-and-Limb Activation.** This warm-up focused on the activation of the lungs (by breathing in), ribcage, diaphragm and homolateral activation of upper and lower limbs (i.e., left-hand rises along with the left leg). Here, the limbs did not cross the vertical midsection of the body and were repeated three or four times. This same breath-and-limb activation was then carried out on the opposite limbs. After mastery of this, I invited participants to try contralateral movements with each breath (i.e., left hand rises along with right leg). This was adapted from the systematic review (manuscript in review)(Christopher, 2023), in which Ho et al. (2020)’s use of contralateral movements was emphasised to help activate both hemispheres of the brain.

- (iii) **Body-Based Check-In.** Here, I verbally guided the participants to bring conscious awareness to different body parts systematically (i.e., from the top of the head to the back of the neck, to the back, shoulders, and so on). As the participants were guided through different parts of their bodies, they were invited to observe any sensory experiences (touch, sound, smell, etc.) they were aware of. When relevant, I invited participants to focus on the nature and intensity of any identified sensorial experiences through the check-in. This emphasis on increasing interoceptive skills in participants was obtained from the findings of the second preliminary study, where interoceptive awareness may be a beneficial way to track somatic depression symptoms (Christopher & Tamplin, 2022).
- (iv) **Physicalizing.** This warm-up was based on projective techniques in dance therapy (Levy, 1992, p. 40-41). Here, each participant was invited to identify a feeling that best described their presence in the group, verbalising the identified feeling and adding a movement of their own to express their feeling ‘in-the-moment physically’. A variation of this was to create a small group dance from all the emergent movements. The use of creating small group dances as a DMT technique was emphasised in the individual studies included (Ho et al., 2016; Ho et al., 2018; Ho et al., 2020); another study included in the review also emphasised the importance of group cohesion (Pylvänäinen et al., 2015). Hence, small group dances were retained in the intervention protocol as a possible way to foster said cohesion based on the findings of the systematic review (manuscript in review) (Christopher, 2023).
- (v) **Feeling Check and Play with Props.** Occasionally, props were offered to foster orientation to time, place, and person. Examples of movements that emerged from the props may include movements like ‘passing a ball’ from one participant to the following or more complex movements like using an octaband to demonstrate one’s

emotional state. This was also based on physicalizing (Levy, 1988). Here, props were incorporated in the intervention protocol based on the DMT approaches mentioned in all studies included in the systematic review (manuscript in review) (Christopher, 2023). Props were used to facilitate expression through metaphors and increase movement repertoire.

Lastly, the importance of a physical warm-up was also directly aligned with a dance movement therapist's duty of care by taking all the necessary steps to prevent physical injury.

12.4.3 Theme Development

The overarching theme across the protocol was roughly predetermined. However, due to my presence and creative orientation (Young, 2017), changes were introduced to fit any urgent emergent needs of the participants. The 12-week DMT intervention was divided into four phases, each consisting of four sessions.

12.4.4 Phase 1: Theme Development: Weeks 1,2,3,4

Goal: Sensory Identification and Interoception. In this study, sensory identification was best described as linking words to sensory experiences (Motamedi et al., 2021). This specifically included the activation and felt experience of all five senses. Sensory identification was offered via the following:

- (i) ***Sensory Exposure via Props.*** First, different textures were introduced via different props. Next, the participants were invited to select a prop (from the various options presented) and asked to spend three to four minutes tracing their fingers across the prop. Each prop had a different texture (elastic, hard ball, etc.) and was used to elicit descriptive vocabulary around their sensory experience. This was offered as a practical way for participants to normalize and practice 'tuning in' to their sensorial experiences. A verbal discussion and sharing/exchanging props between group members was also offered. One

variation included conscious breathwork, where participants may trace their hands on a prop. Here, I also guided the participants to notice changes in breathwork and note any associations that might emerge. It is important to note that I emphasised parasympathetic tones and exhalation of breaths, not merely deep inhalations, as the latter can erroneously activate the sympathetic nervous system (Jerath et al., 2019). Another variation was to invite participants to align their breathing patterns to their internal rhythm. This included bringing one's attention to their heartbeat, etc. This was also directly influenced by the findings of Christopher and Tamplin (2022), in which somatic tracking was emphasised as an essential way to understand the “embodied culture” of oneself (p. 126).

(ii) *Externalizing Internal Rhythms.* Participants were invited to create movement patterns based on their internal rhythms. This was designed to help enhance/develop sensory identification and interoception due to the close attention to tuning into internal rhythms. This was done by inviting the participants to pay close attention to an internal rhythm, such as their heartbeat, and then clapping to the ‘identified rhythm’. I also invited this ‘identified rhythm’ to be externalised through different body parts (for example, stomping with one's legs).

(iii) *Somatic Tracking.* Typically, this was designed to engage after a body-based check-in during the warm-up section. Here, I invited participants to focus on one sensory experience in their body and respond to a verbal prompt such as, “If this sensation has to find its way out of your body, how would it travel?” or, “If this sensation had to find a safe and comfortable spot in your body, where would it go?” etc. Visual aids (such as an outline of a body on paper) were also offered to draw the path of specific sensory experiences. This was offered to be done 3 or 4

times to help identify any common or recurrent areas where sensory experiences reside or travel through in participants' bodies.

(iv) ***Mirroring.*** Typically, this was facilitated after sensory exposure and externalization of internal rhythms. Here, I paired participants into duos and invited them to mirror each other's rhythms. The rhythm may be a unique movement pattern or their partner's externalized internal rhythms. In each duo, one participant was invited to engage in a movement of their choice ('movement A'). While the partner mirrored 'movement A', the mover typically witnessed this movement, followed by reversed roles. Mirroring was noted, and a DMT technique used in an individual study (Pylvänäinen et al., 2015) revealed a reduction in low mood in the dance therapy group more compared to the control group as noted in the systematic review (manuscript in review)(Christopher, 2023).

(v) ***Using memory to Track Past Body-Based Sensations.*** Here, the therapist-facilitator invited the participants to recall a 'pleasant moment they wished to re-live. Participants were invited to verbalize the details of the memory in their minds or with a partner (in duos). Next, they were invited to eternize any emergent sensory experiences that arose with recalling the memory. As done in mirroring, first, one participant was invited to engage in a movement of their choice (termed 'movement A'). While the partner mirrored 'movement A', the mover witnessed this movement, followed by reversed roles.

12.4.5 Phase 2: Theme Development: Weeks 5,6,7,8

Goal: Co-regulation. In this theme development phase, co-regulation was the primary goal. It can be best described as a process built upon safety within the therapeutic relationship. Findings of one of the preliminary studies, (Christopher & Tamplin, 2022),

indicated that safety may be linked with “the survey results suggest a safe holding environment (Winnicott, 1960) and movement within the therapeutic alliance as a possible link between kinesthetic empathy and emotional regulation. One of the participants directly spoke to “safety” as an essential factor in their use of kinesthetic empathy. The authors believe that expressive movement within a safe space creates the opportunity for emotional self-regulation(Christopher & Tamplin, 2022).

Further, the study emphasised one of how self-regulation can be described, that is, involving three key aspects: a) providing a warm, responsive relationship, b) structure and c) teaching/coaching self-regulation skills (Rosanbalm & Murray, 2017). Here, structure and self-regulation skills were also identified as possible “a pathway to regulation” (Christopher & Tamplin, 2022). Co-regulation was fostered via the following:

- (i) ***Playing with Polarities.*** Here, I invited the participants to walk around the room, spot an item that seemed to draw their attention and embody the nature (texture, shape) of the object followed by the opposite of its nature. Playing with polarities, as theorized by Schoop (Levy, 1988), contributed to emotional flexibility and potentially increased openness to sharing diverse movements with another participant. Props were offered as a ‘surrogate mover’ if desired by the participants.
- (ii) ***Paired polarities.*** ‘Playing with polarities’ (mentioned above) can also be done in pairs. Here, the mover's partner identifies and embodies the ‘opposite’ of one’s current/ felt emotion. Like the activities in phase 1, one participant from the duo was first invited to engage in a movement of their choice (termed movement A) while the partner mirrored ‘movement A’. Typically, the mover witnessed this movement, followed by roles being reversed. Verbal discussion was offered, and

some prompts included: “How did both those extremes feel in your body? Do these polarities feel familiar or unfamiliar?” etc.

- (iii) ***Improvisational Movement and/or Choreography.*** In this intervention protocol, a choreography is best understood as a string of movements put together with contributions from the participants. The therapist may use improvisation to expand on these contributions and create a group/ dyad movement after the polarities have been experienced (as mentioned above). As mentioned earlier, the use of improvisational techniques was adapted from the systematic review (manuscript in review) (Christopher, 2023) that revealed a short-term reduction in depression (Ho et al., 2020), increased social connection, and engagement in healthier coping responses after the DMT intervention (Ho et al., 2016).
- (iv) ***Recognising the ‘Point of Return’.*** The participants were led through a guided meditation where they were lying down on a mat/ sitting in a chair. Through this guided meditation, the participants were invited to reflect, identify, and embody the somatic cues that indicated “how” participants felt in their body “when” they were emotionally uncomfortable and also able to tolerate the dysregulation that accompanied this state and recognise the “the point of no return” or “freeze” after which regulation may not seem immediately attainable to them. The purpose was to foster familiarization of their window of tolerance being activated (Siegel, 2020) so they can start engaging in somatic modulation (described in phase-3 below) during this window. This was based on the finding that mindfulness could be a potential link between the intervention, kinesthetic empathy, and self-regulation in DMT sessions in adults with TRD (Christopher & Tamplin, 2022).

12.4.6 Phase 3: Theme Development: Weeks 9,10,11,12

Goal: Emotional Self-regulation. Emotional self-regulation is one way to foster an optimally regulated nervous system (Kooze et al., 2011). This was fostered through the following:

- (i) **Somatic Modulation.** Once the participants practised identifying and embodying the somatic cues that indicated activation of their tolerance window, they were invited to engage in somatic modulation. Here, the goal was to try alternative movements instead of engaging in the typical movement patterns while starting to feel dysregulated or recognising an activation of one's window of tolerance. I often role-modelled this by providing examples of somatic modulation, after which the participants were invited to create a three-set movement pattern that they could engage in to modulate their sensory experiences towards regulation. This was offered to be done X3 or X4 times, as appropriate.
- (ii) **Somatic Modulation, Practice, and Sharing.** I encouraged participants to engage in somatic modulation outside the DMT sessions. Any insights/reflections were encouraged to be brought back to sessions and were further explored in the sessions.

12.4.7 Closure

Finally, all sessions ended with a 10-minute closure. Just as the warm-up offered a dual purpose, the closure was designed to offer a physical 'cool down' and ensure an emotionally safe transition from the session to the participants' individual lives. No new themes were consciously introduced or explored in this section. Closure was facilitated in the following ways:

- (i) **Structured and Planned Movements (like stretching).** Like the warmup activities where different body parts are systematically activated, different body

parts may be stretched again to bring moving to a close. This was done with or without musical accompaniment (slow and non-lyrical music was used here).

- (ii) **Self-Soothing Touch.** Participants were invited to engage in a ‘self-soothing’ touch. This may include giving oneself a gentle neck rub or rubbing one’s palm against another.
- (iii) **Verbal Processing.** The need for verbal processing was determined depending on the themes explored in the session. A verbal discussion may be initiated since words are a common and more familiar way for individuals to process and typically understand new and old experiences. This was based on the study by Ho et al. (2020) (included in the systematic review, in peer-review) (Christopher, 2023), in which verbal processing was explicitly used to help foster a sense of closure. A few examples of verbal prompts were: How are you feeling as we reach the end of today’s session? Can you identify a part of you that you discovered or reconnected with in today’s session? How did it feel to move your body in the same or new ways today? Lastly, are there one or two insights from today’s session that you want to keep in mind?

Mobility accessibility: The entire 12-week DMT session plan could be done seated or standing. Chairs were always in the room, and yoga mats were present when needed.

12.5 Conclusion

An embodied exploration of the ‘self’ of the researcher and research paradigm while engaging in reflexive questions can aid in developing an intervention. This is especially helpful whilst embarking on the journey of novel research that lacks precedence for replication or argumentative reasoning (Greene et al., 2016). Further, ‘braiding’ insights (Watson, 2020) from various sources may provide significant direction towards obtaining centralized research outputs (Watson, 2020). Just as the intervention protocol in this paper

was developed by braiding knowledge from clinical practice, existing literature, preliminary studies, embodied self-reflection and dance, this approach may be one way to develop a comprehensive intervention protocol in novel research.

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Chapter 13: Bridging Material

In the introduction chapter of this thesis, I discussed the case vignettes of Evin, Claudia and Dina, which I also revisited in Chapter four. These case examples were among the many from my clinical practice that cemented my research interests in the topics of dance/movement therapy, treatment resistant depression and emotional regulation. In the intervention Study I designed, I aimed to explore the effects of group dance/movement therapy sessions on stress associated with treatment resistant depression. Further, based on my observations from my clinical practice, I was keen to learn if dance/movement therapy could help improve emotional regulation through somatic aptitude.

In Chapter 10, somatic aptitude was described as a process that involves actively recognising and navigating sensory cues (Christopher & Tamplin, 2022). The ‘cues’ in the intervention study refer to cues of dysregulation in the body. This was clarified with the participants during the initial screening call and before the first data collection timepoint. Like treatment resistant depression, lacking a universal definition, it is likely that the description of somatic aptitude has evolved since it was first proposed in 2022 (Christopher & Tamplin, 2022). Therefore, my understanding of somatic aptitude grew to not merely focus on the processes of recognising, navigating, and coping as proposed earlier (Christopher & Tamplin, 2022) but to include the specific bodily-based processes of interoception and embodiment, as I learned that they are foundational avenues to successfully recognise, navigate, and cope with cues of dysregulation. Keeping this evolution in mind, somatic aptitude refers to the processes identified as one unifying term that indicates an interplay between interoception and embodiment in the upcoming chapter.

The intervention study addresses one overarching research question and six sub-questions. Four forms of data were collected in this mixed methods study: interviews,

questionnaires (the Perceived Stress Scale-10, Multidimensional Assessment of Interoceptive Awareness-2), and cortisol hormone levels measured through hair samples.

13.1 Relevance in Global Discourse

Based on published studies in dance/movement therapy literature, the intervention Study I designed is the first dance/movement therapy study that focuses on adults with a diagnosis of treatment resistant depression. Before this, dance/movement therapy research certainly explored depressive disorders, but this primarily included major depressive disorders and not the specific population with treatment resistant depression. Like previous publications in this thesis, the upcoming chapter is a stand-alone study addressing a gap in dance/movement therapy literature. I envisioned the readership of the forthcoming publication to be both dance/movement therapists and participants alike, who are interested to learn about how the effects of dance/movement therapy on stress and emotional regulation in adults with treatment resistant depression. This article was published in *The Arts in Psychotherapy Journal* (Christopher et al., 2025). The online version of the article has been linked [here](#).

13.2 Relevance in Doctorate Research

The intervention study reported in the upcoming chapter is the culmination of my efforts in this doctorate research. As mentioned in the previous chapter, the intervention study's protocol was developed by incorporating insights from two preliminary studies (Chapters six and 10). The upcoming chapter will include two sections. Section I consists of a publication, presenting the results of three participants who completed the study. The publication has been reproduced in full in this thesis. Headings, subheadings, tables, and figures have been numbered in conjunction with the rest of this thesis, as shown in the table of contents. The publication is titled: "Investigating the effects of group dance movement therapy sessions in adults living with treatment resistant depression: A mixed method case

series”. This publication was co-authored with my supervisors, Associate Professor Jeanette Tamplin, Dr Ella Dumaresq, and Professor Emeritus Sharon Goodill. My contribution was significant (including study conceptualisation, finalising the study design, developing the intervention protocol, applying for ethics approval, study registration, participant recruitment, data collection, initial data analysis, fidelity checks, documentation, consulting with the Statistician for data presentation, drafting the results manuscript), and all co-authors have agreed upon this. Hence, adhering to the requirements of including this publication in this doctorate thesis. Section two will present the incomplete results of the two participants who dropped out of the study. Supplementary material associated with this publication has been added in the appendix of this thesis and references have been added after the publication.

13.3 A Mixed Method Study and The Body-Mind Nexus

I designed the intervention study with a mixed methods design as it aligned with both the needs of my research from a methodological and philosophical perspective. Here, I reiterate a belief that the mind–body nexus inherently symbolises the convergence of two forms of knowledge. Further, a mixed methods study also aligned with my ontological stance of *Anekantavada* (अनेकान्तवाद), which embraces reality with many sides or perspectives that can be better captured via mixed method design compared to qualitative or quantitative design.

13.4 A Case Series Design

The intervention study was initially planned as a convergent parallel comparative mixed method study between two groups of five participants. Recruitment for this study began in March 2023, and I recruited 5 participants to start the first group in May 2023. After the first group had completed the study, I was unable to recruit a second group. Further, there were two participants who dropped out. At this point, as the researcher, I was faced with the challenge of determining the best way to navigate low recruitment and attrition. After

consulting with my advisory committee, I decided to modify the analysis plan for the study to a convergent parallel mixed method case series. Despite making this change, the research questions and complementary intent to integrate data remained the same.

Contextualising Quantitative Findings

In the upcoming chapter, I contextualise the questionnaire results in relation to the minimal clinically important differences where possible. A minimal clinically important difference measures the extent of change to support clinical decision-making. It is important to note that the minimal clinically important difference is not the same as experiential benefits. Reliance on a minimal clinically important difference to determine study outcomes has been criticised in complex conditions and interventions in a pathbreaking report by Kathryn Skivington and colleagues (Skivington et al., 2021). In this report, they urge a shift towards recognising the unavoidable interactions between the intervention and its context. They suggest these interactions occur even in quantitative research and encourage researchers to decide what a clinically significant difference is based on collaboration with participants. Hence, although I will contextualise the quantitative results within the standardised range of minimal clinically important difference, I do not use this range to answer the research question, instead I refer to the range to contextualise the results obtained. I concur with Skivington et al. (2021) and appreciate and assert the value of a mixed method design in the upcoming study where the data sets are examined contextually.

13.5 Terminology

The terminology for the intervention in the upcoming chapter is consistent with the term used in this thesis, that is, ‘dance/movement therapy’. Conversely, the phrase ‘adults living with treatment resistant depression’ has been used instead of ‘adults with a diagnosis of treatment resistant depression’ (which has been used in this thesis) in Section I of the forthcoming chapter (publication). The abbreviation ‘P 1/2/3’ has been used as participant

identifiers in the forthcoming chapter. American English has been used in Section I (publication) of the upcoming chapter based on the journal's language preference. These modifications were made to adhere to the journal's word count requirement. Lastly, since the word 'Participant' has been used instead of pseudonyms, it has been capitalised where relevant in Section II.

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Chapter 14: Investigating the Effects of Group Dance/Movement Therapy Sessions in Adults with Treatment Resistant Depression: A Mixed Method Case Series

14.1 Abstract

Background: There are currently no studies that specifically explore the use of dance/movement therapy (DMT) for treatment resistant depression, despite the growing literature base on DMT and major depressive disorders. This paper reports the effects of group-DMT sessions for adults with treatment resistant depression in a convergent parallel, mixed-method case series.

Method: Participants (n=3) attended 12 weekly 45-minute group-DMT sessions. Quantitative outcomes were measured at four timepoints via the Perceived Stress Scale-10, Multidimensional Assessment of Interoceptive Awareness-2, and cortisol hormone levels measured through hair samples. Qualitative data was collected via focus groups and individual interviews. Data were mixed with a complementary intent and are presented in a joint-display table.

Results: Findings indicate an increased capacity for emotional regulation, increased confidence in navigating somatic cues, and a more positive association with one's body after group-DMT sessions. Integrated data demonstrates a convergent relationship between the data sets. Key findings suggest that DMT (i) offered a change in participants' negative somatic associations, (ii) expanded the participants' capacity for regulation, and (iii) offered a body-based form of self-assessment and regulation. Considering the novelty and small sample size in this case series, generalisations cannot be made about the benefits of DMT in treatment resistant depression. Further research on this topic is warranted.

14.2 Keywords

Emotional regulation, interoceptive awareness, treatment resistant depression, stress, dance/movement therapy

14.3 Introduction

Adults living with treatment resistant depression (TRD)¹⁵ often face a challenging road to recovery due to symptomatic complexity (Voineskos et al., 2020). Treatment resistance affects one third of adults with a depression diagnosis and can be difficult to both diagnose and treat (McIntyre et al., 2023). It differs from major depressive disorders in that individuals do not feel symptomatically better despite engaging in treatment, which can further exasperate feelings of self-pity and hopelessness in depression. Based on the personal disappointment that can accompany treatment resistant depression, there is ongoing discourse to change the terminology from ‘treatment resistant’ to ‘difficult to treat’. This attempt aims to remove embedded judgement on the individual for being or having treatment resistance, however a consensus has not yet been achieved on the usage of the term (McAllister-Williams et al., 2020). Factors, such as poor doctor-patient relationships, inadequate treatment options, patient/caregiver fatigue, high costs, and co-morbidities (e.g. anxiety, chronic pain), impede treatment of resistant depression (Kruk et al., 2018). Another barrier in treatment is the lack of studies with non-invasive treatment options like dance movement therapy. Although creative arts therapies may seem like a potential treatment for treatment resistant depression, we were unable to find peer reviewed literature that highlighted the benefits of creative arts therapy in isolation to pharmacological treatment. There is some informal literature on the use of Ketamine and art therapy for treatment resistant depression in the form of podcasts and blogposts (Wellness, 2025), with data that has not been peer reviewed. Current dance movement therapy literature does highlight its effects on depression but does not categorically

¹⁵ Adults who have a diagnosis of clinical depression which has either lasted at-least 18 months OR, have been identified to have ‘treatment resistance’ by a medical professional AND, have not experienced a significant reduction in symptoms despite trying at least two-cycles of anti-depressants. Al-Harbi, K. S. (2012). Treatment-resistant depression: therapeutic trends, challenges, and future Directions. *Patient preference and adherence*, 6, 369-388. <https://doi.org/10.2147/PPA.S29716> .

discuss treatment resistant depression (Bradt et al., 2015; Karkou et al., 2023; Meekums et al., 2015).”

Persistent stress associated with factors that inhibit treatment from lack of awareness or inadequate research or complex medical systems can have a domino effect, exacerbating depressive symptoms and prolonging the activation of the sympathetic nervous system(Tong et al., 2023), causing chronic stress(Segerstrom & Miller, 2004), and emotional dysregulation. This is synchronous with theories that recognise the inherent dysregulation in chronic depression(Maffioletti et al., 2020). Given that chronic stress and emotional dysregulation are common in TRD(Compare et al., 2014; Perlman et al., 2012), nuanced recognition of early signs of stress and rest in the body can be crucial towards enabling emotional regulation in TRD(Akil et al., 2018).

Exposure to stress requires emotional regulation, which in turn requires emotional expression (verbal, non-verbal, etc.); this belief stems from inhibition theory(Pennebaker, 1985), which suggests emotional suppression to be the primary cause of long-term adverse health effects in the body(Traue & Pennebaker, 1993). In the last 50 years, theories of emotional regulation have significantly evolved from merely focussing on flexibility around psychological defences to an integrated understanding of how various systems in the body (cognitive, social, and emotional) receive and process information(Gross, 2013). Typically, this is done through an antecedent or a response-focused regulation strategy(Gross, 2002). In the former, regulation begins earlier (i.e. immediately after exposure to a stressor) by engaging attentional strategies such as cognitive reinterpretation. Alternatively, suppression and masking are utilised in a response-focused strategy once physiological signs of distress have emerged. The proactive nature of an antecedent strategy is better suited to cope with immediate stress and reduce the chance of burnout from long-term exposure to stress(Nizielski et al., 2013).

Given the value of an antecedent-focused emotional regulation strategy, somatic-based therapy, such as dance movement therapy may be helpful. Dance movement therapy (DMT) is an allied health profession that draws on psychodynamic and person-centred approaches to offer emotional expression and processing(Tomaszewski et al., 2023). Although theoretically promising, research is needed to explore the feasibility and role of DMT in fostering emotional regulation in adults with TRD. Psychodynamically-oriented DMT includes a psychoanalytic approach that emphasises unconscious processes(Vermes & Incze, 2012), in addition, this approach encompasses kinesthetic empathy, embodiment, and interoceptive awareness, with a relational focus on uncovering and understanding unconscious processes(Lauffenburger, 2009).

Considering the broad understanding of kinesthetic empathy across performing arts and DMT (Artpradid, 2023; Barrero González, 2019; Fischman, 2015) in this study, kinesthetic empathy is understood as a relational process unique to the relationship between a DMT therapist and their client/s with tangible outcomes (also referred to as the therapeutic movement relationship)(Young, 2017). Specifically, sensory awareness, embodied attunement, and active body engagement are often used to offer kinesthetic empathy and foster emotional regulation in clients(Meekums et al., 2015). Dance/movement therapists often use kinesthetic empathy to support emotional regulation in clients with TRD(N. Christopher & J. Tamplin, 2022); however, this connection has yet to be empirically proven. Additionally, kinesthetic empathy is utilised to foster rapport via interoception, which is the skill of somatically cueing in and recognising signals stemming from one's body(N. Christopher & J. Tamplin, 2022; Quadt et al., 2018). Previous studies demonstrate group DMT (G-DMT) as a creative intervention to foster interoception(Dieterich-Hartwell, 2017; Homann, 2020). We align with Mehling et al. (2012)'s expansion of five facets of interoception: (i) awareness of body sensations, (ii) emotional reaction and attentional response to sensations, (iii) capacity to regulate attention,

(iv) awareness of mind-body integration, and (v) trusting body sensations. In the current study, building interoceptive awareness was a crucial component of G-DMT sessions, as it has been previously identified as a precursor to emotional regulation (Füstös et al., 2013). Similarly, the process of co-regulation was understood to be an important, scaffolded step towards learning to regulate one's emotional state in the presence of another, that paved the way for self-regulation in this study (Paley & Hajal, 2022).

Embodiment is a state that highlights the role and effects of movement on thoughts and emotions (Gomes et al., 2021). In this study, embodiment was viewed as a contextual experience based on social reality as proposed by Gattario et al. (2020) and Piran (2017). Their perspectives were influential in the development of the intervention employed in the present study: (i) body connection and comfort, (b) agency and functionality, (c) attuned self-care, (d) experience and expression of bodily desire and (e) resisting objectification (Gattario et al., 2020).

Finally, the first author also perceived somatic aptitude to contribute to their approach to psychodynamically-oriented DMT in this study. Somatic aptitude is a malleable skill that consolidates the processes of interoception and embodiment towards regulation. It points towards one's capacity to adeptly deal with somatic experiences (Christopher & Tamplin, 2022). Based on this description, 'somatic aptitude' has been used as a unifying term to indicate an interplay between interoception and embodiment henceforth in this manuscript.

14.4 Emotional Regulation through DMT

Interoception

Since one of the dimensions of interoception is activating one's attention towards immediate or involuntary physiological responses in the body (Mehling et al., 2012), enhancing interoceptive awareness can potentially enable an antecedent-focused emotional regulation strategy rather than a response-focused strategy. Further, poor interoceptive skills

have been associated with a reduced capacity to regulate the autonomic nervous system, integral to stress management and emotional regulation (Biondo, 2023). This reiterates the importance of somatic awareness and proactive somatic regulation to better regulate the autonomic nervous system.

Embodiment and Cognition

Embodiment has also been identified to play a major role in emotional regulation (Füstös et al., 2013). The felt sense of ‘how’ we experience emotions in the world, our perceptions, and how we make meaning of embodied experiences have been proposed to be equally important as the embodied experiences themselves. Psychodynamically driven DMT offers an opportunity to use symbols, images, and cognition, to enable meaning making and somatic embodiment. Similarly, kinesthetic empathy offers a relational opportunity where these processes (interoception, embodiment, emotional regulation) can be learned and practised within DMT (Artpradid, 2023; Rova, 2017).

Cognition is also an important aspect of emotional regulation amid stress. Expressive cognition is used in DMT through verbalisation, metaphors, symbolism, and emotional processing. Hence activating aspects of the prefrontal cortex and the amygdala (Salzman & Fusi, 2010). This is particularly relevant in TRD as Compare et al. (2014) found that it is both the amygdala and frontal cortical regions that enable emotional processing and mediate effective emotional regulation together. This supports the cognitive reinterpretation proposed in the antecedent-focused emotional regulation strategy and enables a top-down emotional regulation approach. Hence, reinforcing an important information loop in the body. Here, the information loop refers to the messaging system between the body and the brain (Xavier et al., 2020), specifically between the autonomic nervous system and an individual’s experience of DMT itself. Developing positive body-brain communication is of critical importance since

it has been identified to directly influence stress perception and subsequent response (Schulz & Vögele, 2015).

In this study, kinesthetic empathy and somatic aptitude were used to support a positive feedback loop system to support emotional regulation. The underpinnings above support the assumption that developing interoceptive skills can stimulate proactive emotional regulation and reduce stress. This study aimed to explore the effects of group dance/movement therapy (G-DMT) sessions on stress associated with TRD and improve emotional regulation through somatic aptitude. The overarching research question was: “*Can a 12-week group dance/movement therapy intervention improve emotional regulation in adults with treatment-resistant depression?*” Table 14.1 displays the quantitative, qualitative, and mixed methods research questions for this case series.

Table 14.1

Secondary Quantitative, Qualitative, and Mixed Methods Research Questions.

Component	Research Questions (RQ*)
Quantitative *RQs	1. Does participation in a 12-week G-DMT intervention reduce perceived stress in adults with TRD? 2. Does participation in a 12-week G-DMT intervention increase interoceptive awareness in adults with TRD? 3. Does participation in a 12-week G-DMT intervention reduce cortisol levels in adults with TRD? 4. Are findings consistent between the self-report stress measure and stress biomarker (i.e., the PSS-10 and cortisol hormone levels)?
Qualitative *RQ	5. How did the adults with TRD engage with and experience the 12-week G-DMT intervention?
Mixed Methods *RQ	6. How do participant descriptions of their experience in a 12-week G-DMT intervention elaborate on the quantitative findings collected from the same individuals?

14.5 Method

This study used a convergent parallel mixed method case series design and collected both quantitative and qualitative data simultaneously. A mixed method design was deemed appropriate due to the complexity and novelty of the topic (Creswell, 2006) and was also congruent with the research teams' epistemic relativism stance. Finally, we chose this design as integrating quantitative and qualitative results offer a potential to overcome the limitations of separate approaches and provide a more holistic perspective on this niche topic (Alele & Malau-Aduli, 2023; Creswell, 2006).

This study was prospectively registered with the Australia and New Zealand Clinical Trials Registry and approved by the University of Melbourne's Human Research Committee thus ensuring compliance with national ethics guidelines (NHMRC, 2023). Following ethics approval¹⁶, advertisements for recruitment were distributed via flyers, emails, and calls to private health clinics near the study site.

Individuals were eligible to participate if they fulfilled all the following criteria: (i) a diagnosis of clinical depression that had either lasted at least 18 months *or* identified to have 'treatment resistance' by a medical professional; (ii) lived independently (not in an assisted living facility); (iii) 21-50 years of age; (iv) had not experienced a significant reduction in symptoms despite engaging in traditional treatment options for at least six weeks (i.e. antidepressants, or 1:1/group psychotherapy); (v) did not have any other illness that required urgent and persistent medical care; (vi) were willing to participate in a 16-week G-DMT study; (vii) were comfortable with communicating in English; (viii) were not at risk of active self-harm; and (ix) were not at risk of falling. Participants of all genders and races were welcome. Participation was voluntary, and consent could be withdrawn at any time.

¹⁶ See Appendix E of this thesis.

The following steps were followed to ensure smooth and safe implementation of the study protocol: (a) completion of a fidelity checklist after each session, (b) maintenance of case notes, (c) travel compensation for participants, (d) ensuring physical safety during G-DMT intervention, and (e) secure data management. This manuscript will specifically focus on the results of the study. A brief summary of the intervention is presented below and a subsequent paper describing the intervention sessions in more detail, along with the process of implementing the study protocol, is forthcoming.

Intervention

The G-DMT intervention was designed by integrating the results of two previous studies (Christopher & Tamplin, 2022; Christopher et al., 2024). Each 45-minute session was divided across three components, warm-up (10 min), theme development (20 min), and closure (15 min). The focus of the theme development varied during the program; weeks 1-4 focussed on developing sensory identification and interoception, weeks 5-8 focussed on co-regulation, and weeks 9-12 focussed on development of emotional self-regulation. All sessions were conducted at a dance studio at the study implementation site (removed for masking) and were led by the therapist-researcher (first author) who is a board-certified dance movement therapist (American Dance Therapy Association) and a registered arts therapist (Australian, New Zealand and Asian Creative Arts Therapy Association). A detailed description (including the process) of developing the study protocol can be reviewed in a companion paper (Christopher, 2024). Although this paper is focussed on the results of the dance movement therapy intervention and not the nature of the intervention protocol itself, we have chosen to describe one of the experientials titled, ‘Point of Return’ below due to its recurrence in participant quotes and the key findings section of this manuscript.

In addition to the description in the companion paper, the ‘Point of Return’ experiential not only focussed on envisioning distress but also using embodiment and interoception to

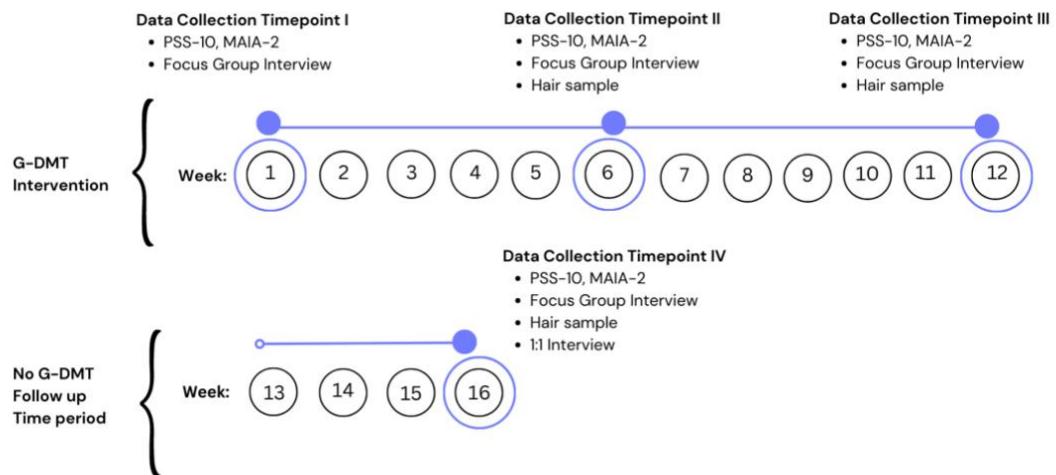
recognise when and to what extent their window of tolerance (Siegel, 2020) maybe activated and explore dysregulation patterns they wanted to modify. As mentioned in the companion paper(Christopher, 2024), the goal of this experiential was “not to expand their window of tolerance, but identify and familiarize themselves with their window of tolerance being activated”(Christopher, 2024, p. 182).

Data Collection

Based on a convergent, parallel, mixed method design, quantitative and qualitative data were collected at weeks 1, 6, 12, and 16 simultaneously (Figure 14.1). Our data comprised two self-report measures, one biomarker, and two types of interviews.

Figure 14.1

Schematic Depiction of the Data Collection Timeline



Abbreviations: G-DMT, Group-Dance Movement Therapy; PSS-10, Perceived Stress Scale 10; MAIA-2, Multidimensional Assessment of Interoceptive Awareness-2

Questionnaires

We used the Perceived Stress Scale (PSS-10) due to its high reliability and validity (Cohen et al., 1983), low participant burden (short length), and ease of use. The PSS-10 is a negatively scored scale with total scores interpreted as: >26: high stress; 14-26: moderate stress, and 0-13: low stress (Cohen et al., 1983). We also used the Multidimensional Assessment of Interoceptive Awareness (MAIA-2) (Mehling et al., 2018) due to its focus on regulation (subscales 4, 5, and 6) and interoceptive awareness (Mehling et al., 2018). The MAIA-2 is a positively scored scale in which total scores are not calculated; instead, only individual subscale scores are used for interpreting results.

Hair Cortisol Concentration

We collected hair samples to measure a 6-week average of cortisol levels in participants. We chose hair cortisol concentrations over saliva or blood cortisol, since the latter are both

directly impacted by activity. Specifically, saliva samples (i.e., active free cortisol) are directly impacted by the level of physical activity involved 15-20 minutes prior to collection, hence not only limiting the type of movements that can be done during the session on the collection days but also raising concerns regarding the stability and reliability of the measure itself. Further, smoking, food, or water intake can also influence saliva composition with skewed cortisol levels. Limiting water intake during a movement-based intervention was not deemed appropriate. Next, since plasma cortisol (measured through blood) is directly affected by circadian rhythms (Thau et al., 2019), this method would have required higher administrative and medical support than what was available in this study. Another shared limitation of these cortisol collection methods is that they only measure acute stress not exceeding a maximum of 24 hours before collection (Inder et al., 2012). Therefore, we used hair samples to obtain data on cortisol levels in this study, which allowed us to obtain an average cortisol level across six weeks for every three inches of hair. Owing to this retrospective feature, we collected hair samples at timepoints 2, 3 and 4 (each measuring an average for the six weeks before each collection) and simultaneously reduced potential participant burden by eliminating the need for collection at timepoint 1. Further, hair sample analysis of cortisol can also help indicate if the hypothalamus–pituitary–adrenal axis (HPA) is overactive, which is common in people experiencing chronic stress (Stalder & Kirschbaum, 2012).

Interviews

Focus group interviews were conducted at weeks 1, 6, 12, and 16 after participants completed the quantitative measures, additionally a 1:1 interview was also conducted at week 16. A list of questions can be seen in supplementary document 1. Given the case series format, the 1:1 interview was designed as an opportunity to understand each participant's experience on an individual, in-depth level. The 1:1 interviews were conducted at week 16 after the

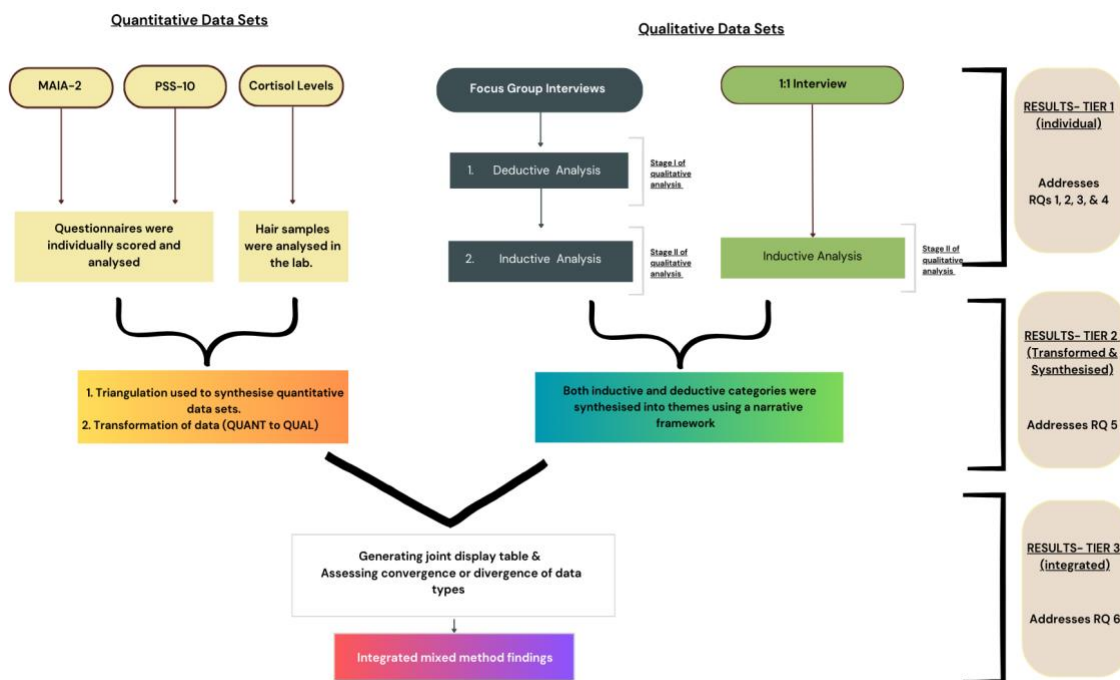
quantitative data collection to reduce the risk of influencing the quantitative results obtained at week 16.

Data Analysis

Figure 2 depicts the three-tier process of data analysis used.

Figure 14.2

Visual Representation of the Data Analysis Process



Abbreviations: PSS-10, Perceived Stress Scale 10; MAIA-2, Multidimensional Assessment of Interoceptive Awareness-2

We have presented the results for each tier of analysis in the following section. That is, including 1) individual qualitative and quantitative results, 2) synthesised results, and 3) integrated mixed method results. The process depicted above (Figure 2) follows the steps suggested by Creswell and Clark (2017) for convergent parallel mixed-method studies.

Tier 1. Questionnaire data were scored and interpreted based on each measure's guidelines. Individual participant scores at each timepoint and change scores were calculated to determine the individual change between timepoints. Hair samples were sent to an external

lab for analysis. A 6-week longitudinal retrospective cortisol level was obtained for each hair sample.

Qualitative data was audio recorded, transcribed, and coded by author 1, consulting with author 3. We followed a hybrid (deductive and inductive) analysis approach (Proudfoot, 2023) for the Tier 1 individual qualitative data. While hybrid analysis is not common, dynamic analysis methods (like hybrid analysis) are fitting in mixed methods studies, especially convergent designs (Proudfoot, 2023). Additionally, it is worth noting that this hybrid analysis method is congruent with the epistemic and ontological stance of therapist-researcher who led this research project (Proudfoot, 2023). This philosophical stance has been discussed in a companion paper (Christopher, 2024) as an influential factor in the intervention protocol development, including the analysis process.

During the Tier 1 hybrid analysis, we focussed on individual participant themes as proposed by Proudfoot (2023), emphasising inductive and deductive analysis equally. We used the following steps adapted from Bingham (2023) in the Tier 1 qualitative analysis (i) familiarising ourselves with the data by transcribing, reading and re-reading the raw data (ii) sorting the data by highlighting participant quotes that answered the qualitative research sub-questions (Table 1) (iii) organising the data by inputting participant quotes extracted from the transcribed interview raw data into an Excel spreadsheet (iii) verifying extracted data as ‘deductive’ by checking the alignment of the extracted quotes with the research sub-questions done by another member of the research team (iv) Re-examining and understanding the data inductively (this included highlighting and extracting quotes that were not directly pertaining to the research sub-questions listed in Table 1) (v) Interpreting and discussing the extracted data (both deductive and inductive) (vi) Categorising quotes based on their descriptions, assigned by both researchers (vi) determining personal themes for each participant.

A narrative synthesis approach was used in Tier 2 (discussed below) which led to the development of final qualitative themes which emerged from this case series that not only highlight commonalities across participants but instead focus on the personal experiences and story of each participant. The synthesised qualitative data displayed in the joint display table in the results section includes a narrative synthesis of the qualitative data per participant. This use of two synthesis methods - one for individual analysis (hybrid analysis in this case series) and another for amalgamating participant qualitative data (narrative synthesis in this case series) - is reinforced by Noyes et al. (2019) and Cruzes et al. (2015), especially in the case of complex interventions and convergent parallel mixed methods studies.

The qualitative results were obtained from a two-stage process. The first stage was completed manually by highlighting potential codes from the focus group interviews using a deductive approach based on our research questions (Table 1). The deductive themes were: interoceptive awareness, stress regulation, experience of DMT, and engagement in the study. Potential inductive categories noticed at this stage were bracketed and marked to be reviewed in the second stage. Despite this, we acknowledge that true bracketing cannot be guaranteed and that ‘blurring’ or the influence of an inductive approach on the deductive process cannot be avoided entirely (Proudfoot, 2023).

In the second stage, an inductive approach was used to analyse data from the focus group and 1:1 interviews separately. We inductively coded the raw data and then combined similar codes into categories, which were then used to develop emergent, inductive themes presented in the results section.

Tier 2. Author 1 synthesised the qualitative data using a narrative synthesis approach (Noyes et al., 2019; Popay et al., 2006) to bring the inductive and deductive results together. This synthesis approach prioritised the voices of participants but also allowed for a theory-led analysis (Proudfoot, 2023, p. 309). The synthesised qualitative data displayed in the joint

display table in the results section includes a narrative synthesis of the qualitative data per participant (Guthrie, 2022).

The quantitative data was synthesised to allow for triangulation. Triangulation refers to the process of, “mixing approaches to get two or three viewpoints upon the things being studied” (Olsen, 2004, p. 2). Here, we used triangulation as a method to gain different perspectives on one complex condition (Mertens & Hesse-Biber, 2012), which in our study was investigating the effects of group dance movement therapy sessions in adults with treatment resistant depression. The triangulated data was then transformed using narrative synthesis (Noyes et al., 2019; Popay et al., 2006). As suggested by Creswell and Clark (2017), we transformed the triangulated quantitative data into qualitative descriptions.

Tier 3. The transformed qualitative data and existing qualitative data were integrated with a complementary intent. The final mixed methods results are presented in a joint display table. Congruence and divergence were examined and influenced the overall interpretation of the integrated results.

14.6 Results Overview

Table 14.2 outlines participant demographics. Participants were aged between 21 and 30 ($M = 24.4$, $SD = 3.64$) and most were women (80%). All were engaged in tertiary education, and by chance, were people of colour. During recruitment, 18 individuals expressed interest via email and five individuals consented to participate. The most common reason for exclusion was not having previously tried a depression treatment for at least 6 weeks. As mentioned above, this case series followed a convergent parallel case series design (Creswell and Clark (2017), and the results were obtained after qualitative and quantitative analysis (as depicted in Figure 2) followed by the integration or mixing of data.

Table 14.2*Participant Demographics*

Participant (P)	Age	Sex	Racial Identity	Other concurrent Therapies
P 1	30	Male	Pakistani	Self-administered cognitive behavioural therapy
P 2	26	Female	Chinese	Psychiatric medication and psychotherapy
P 3	21	Female	Australian of Indian origin	Psychiatric medication
P 4	22	Female	Prefer not to say (POC)	Psychiatric medication
P 5	23	Female	Prefer not to say (POC)	None

Abbreviation: P=Participant.

Attrition

Of the five participants that began the study, two dropped out. Participant 4 dropped out at week 9 to go back to their home country due to feeling overwhelmed and needing a break from education. Participant 5 dropped out at week six due to chronic pain.

Case Series, Participant Descriptions

Participant 1 (P1) was a 30-year-old male Pakistani immigrant with a supportive partner (married). He was the eldest son, which had cultural connotations of very high responsibilities, and had a deep respect for his faith, identifying spirituality and religion as of great importance in his life. P1 was diagnosed with depression in 2020, and his symptoms continued to persist despite various treatments (psychotherapy, cognitive behavioural therapy, and psychiatric medication). He participated in 11 of 12 sessions (missing one session to observe a religious day) and contributed data at all timepoints.

Participant 2 (P2) was a 26-year-old female Eastern Chinese immigrant. She was an only child and expressed feeling immense familial pressure to achieve success. P2 identified as having a long history of depression (6 years) and had not experienced desired benefits from previous treatments (psychiatric medication, psychodynamic psychotherapy, yoga). Prior to her participation in this study, P2 was on a year-long leave of absence from her

studies due to the severity of her depressive symptoms; she recommenced her graduate education between timepoint 2 and 3 of our study. P2 participated in all 12 sessions and contributed data at all timepoints.

Participant 3 (P3) was a 21-year-old, female of Indian origin. She was the eldest of two children and identified as a “daughter of immigrants”. P3 expressed experiencing high pressure to take over her family’s business and a sense of persistent stress in her life. She had been diagnosed with depression 6 years prior and had not experienced optimum results from treatments (psychotherapy, cognitive behavioural therapy and psychiatric medication). She participated in 11 of the 12 sessions and contributed quantitative data collection at all timepoints but did not participate in the first focus group interview conducted (week 1).

14.7 Tier One: Individual Results

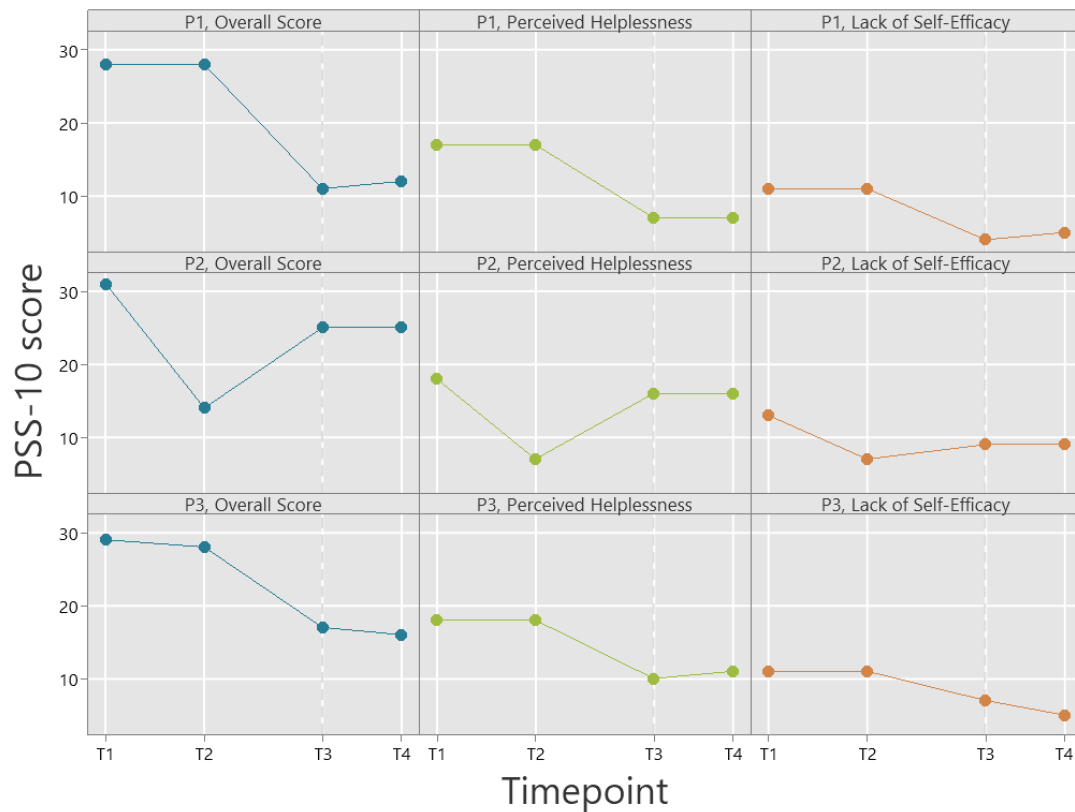
The quantitative data have been categorised and presented to answer each sub-research question (RQ).

RQ1. Does participation in a 12-week G-DMT intervention reduce perceived stress in adults with TRD?

P1 and P3’s total change scores of Perceived Stress Scale-10 (PSS-10) were greater than the estimated minimal clinically important difference (MCID) of 11(Carter et al., 2021). P2’s scores did reduce over time but were less than the estimated MCID. Raw PSS-10 scores have been represented below (Figure 14.3); raw data and detailed narrative interpretations are available in Supplementary Document 2.

Figure 14.3

Perceived Stress Scale-10 (PSS-10) Results



Abbreviation: P=Participant; T: Timepoint.

Note: Lower scores are associated with lower stress levels in the PSS-10 and vice versa.

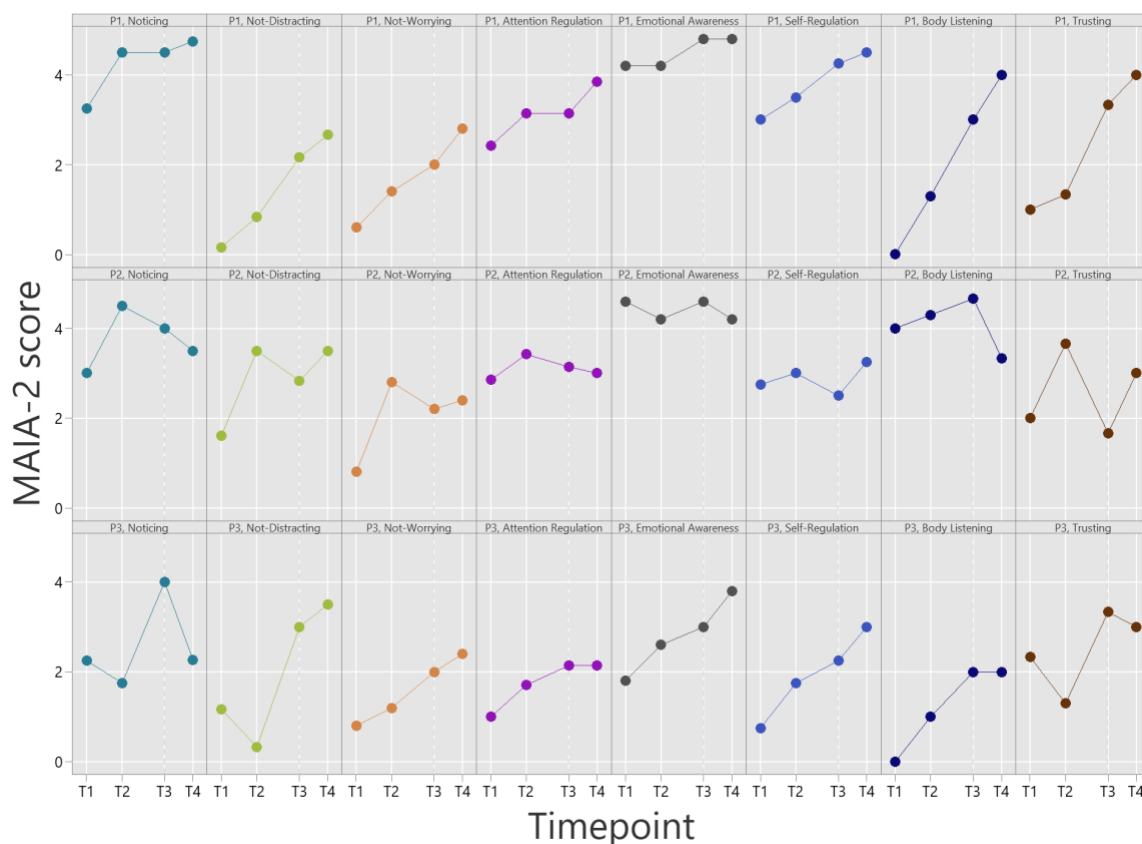
RQ2. Does participation in a 12-week G-DMT intervention increase interoceptive awareness in adults with TRD?

Interoceptive awareness was measured using the MAIA-2. Since MAIA-2 scores are interpreted via subscale scores instead of overall total scores, the estimated MCID range is for each subscale, that is, between .38-.61(Eggart et al., 2021). P1's change scores indicated an increase across all subscales that was greater than the estimated MCID. P2's change scores indicated an increase greater than the estimated MCID in subscales 1 (*noticing*), 2 (*not-distracting*), 3 (*not-worrying*), 6 (*self-regulation*), and 8 (*trusting*) and less than the estimated MCID on subscale 4 (*attention regulation*), subscales 5 (*emotional awareness*) and 7 (*body listening*). P3's change score indicated an increase that was greater than the estimated MCID

in subscales 2 (*not-distracting*), 3 (*not-worrying*), 4 (*attention regulation*), 5 (*emotional awareness*), 6 (*self-regulation*), 7 (*body listening*) and 8 (*trusting*). P3's change score was less than the estimated MCID in subscales 1 (*noticing*). Raw MAIA-2 have been graphically represented (Figure 4), with raw data and detailed narrative interpretations available in Supplementary Document 2¹⁷.

Figure 14.4

Multidimensional Assessment of Interoceptive Awareness-2 (MAIA-2) Results



Abbreviation: P=Participant; T: Timepoint.

Note: Higher scores are associated with more adaptive interoceptive skills in the MAIA-2 and vice-versa.

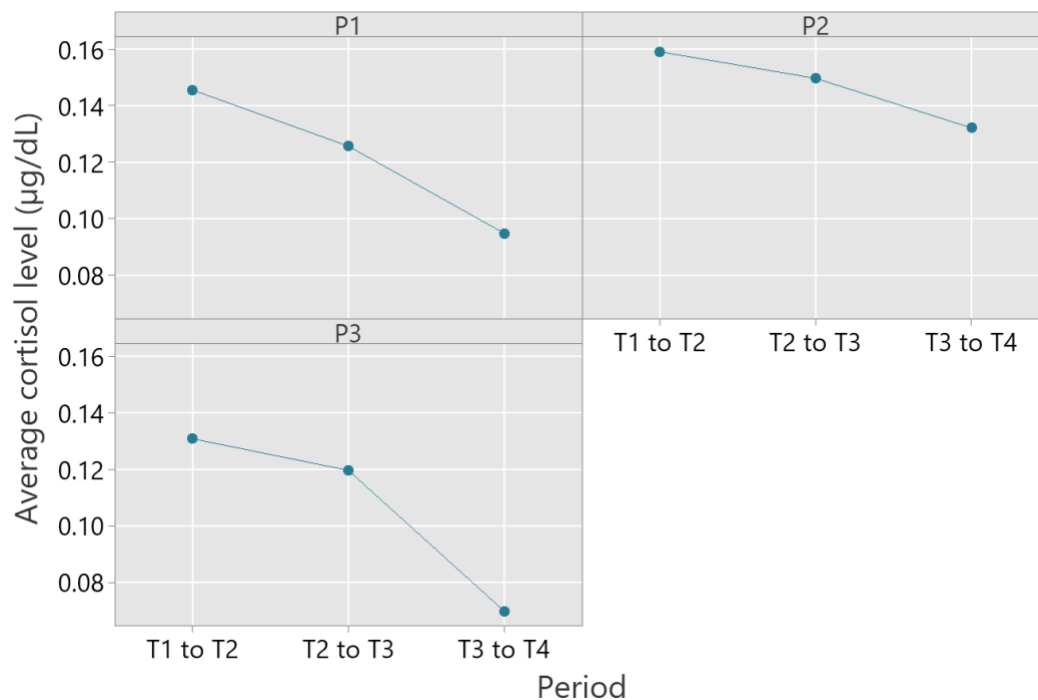
RQ3. Does participation in a 12-week G-DMT intervention reduce cortisol levels in adults with TRD?

¹⁷ See Appendix H of this thesis.

Participants' cortisol levels reduced across the course of the study. The results have been graphically represented below (Figure 14.5).

Figure 14.5

*Changes in Participant Cortisol Levels across Time Periods**



Abbreviations: P=Participant; T: Timepoint.

**The word period has been used here as the cortisol levels provide a retrospective range across timepoints.*

Overall, across the study, P1's cortisol levels decreased by 0.05 ng/50mg of hair, P2's cortisol levels decreased by 0.02 ng/50mg, and P3's cortisol levels decreased by 0.06 ng/50mg. These results show a reduction in cortisol levels over time for all three participants which could indicate reduced stress levels. It is important to note however, that there are inconsistencies in the literature regarding the optimum range of cortisol when measured via hair (Gonzalez et al., 2019; Manenschijn et al., 2013), and no information on the ideal hair cortisol range for adults with TRD. Hence, 'favourable' results are indicative and not definitive. Furthermore, labs use different assessment techniques and measure hair cortisol in different concentrations, which makes it difficult to compare levels between studies

(StratechLabs, 2014). Hence, these findings are contextualised within the normal hair cortisol range (0.05 to 0.85 ng/50mg of hair) as determined by the analysing lab (StratechLabs, 2014).

RQ4. Are the findings consistent between the self-report stress measure and stress biomarker (i.e. PSS-10 and cortisol hormone levels)

Congruent findings were obtained as perceived stress and cortisol levels both reduced for all three participants.

RQ5. How did the adults with TRD engage with and experience the 12-week G-DMT intervention?

Individual Summaries of Qualitative Findings

Participant 1; Focus Group Interviews

Deductive Analysis. P1 reported a shift in his perspective on coping with stress from T1 to T3. At T3, he shared that he no longer managed his stress by “powering through” or “ignoring” his stress responses. Instead, he described an increased awareness of his body's sensations that helped him “better manage” his stress responses. At T3, P1 expressed “enjoying playing with props”, which positively affected his engagement within the study.

Inductive Analysis. P1 shared that he often felt “anxious coming to the sessions” but felt “really calm” upon arrival. He expressed having “doubts” about participating in G-DMT and feeling “conscious” of how his body was being “perceived” in sessions. While P1 acknowledged these “vulnerabilities” he also reported them not to be an “obstacle” to his engagement in the study. He attributed this to the “group” structure of the intervention. Further, at T3, he expressed recalling a part of the intervention that the facilitator (author 1) titled the ‘Point of Return’, outside the study. This part of the session was specifically designed to use embodiment, sculpting and witnessing to help creatively identify the signs of stress in the body. At T4, P1 expressed seeing value in the study and even shared this with his

doctor, which helped him advocate for continued access to a body-based form of mental health support as part of his annual healthcare plan going forward.

Participant 1; 1:1 Interview

Inductive Analysis. P1 identified dance to be a crucial part of his culture and also emphasized the significance of his faith and its role in his overall wellbeing. Hence, he expressed comfort with dance as he often engaged in his own “indigenous dance” forms too. According to P1, his faith helped him view life from a broader perspective while maintaining a regular spiritual connection and motivating him on a daily basis. An example of this is his statement on the temporary nature of all things, he stated, “various aspects of my faith calm me down. For instance, our belief that this world is not the final thing, it's not permanent”.

Participant 2; Focus Group Interviews

Deductive Analysis. At T1, P2 managed her stress by “ignoring sensations”, “avoiding”, or “sleeping”. P2 also associated feeling “stress” with her perception of her body. At T3, this shifted as she expressed feeling a “general relief” and “ease of tension” in her body. P2 said the use of props brought “joy” and a sense of “playfulness” which supported her engagement in the study. P2 found G-DMT beneficial in helping her modulate her responses by primarily helping her feel “motivated” to take action upon noticing signs of stress in her body. Like P1, P2 also referred to recalling the ‘Point of Return’ from G-DMT, which helped her gauge where she was on the spectrum of dysregulation. P2’s experience changed again at T4; she found it harder to manage stress and attributed this to the absence of sessions (referring to the 4-weeks without G-DMT prior to the follow-up interview at T4). Despite feeling more stressed at T4 she expressed feeling a sense of control and reported not feeling overwhelmed by stress. P2 said she continued drawing on her “discoveries” from the study even after the G-DMT sessions ended. Finally, P2 directly spoke to engagement by

appreciating the “social aspect” of the group and the importance of it being composed of “people of colour”, making it “easier to relate” and engage in the study.

Inductive Analysis. For P2, moving in front of the mirror brought up feelings of “embarrassment”, and in contrast, she felt “more calm” while moving “face to face” with the group. She referenced her comfort with the group to the composition of “people of colour”; specifically, “commonalities” and “shared culture” with fellow participants who are also “minorities” in “Western society” to motivate her engagement in the study. She described this relatedness to make her “feel well”. P2 described experiencing “enlightenment moments” that enabled emotional discoveries about the “core of her depression” through G-DMT. One, that “shame” was at the core of her depression (identified during mirroring) and two, that she felt “fear” in social settings and was not just “avoiding” them. These discoveries emerged from her growing interoceptive awareness in sessions.

Participant 2; 1:1 Interview

Inductive Analysis. P2 attributed the roots of her depression to her “family”, “cultural background”, and “personality type”. P2 described how her experience of G-DMT varied from psychotherapy. She described G-DMT as a space that generated discoveries which she delved deeper into in psychotherapy. She described dance therapy as a space that filled a “concrete gap” in her “previous therapeutic experience.” P2’s experience of G-DMT included feeling like she could “truly express” herself and “just move freely”. The biggest felt change P2 reinforced was recognising her stress responses immediately as they occurred in her body.

Participant 3 Focus Group Interview

Deductive Analysis. At T2, P3 expressed her engagement with G-DMT as helping with mind-body integration. She said, “it made me realise that when I’m moving a certain way, I start to feel a certain way.” P3 also felt more engaged in G-DMT compared to talk-

based therapy and attributed this to “moving more”, which caused her to “dissociate less.” She also alluded to the use of props in G-DMT and said that they were “very helpful” in assisting her “concentrate more” and stay engaged in the session. P3 described the benefits of G-DMT as being able to “notice sensations” and to be “quick” in response to the somatic manifestations of stress. At T4, P3 described her stress levels to be “lower and more manageable”. She described one of her coping strategies as recalling a specific G-DMT activity the ‘Point of Return’.

Inductive Analysis. P3 described the G-DMT sessions to help her become more “accepting” of her depression. At T2, P3 expressed feeling the links between her body movements and her emotional state. She said, “I’ve noticed that when I am moving around a lot it usually means I am emotionally much better”. She also made links between different “types of body movements” and certain emotions. In addition to dance therapy fostering her engagement [mentioned above] P3 also identified G-DMT sessions to be “more helpful” as she is “always present in these sessions”, which she attributed to moving. Lastly, P3 expressed experiencing a “sense of connection” as she engaged with the group, as “everyone was a person of colour” and she felt they dealt “with the same kind of pressures” as she did.

Participant 3; 1:1 Interview

Inductive Analysis. In the 1:1 interview, P3 linked her depression diagnosis to certain cultural expectations that were laid on her due to her “role in the family”, i.e. “eldest daughter in an immigrant family”. She also shared her preference for G-DMT over talk-based therapy mainly because she experienced G-DMT to be a “safe space” and discovered that the movement component of G-DMT helped her stay “engaged” and prevented her from “zoning out” as she often did in traditional psychotherapy.

14.8 Tier Two: Synthesised Results

Quantitative Results

For P1 and P3, consistent results across all three measures demonstrated increases in patterns of interoceptive awareness and reductions in perceived stress, concurrent with a reduction in cortisol levels. For P2, there were some inconsistent results specifically due to a reduction in subscales 5 and 7 of MAIA-2 (*emotional awareness* and *body listening*), which demonstrated a decrease and simultaneously reduced perceived stress and cortisol levels. Here, our assumption is supported by the results of P1 and P3. However, P2's results indicate that increased interoception and reduced stress may not have a directly proportional relationship. Table 14.3 displays each Participant's triangulated and synthesised quantitative results. The triangulation of quantitative data is especially helpful in the absence of a standard desirable range for hair cortisol. The table below (14.3) enables us to determine the agreeability between the quantitative measures used suggesting an overall reduction in stress and increase in interoceptive awareness.

Qualitative Results

The synthesised qualitative results under tier two results can be directly seen in the joint display table (Table 14.4).

Table 14.3
Triangulated Quantitative Results per Participant

Measure Type	Participant 1		Participant 2		Participant 3	
	Change Score	Interpretation	Change Score	Interpretation	Change Score	Interpretation
Perceived Stress Scale-10 (PSS-10)	Total: 16 Subscale 1: 10 Subscale 2: 6	Change scores (T4-T1) indicate a reduction in perceived stress (in both subscales).	Total: 6 Subscale 1: 2 Subscale 2: 4	Change scores (T4-T1) indicate a reduction in perceived stress (in both subscales).	Total: 13 Subscale 1: 7 Subscale 2: 6	Change scores (T4-T1) indicate a reduction in perceived stress (in both subscales).
Multidimensional Assessment of Interoceptive Awareness- 2 (MAIA-2)	Subscale 1: 1.5 Subscale 2: 2.5 Subscale 3: 2.2 Subscale 4: 1.4 Subscale 5: 0.6 Subscale 6: 1.5 Subscale 7: 4.0 Subscale 8: 3.0	Change scores (T4-T1) indicate an increase in interoceptive awareness across all subscales.	Subscale 1: 0.5 Subscale 2: 1.9 Subscale 3: 1.6 Subscale 4: 0.22 Subscale 5: -0.4 Subscale 6: 0.5 Subscale 7: -0.77 Subscale 8: 1.0	Change scores (T4-T1) indicate an increase in interoceptive awareness across 6 subscales.	Subscale 1: 0.02 Subscale 2: 2. Subscale 3: 1.6 Subscale 4: 1.1 Subscale 5: 2.0 Subscale 6: 2.33 Subscale 7: 2.0 Subscale 8: 0.77	Change scores (T4-T1) indicate an increase in interoceptive awareness across all subscales.
6 Week Retrospective Cortisol Levels	0.05 ng/50mg of hair	Change scores (T4-T2) indicate a reduction in cortisol levels.	0.02 ng/50mg of hair	Change scores (T4-T2) indicate a reduction in cortisol levels.	0.06 ng/50mg of hair	Change scores (T4-T2) indicate a reduction in cortisol levels.

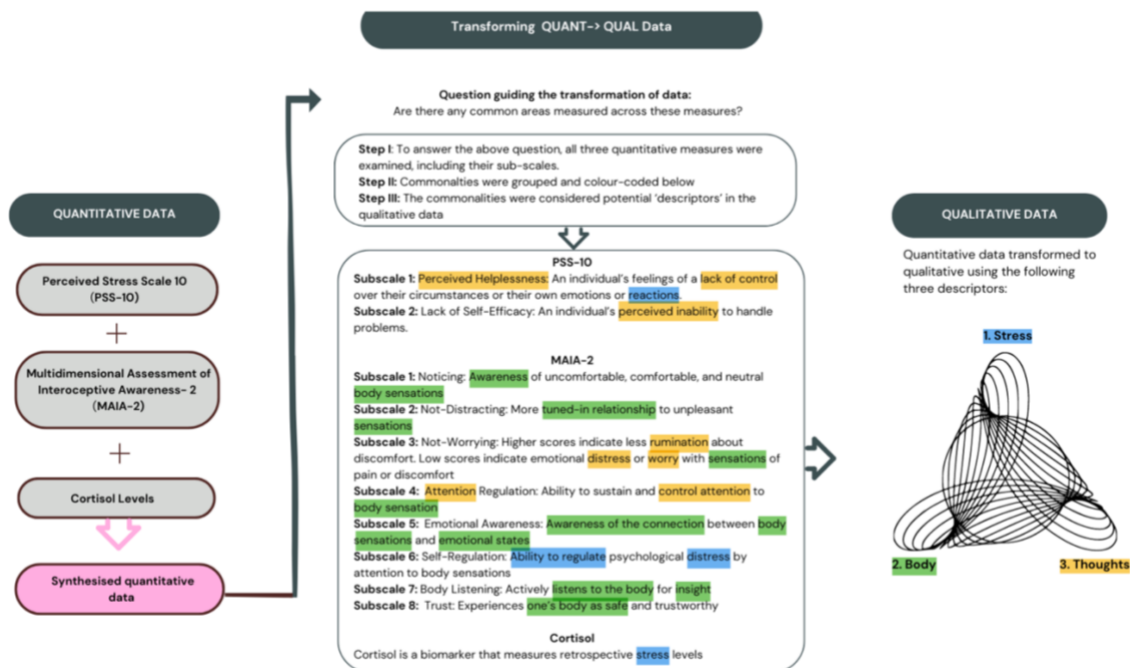
Abbreviations: T1: Timepoint 1 (week 1), T2: Timepoint 2 (week 6), T4: Timepoint 4 (week 16), PSS-10 Subscale 1: Perceived Helplessness, PSS-10 Subscale 2: Lack of Self-Efficacy, MAIA-2 Subscale 1: Noticing, MAIA-2 Subscale 2: Not-Distracting, MAIA-2 Subscale 3: Not-Worrying, MAIA-2 Subscale 4: Attention Regulation, MAIA-2 Subscale 5: Emotional Awareness, MAIA-2 Subscale 6: Self-Regulation, MAIA-2 Subscale 7: Body Listening, MAIA-2 Subscale 8: Trust

14.9 Transformed Qualitative Results

These triangulated quantitative results were transformed into qualitative results using the process depicted in Figure 14.6. We identified three emergent themes through the transformation process: body, thoughts and stress. This data was contextual to emotional regulation in participants (see Table 14.4).

Figure 14.6

A Visual Illustration of how Quantitative Data were Transformed to Qualitative Data



Abductive, Synthesised Qualitative Results

The transformed qualitative and abductive, synthesised qualitative results have been presented in a joint display table (Table 14.4). The final themes that emerged from the data were: a) cultural expectations, b) reliance on faith, c) increase in confidence, d) feeling

empowered by discovery, e) recognising cues of dysregulation, f) chronic stress, g) acceptance, and h) understanding ‘how’ depression manifests (see Table 14.4).

14.10 Tier Three: Mixed Methods Results

The transformed qualitative and existing qualitative data were synthesised to answer the mixed method research question: *RQ6. How do participant descriptions of their experience in a 12-week G-DMT intervention elaborate on the quantitative findings collected from the same individuals?* Table 14.4 presents the joint display mixed method results per participant. The integrated data suggest a convergent relationship between the data sets in all three participants.

Similar to the benefit of triangulation stated earlier (tier-2 results), integrating both strands of data provided us with a more holistic understanding of individual outcomes. Mixing the data was especially helpful in interpretation of the cortisol findings as indicative of a favourable change since the factors associated with reduced chronic stress such as emotional regulation and altered stress perception (Schulz & Vögele, 2015) were corroborated by participants’ lived experience in the qualitative data.

Table 14.4
Joint Display of Integrated Findings

P	Construct of interest	Synthesised Qualitative Findings		
		Transformed Data	Synthesised Data	Integrated Interpretation
P1	Emotional regulation at the levels of: • Cognition (thoughts) and • Soma (body) amid stress.	Stress: P1's cortisol ranges indicated a reduction in chronic stress levels. Likewise, there was also a reduction in his total perceived stress scores. Thus, reinforcing enhanced psychological distress management. Specifically, by paying attention to body sensations (MAIA 2 subscale-<i>self-regulation</i>) across the 16 weeks. Body: P1's scores showed an increase in recognising the connections between body sensations and emotional states (MAIA 2 subscale-<i>emotional awareness</i>) including all types of sensations i.e. noticing his body	Cultural Expectations: P1's experience with TRD included chronic stress and anxiety, which he primarily attributed to academic stress and the role he played in his family and society (he was the eldest son of seven siblings). P1 expressed a high desire and motivation to change and modulate his stress patterns differently. P1 witnessed a change in how he responded to his stress patterns across the study. Reliance on Faith: Via participation in this study P1 was able to draw on his	The integrated data suggests a convergent relationship between the data sets. Both transformed quantitative and abductive, synthesised qualitative results highlight P1's reduction in worrying and increased confidence towards the end of the study. The confidence is specific to P1's self-perception of being capable as he felt he had the tools to regulate himself amidst stress. This is concurrent with the increase in listening to and trusting his body. These are notable findings as P1 associated worry and fear with his body at the beginning of the study but moved towards feeling safe in his body at the end of the study. External factors that must be considered in this convergence are P1's practice of CBT, his faith, and having a social support system. However, since these external factors were present at the beginning of the study where he demonstrated stress and low adaptive behaviours, it is likely that DMT contributed to the above identified changes.

sensations (described to encompass uncomfortable, comfortable, and neutral (MAIA 2 subscale-*noticing*). P1 also experienced an increase in feeling more tuned into these body sensations and subsequently using these body sensations for insight and meaning-making (MAIA 2 subscale-*snot-distracting*) and experiencing his body as safe and trustworthy source of information (MAIA 2 subscale-*trusting*).

Thoughts: P1's scores showed an increase in his ability to sustain and control attention towards his body sensation (MAIA 2 subscale-*attention regulation*) and feeling less pre-occupied with or ruminating on discomfort in his body (MAIA 2 subscale-*not-worrying*).

Simultaneously, P1's change score also indicates an increase in his

existing support structures, his "faith", and a "spiritualised version of CBT" which he created for himself.

Increase in Confidence: P1 described not being afraid of his somatic stress responses anymore which in turn enabled him to respond to his stress differently. P1 derived meaning from his experience of G-DMT and hence sought out ways to continue participating in DMT after the study had ended.

In terms of emotional regulation, P1 described not being scared by his stress responses and feeling "confident" and "capable" of managing his stress responses by the end of the study.

		perceived ability to handle problems and his control over circumstances or his own emotions/ reactions through a reduction in <i>lack of self-efficacy</i> and <i>perceived helplessness</i> (which are PSS-10 sub-scale scores).		
P2	Emotional regulation at the levels of: • Cognition (thoughts) and • Soma (body) amid stress.	Stress: P2's cortisol ranges indicated a reduction in stress levels. Likewise, there was reduction in her total perceived stress levels. This is also reinforced with an increase in P2's management of psychological distress by paying attention to her body sensations (MAIA 2 subscale- <i>self-regulation</i>). Body: P2's change scores indicate a reduction in her awareness of the connection between body sensations and emotional states (MAIA 2 subscale- <i>emotional awareness</i>)	Feeling Empowered by Discovery: P2 commenced the study with a high awareness of her patterns of stress, however, she described feeling a strong desire to change how she responded to stress. Despite this desire, she expressed not feeling "motivated" to make any change and attributed this to her depression. P2 had not only lived with depression but also experienced chronic stress as part of her life with TRD. During the study, P2 used the insights she gained about the root cause of her	Integrated data suggests a convergent relationship between the data sets. This is despite two subscales of MAIA-2 (5,7) that seem to diverge from the PSS-10, Cortisol analysis and remainder subscales of MAIA-2 (1,2,3,4,6,8). Both the transformed quantitative and the abductive, synthesised qualitative results highlight P2's pre-existing awareness about her stress patterns and their manifestations in her body. Through the study, P2 seemed to gain further insight about the roots of her depressions and stress patterns. P2 also experienced an increased motivation to change her patterns based on this insight. Her continued connection with her body seemed to change her internal narrative and cognitive processes about her capacity to enable change in her life. Yet, the change that occurred seems to be less than optimum with regards to actioning change at the level of cognition and body sensations. This is corroborated by the challenge of changing pre-existing patterns captured in the qualitative interviews. Hence, even though the data may suggest different inferences

At T1, P2's scores were almost at the maximum possible score (4.6/5) and across the course of the study experienced the opposite desired that is a slight reduction in emotional awareness, this occurred between T3 and T4 (i.e., the follow up time-period without the DMT intervention). P2 also experienced the opposite desired effect on actively listening to her body for insight at the end of the study (MAIA 2 subscale- <i>body listening</i>), this also occurred between T3 and T4 (i.e., the follow up time-period without the DMT intervention). P2's ability to notice all types of body sensation, i.e., uncomfortable and comfortable, (MAIA 2 subscale- <i>noticing</i>), experiencing one's body as safe and trustworthy (MAIA 2 subscale- <i>trusting</i>) and being more in tune to her body	depression and explored it further in 1:1 psychodynamic psychotherapy, which also ended around the same time as this study. She described DMT as filling a "tangible" gap in her emotional exploration; this helped her understand the causes of her depression and chronic stress, and to explore these in a deeper way. P2 described feeling empowered and motivated to make changes in her life based on her insights (about herself) from participation in the study. Recognising Cues of Dysregulation: In terms of emotional regulation, P2 described being able to "immediately" recognise signs of distress in her body and start to modulate her stress responses	at face value, both the qualitative and quantitative data tell the same story of a struggle with interoceptive awareness.
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sensations (MAIA 2 subscale- *non-distracting*); all of which increased through the study. Hence, indicating that while there is awareness and trust in her body and its sensations, there is a potential gap between this awareness and integration of this awareness with her beliefs and actions (as indicated in *emotional awareness & body listening* above)

before it escalated beyond her identified 'Point of Return', by the end of the study.

Thoughts: P2's change scores showed in cognitively adaptive behaviour by ruminating less about discomfort (MAIA 2 subscale- *not-worrying*), which coincides with an increase in feeling a sense of control over her circumstances/ emotions / reactions (PSS-10 subscale- *perceived helplessness*) and an increase in her perceived ability to handle problems (PSS-10 subscale- *lack of self-efficacy*). Alternatively, although P2's change scores show a slight

		increase in her ability to sustain and control attention to body sensations (MAIA 2 subscale- <i>attention regulation</i>), the change occurred was lesser than the estimated MCID. While P2 felt an increased sense of control and reduction in mental rumination, this does not reflect in the interaction between thoughts and her reaction to body sensations.		
P3	Emotional regulation at the levels of: • Cognition (thoughts) and • Soma (body) amid stress.	Stress: P3's cortisol ranges indicated a reduction in stress levels. Likewise, there was reduction in her total perceived stress also. These reductions were also reinforced with P3's increased ability to manage her psychological distress by paying attention to her body sensations (MAIA 2 subscale- <i>self-regulation</i>). It is plausible that an increase in self-regulation caused a reduction in perceived stress and cortisol levels.	Chronic Stress: P3 described her experience of depression to include difficulty getting out of bed, low mood, heaviness in the body, tightness in her jaw, and a general dull sadness. She also described feeling chronic stress, which she initially attributed to "school-related stress," but later identified that a feeling of stress	Integrated data suggests a convergent relationship between the data sets. Both the transformed quantitative and the abductive, synthesised qualitative results demonstrate an overall increase in P3's insight and adaptive behaviour. P3's insights were primarily intrapersonal in nature and highlight her own discoveries about herself which led to an increase in acceptance of illness and identifying a more suitable therapy format for herself. P3 experienced some significant life events between weeks 12 and 16 of the study, yet there continued to be a decrease in her cortisol levels and perceived stress and an increase in interceptive awareness. It is plausible that she engaged in more adaptive ways of coping with stress while also

Body: P3's change scores showed an increase in her recognition of the link between her body's sensations and her emotional states (MAIA 2 subscale- <i>emotional awareness</i>). P3 not only experienced an increase in being more tuned into body sensations (MAIA 2 subscale- <i>non-distracting</i>) but also increased experiencing her body as safe and trustworthy (MAIA 2 subscale- <i>trusting</i>), and actively listening to her body for insight (<i>body listening</i>) at the end the study compared to the beginning. Interestingly, while there was an increase in her ability to feel varied types of body sensations including uncomfortable and comfortable, (MAIA 2 subscale- <i>noticing</i>), these change scores indicated a change	persisted even in the absence of academic pressure. Cultural Expectations: P3 was the eldest daughter in an immigrant family and attributed her depression to have roots in her cultural and familial roles. Through participation in the study. Acceptance: P3 said her understanding of what depression "should" look like was challenged and evolved to be more inclusive. She described having somewhat of a fixed perception of how she needed to look and behave due to her depression and breaking this perception allowed her to fully "accept her diagnosis". P3 used G-DMT to link themes that emerged in the sessions with her life outside the session.	recalling the DMT experience that enabled her to experience a sustained effect of the DMT sessions.
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that was lesser than the estimated MCID.

Thoughts: P3's change scores showed a reduction in ruminating about discomfort (*not-worrying*) and increase in her ability to sustain and control attention to body sensations (MAIA 2 subscale- *attention regulation*), which coincides with an increase in P3's sense of control over her circumstances/ emotions/ reactions (PSS-10 subscale- *perceived helplessness*) and her perceived inability to handle problems (PSS-10 subscale- *lack of self-efficacy*).

Understanding 'how'

depression manifests: She described gaining a deeper understanding of "how" her depression manifested in her body. P3 also discovered why talk therapy was not the best fit for her through her participation in G-DMT. By engaging in movement, with others and with props, P3 realised that she "dissociated less" when she moved/ danced (compared to talking in therapy) and used this experience to recognise that a creative arts therapy approach may be a better suited treatment option for her.

Abbreviations: P: Participants; MCID: Minimum clinically important difference, T1: Timepoint 1 (i.e., week 1), T2: Timepoint 2 (i.e., week 6), T3: Timepoint 3 (i.e., week 12), T4: Timepoint 4 (i.e., week 16), PSS-10: Perceived Stress Scale 10, MAIA-2: Multidimensional Assessment of Interoceptive Awareness- 2, G-DMT: Group dance/movement therapy

14.11 Discussion

At the onset of this study, we proposed the assumption that developing or increasing interoceptive awareness could be one pathway towards proactive emotional regulation and subsequent reduction in stress in treatment resistant depression. In this case series, all three participants increased their scores on at least 6 of the 8 subscales in the MAIA-2 (including subscale 6 - *self-regulation*). Simultaneously, they also exhibited a decrease in stress levels (both perceived stress and cortisol levels). Together, all three participants reported an increase in their “felt ability” to manage somatic manifestations of stress, indicating a change in their level of self-efficacy and perception. This shift was achieved specifically through incorporating body-based self-assessment and increased familiarity with somatic sensations and their meaning. External life circumstances, similarities and differences are discussed and considered within the context of these results for each participant.

Similarities Between Participants

Increase in ‘Noticing’ and a Reduction in Stress Despite Exposure to Stress. For P1, taking leave from his studies (his main stressor) from weeks 6 to 10 (i.e. between T2 and T3) was a notable external factor potentially influencing favourable results. This leave period was synchronous with a steep decrease from high perceived stress (28/40) at T1 and T2 to low perceived stress (11/40) at T3. Despite resuming study at week 10, P1’s PSS-10 scores continued to indicate low perceived stress at T4 (12/40) suggesting a positive effect of the intervention. This is also confirmed by the shift in P1’s personal narrative in the interviews at T3 and T4 where his self-perception was altered to feeling “capable” and “confident” of responding to stress. Similarly, P2 also noted education to be a primary stressor in her life. At baseline, P2 was near the end of a one-year mental health leave from her studies, yet she obtained a high score on the PSS-10 at T1 (31/40). Alternatively, at T4, when she resumed her studies, her overall stress levels reduced to moderate, and her MAIA-2 scores indicated

reduced rumination about discomfort (*noticing*). This indicates that despite increased exposure to stress-inducing factors, she was less preoccupied with stress, also demonstrating change at the level of thoughts. Another change that P2 experienced was a change in her medication between T1 and T2. P2 ended psychotherapy around the same time as the end of this study. While P2 acknowledged this to be a big change, she expressed feeling capable of handling this change. However, her MAIA-2 *emotional awareness* subscale results did not support this. In the case of P2, her self-perception was directly influenced by her insight, specifically, insights rooted in understanding the “core” of her depression. P3 also experienced a reduction in overall PSS-10 scores by the end of the study despite continued exposure to potential stress-inducing factors. Considering that P2’s reduction in stress scores (PSS-10) was less than the estimated MCID, we cannot be sure that a new pattern of thought/attention had been formed. However, the reduction of scores despite exposure to stress does indicate a possible change of attention regulation to stressors (also seen in her increased *attention regulation* on the MAIA-2).

P3 was also exposed to multiple life changes and potential stressors at T4. While her PSS-10 scores reduced, P3 also highlighted her tendency to “find something to stress over” even after graduating from her course, attributing this to the chronicity and familiarity of feeling stressed in her life. P3 also appeared more aware, clear, and coherent about her emotional experiences at T4 (consistent with the increased *emotional awareness* subscale scores on the MAIA-2). This raises further questions about the difference between cognitive stress (thoughts/perception) and the role of DMT in addressing pre-existing cognitive patterns (i.e. familiarity with feeling stress).

Reduction in Cortisol Levels. All three participants’ cortisol levels reduced over the course of the study (decrease of 0.05 ng/50mg of hair in P1, 0.02 ng/50mg in P2, and 0.06 ng/50mg in P3). Higher levels of cortisol are typically attributed to a habituated, chronic

stress response involving an overactive hypothalamic-pituitary-adrenal (HPA) axis (Roos et al., 2018) and a reduction could point towards healthier HPA axis (Torrecilla & Barrantes-Vidal, 2021). In the absence of a standardised quantifiable normal range for hair cortisol, we were not able to confirm this without measuring other factors like blood pressure, glucose levels, etc. Further, participant cortisol levels at T2 and T3 in this study, do not indicate a gross overactivation of the HPA axis. This is consistent with literature suggesting that only some individuals with depression may have an overactive HPA axis (Packard et al., 2016). Despite unclear interpretation of tier-1 quantitative findings, through mixing the data we were able to gain a multidimensional understanding of these findings. We see a reduction in cortisol levels corresponding with a reduction in perceived stress alongside participants' change in perception about their felt capacity for emotional regulation, thus, illustrating a convergence of the integrated results.

Race. We did not advertise to any specific socio-racial groups, but interestingly, all recruited participants were people of colour. All three participants described aspects of their culture that increased their mental load by feeling an immense pressure to assimilate to feel socially accepted. This significantly strained their internal resources, through experiences of bullying due to their race, and grappling with a dissonance between their internal cultural narratives and the external Western context that they resided in. Although only a small sample, this aligns with current literature that suggests racially minoritised groups have higher prevalence rates in depressive disorders (Bailey et al., 2019). Considering that people of colour are already pre-disposed to social stress, this is an important finding to consider when planning future research in this area. Participants also noted the therapist-researcher's racial identity (person of colour) to help create a safe space in this research study.

Differences between participants

Role of DMT. Our intervention played a varied role in each participant's life. For P1, DMT played the role of prompting re-assessment. Similar to reality testing (in psychotherapy), it appears that DMT prompted P1 to re-assess his internal capacity and respond to stress accordingly. For P2, DMT played the role of a complementary therapy that enhanced her pre-existing psychotherapy journey. She described DMT as an offering that filled a “tangible gap” in psychotherapy, a gap that was not overcome through words. P2 also described how she used her somatic moments of discovery as “conversation starters” to “dig deeper into” psychotherapy. In the case of P3, DMT played the role of enabling acceptance of her depression. Specifically, accepting and recognising the unique way depression manifested in her life. In one session, when each participant embodied their depression, P3 recalled this to be one of the most impactful sessions as it reminded her of how different depression looked in each person. Further, through the interviews, P3 also emphasised how DMT helped her understand her own preference for a more creative and embodied form of therapy as most suitable for her. She discovered this by linking her movement patterns to certain emotional states, such as realising she dissociates less while moving. Overall, she described accepting her depression and her subsequent therapy needs because of her experience of DMT.

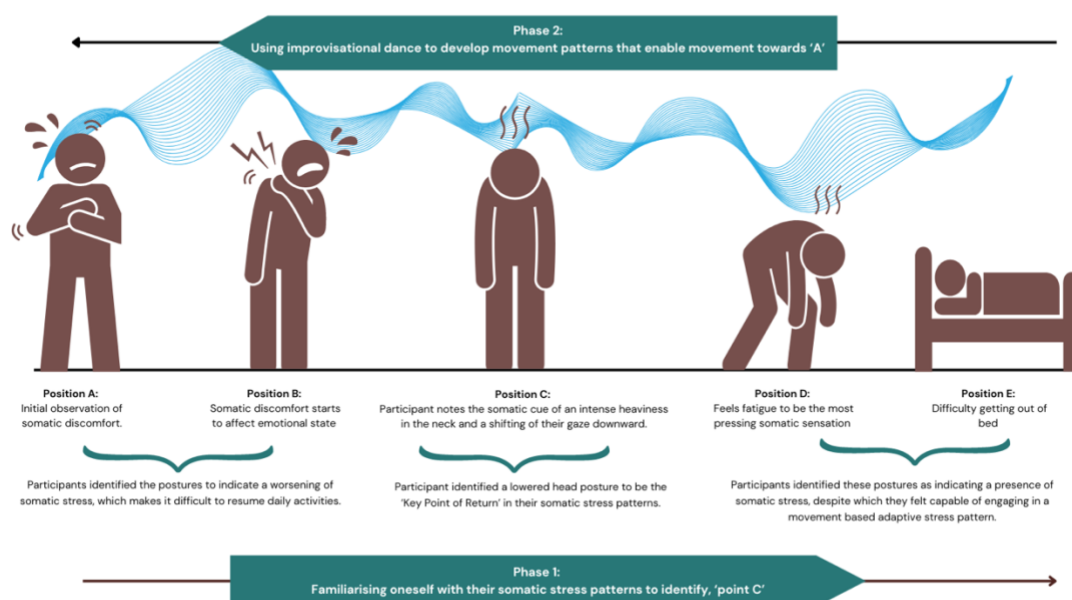
Key Findings

DMT offered a Body-Based Form of Self-Assessment and Regulation. During the interviews, all three participants mentioned recalling the ‘Point of Return’ experiential from G-DMT sessions to help them self-assess and subsequently regulate themselves. In this experiential, participants practised using somatic aptitude (consolidating the processes of interoception and embodiment towards regulation) to recognise their own spectrum of somatic stress cues with the group's support. This experiential was a focused opportunity for

each participant to recognise the moments when they need to actively engage in the movement to prevent themselves from entering a state of ‘freeze’. Participants identified somatic cues that represented a freeze response, which was identified as their ‘Point of Return’. Becoming familiar with and trusting one’s body cues (geared towards developing *noticing* and *trusting* on MAIA-2) were critical aspects of this body-based self-assessment. While flight, fight, and freeze responses have adaptive strengths in acute stress, in chronic stress, they do not serve the same purpose in the process of emotional regulation. Hence, becoming familiar with these signs was a critical aspect of a body-based self-assessment. This rationale and process of developing this experiential have been described in a companion paper (Christopher, 2024). In addition to the [video](#) shared above (intervention section), Figure 14.7 illustrates this experiential, where a participant recognised the subtle body cue of feeling heaviness in their ‘neck’ to be a crucial somatic cue that indicates that they needed to engage in movement to prevent further dysregulation in a timely manner. For example, from practising moving from E to D, D to C, C to B, etc., in the example below.

Figure 14.7

Example of the 'Point of Return' Experiential as a Body-Based Assessment and Regulation Tool



DMT offered a Change in Participants' Negative Somatic Associations. G-DMT seemed to change participants' associations with their bodies to be more positive throughout the study. At the T1 interview, both P1 and P2 associated feeling relaxed with an absence of body awareness and associated body awareness with the presence of "pain", "fear", "stress" and "fear" in their body. Through the study, participants not only increased their familiarity with various somatic cues but also learned to understand them instead of fearing them. Participants described listening to somatic cues as signs of needing emotional regulation, which also, in turn, made them confident in handling these felt cues. Hence, each participant was able to derive meaning from their cues. Here the "safety" expressed within the therapeutic setting should be considered as a potential contributor to their experience and outcome. An example of this is when P2 "discovered" that she felt "fear in social settings"

and was not merely “avoiding social settings”. This revelation occurred after P2 embodied her somatic cues in the sessions and eventually modifying her negative association with her somatic cues due to the new meaning (a cue of fear) that she made through DMT.

DMT Expanded the Participants’ Capacity for Regulation. Participants’ exposure to environmental stressors did not cease during the study, yet all three participants described an increased ability to self-regulate. Participants felt more in control over their somatic responses after engaging in DMT. However, ongoing concurrent treatments (as mentioned in Table 14.2) and other external factors discussed above must be considered. We, therefore, cannot confirm the attribution of change in participants’ capacity for regulation entirely to G-DMT.

Upon examining these three cases, it appears that interoceptive awareness played a critical role in modifying the meaning associated with somatic stress, which subsequently affected their perception of stimuli and capacity for emotional regulation. When the natural stress cycle is analysed through an allostatic load theory of stress (Guidi et al., 2021), the importance of perception is undoubtedly highlighted, as perception directly affects physiological dysregulation, often experienced as the physiological effects of stress (rapid heart rate, rigid body, etc.). While these physiological responses are adaptive, they still cause exhaustion in the body and, in the case of chronic stress, continue to cause more harm physiologically. As previously discussed, an antecedent-focused strategy is more beneficial than a response-focused regulation strategy (Gross, 2002). The participants in this study appear to have benefited from this antecedent-focused approach, ultimately resulting in an increased capacity to self-regulate. In this way, the DMT sessions also reinforced the body-mind nexus, i.e., by strengthening the link between somatic stimuli and thought. This reinforced cognitive emotional loop is one plausible explanation for an expanded capacity for regulation in participants. Lastly, participants also reported feeling “safe” with the therapist-

researcher and each other during the G-DMT sessions. Since safety and attunement are potential signs of active kinesthetic empathy (Christopher & Tamplin, 2022) it is possible that the focused use of kinesthetic empathy in the sessions also contributed to an expanded capacity for regulation.

14.12 Limitations

There are some limitations to this study, including external variables that may have influenced results, such as other concurrent treatment, changes in medications, and external life stressors. The use of focus group interviews may also have contributed to changes experienced by participants, thus (along with other variables) compromising attribution of change entirely to the G-DMT intervention. Our small sample size also reduces the generalisability of our findings, especially due to the cultural homogeneity of the group. The first author was the therapist-researcher in this study which introduces the potential for researcher bias. Supervision, co-analysis of qualitative data and co-authorship were strategies implemented to mitigate this risk. Further, keeping in mind the power imbalance between research participants and the therapist-researcher; we also note the possibility that participants may have felt an unconscious need to provide positive responses during the interviews. Verbal reassurance was provided to participants, that they could choose to withdraw or continue participation based on their will and agency, to reduce the risk of unconscious coercion. Further the therapist-researcher highlighted the importance of participants' honest responses for the research project prior to data collection. The benefits of this dual role should also be highlighted; it offered the potential to generate richer qualitative data due to existing participant rapport with the interviewer and shared understanding of the intervention.

14.13 Research Recommendations

Further research is needed to examine and adapt the G-DMT intervention from this study for longitudinal, cross-group analysis and larger, powered studies. We recommend the continued exploration of DMT's effect on aspects of physiological symptoms of stress, such as cortisol levels. Additionally, measures highlighting depressive symptoms (such as the Patient Health Questionnaire-9 or the Beck Depression Inventory-II) may be helpful to determine changes in depression levels, if present, as a result of changes in stress patterns and interoceptive awareness and learned regulation strategies. Lastly, we encourage the exploration of comparative studies between psychodynamic psychotherapy and psychodynamically-oriented DMT in the TRD population.

14.14 Conclusion

This study was conceived to understand if the concepts of interoceptive awareness, kinesthetic empathy, and embodiment in DMT could help create a positive feedback loop and support a bottom-up approach to emotional regulation. In answering the overarching research question, we found that a 12-week group dance therapy intervention did improve participants' capacity to emotionally regulate by changing their perception of their somatic cues, improving their capacity to handle stress, and increasing their confidence to disrupt the dysregulation cycle. Further, G-DMT sessions offered opportunities for emotional regulation by integrating self-expression, awareness of interoceptive cues, and somatic aptitude. G-DMT may be especially helpful in increasing recognition of the signs of entering hyper-arousal amid stress and learning to modulate responses effectively. These findings support our assumptions at the inception of the study. While further research is required to contextualise the relevance of these case series findings with a larger and more heterogeneous sample, our promising findings support future research utilising DMT to support emotional regulation in adults with TRD.

Section II

As mentioned in the bridging material preceding this chapter, two participants (Participants 4 and 5) dropped out of the study. This section will present the results of these two participants and discuss them in a format similar to that of Participants 1, 2, and 3. Table 14.5 below entails participant demographics and has been reproduced from Section I of this chapter.

Table 14.5

Participant Demographics Reproduced (Table 14.2 in Section I)

Participant (P)	Age	Sex	Racial Identity	Other concurrent Therapies
P 1	30	Male	Pakistani	Self-administered cognitive behavioural therapy
P 2	26	Female	Chinese	Psychiatric medication and psychotherapy
P 3	21	Female	Australian of Indian origin	Psychiatric medication
P 4	22	Female	Prefer not to say (POC)	Psychiatric medication
P 5	23	Female	Prefer not to say (POC)	None

Abbreviation: P=Participant.

14.14 Extended Results; Dropped out Participants

Case Series, Participant Descriptions

Participant 4 (P4) was a 22-year-old female who self-identified as a person of colour but did not want to report the specifics of her ethnicity in this study. She was enrolled in her undergraduate studies and was on psychiatric medications at the time of her participation. She had experienced symptoms of depression for over 18 months but had not experienced a significant reduction in symptoms despite trying at least two cycles of anti-depressants. During the screening call, Participant 4 shared being dissatisfied with her treatment as she continued to experience symptoms of depression. She participated in 8 weeks of the intervention and dropped out in the 9th week via email. She informed the therapist-researcher that she was dropping out in response to an email about her travel card being refilled for week 9's travel to

the dance/movement therapy session. She shared that she was going overseas for a holiday as she was feeling overwhelmed and wanted to take a break from her studies. She contributed to data collection at timepoints 1 and 2.

Participant 5 (P5) was a 23-year-old female who self-identified as a person of colour and also did not want to report the specifics of her ethnicity in this study. She was enrolled in her undergraduate studies and was not receiving any concurrent treatments during her participation in the study. She had a diagnosis of treatment resistant depression and was also experiencing neuropathic pain. Participant 5 participated in three sessions (weeks 3, 4, 5) and contributed towards quantitative data at timepoint 1.

14.15 Tier One: Individual Results

The quantitative data has been categorised to address the research questions and presenting data in relation to each sub-research question (RQ).

RQ1. Does participation in a 12-week group dance/movement therapy intervention reduce perceived stress in adults with treatment resistant depression?

Perceived stress was measured by Perceived Stress Scale-10 (PSS-10) (Carter et al., 2021). Based on the available data, Participant 4's perceived stress did not reduce from timepoint 1 to timepoint 2; in fact, Participant 4's change scores indicate an increase of stress by five points between timepoint 1 to timepoint 2. Between both subscales, there was an increase of four points in subscale 1 (perceived helplessness) and one point in subscale 2 (lack of self-efficacy). Since there was no reduction in PSS-10 scores, the estimated minimal clinically significant difference (MCID) is irrelevant in the findings of Participant 4.

For Participant 5, adequate data was unavailable to compare the scores obtained from timepoint 1. Hence, the answer to this research question for Participant 5 is unknown.

Participant 4 and 5's scores are graphically represented in Figure 14.8 (a) and (b) below.

Figure 14.8

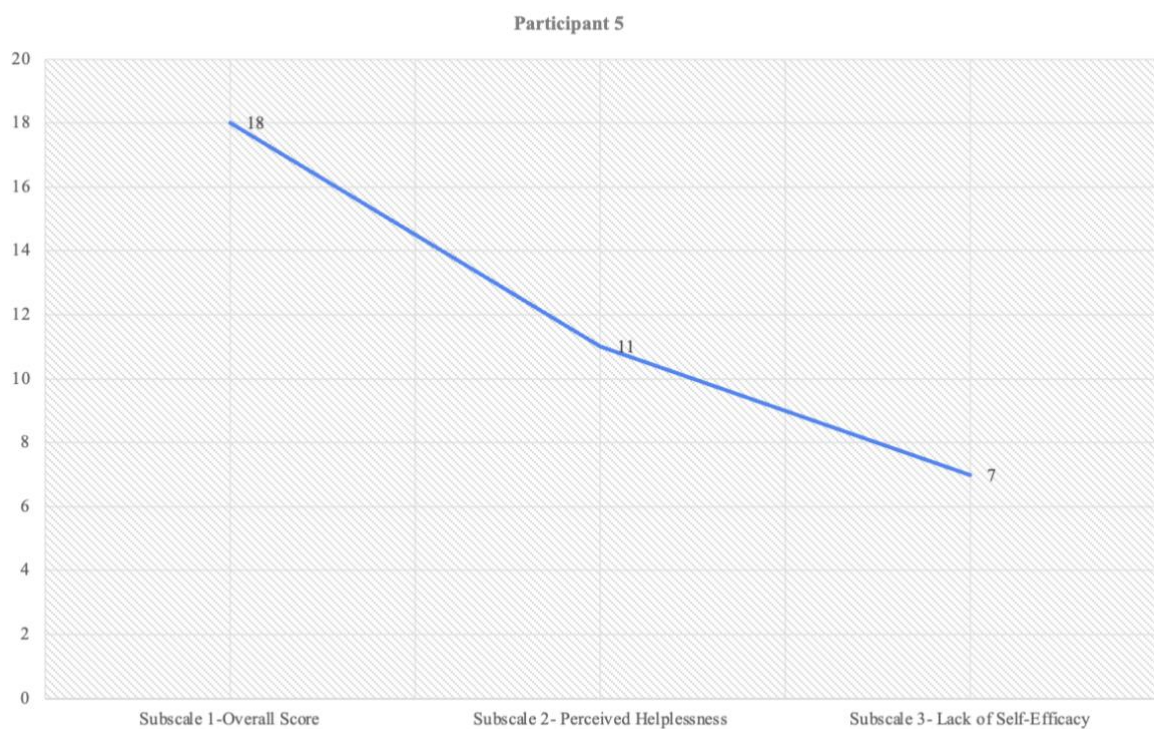
Individual Graphs (a and b) of Incomplete Data (PSS-10 Scores)

a) Participant 4



Legend: Blue: Timepoint 1 (week 1), Red: Timepoint 2 (week 6)

b) Participant 5



Legend: Blue: Timepoint 1 (week 1), Red: Timepoint 2 (week 6)

RQ2. Does participation in a 12-week group dance/movement therapy intervention increase interoceptive awareness in adults with treatment resistant depression?

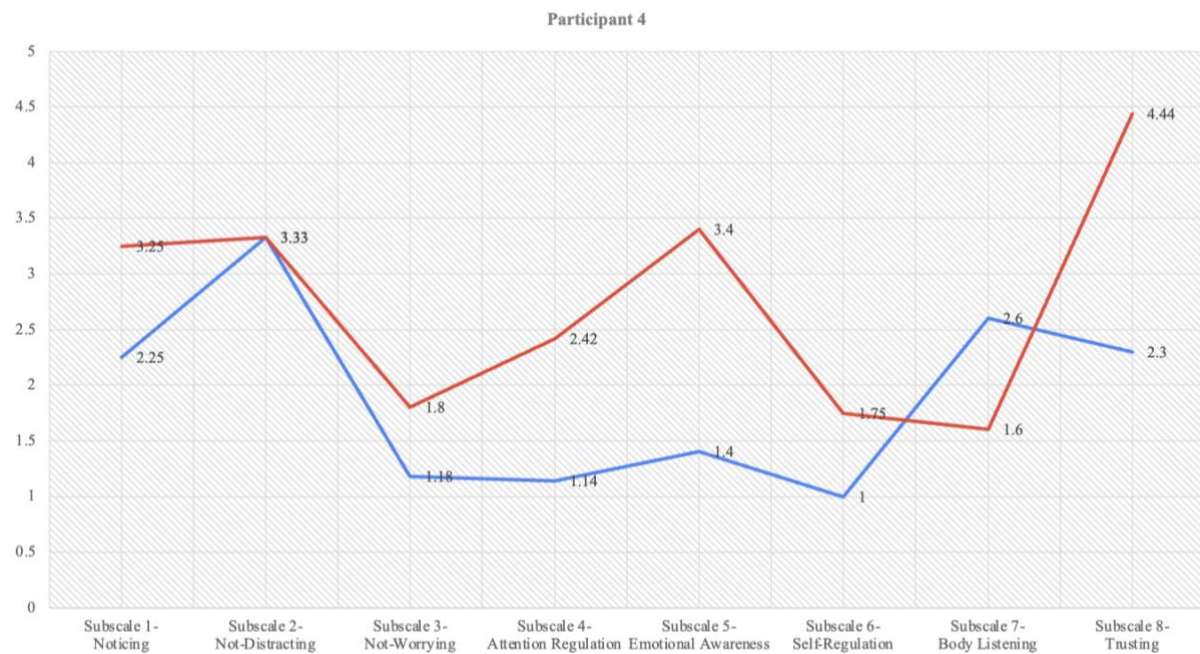
Participant 4's scores indicated an increase in interoceptive awareness on some subscales. There was an increase in scores between timepoint 1 and timepoint 2, with change scores above the MCID range of .38-.61 (Eggart et al., 2021) in subscales 1, 4, 5, 6 and 8 (*noticing*, *attention regulation*, *emotional awareness*, *self-regulation*, and *trusting* respectively). Alternatively, Participant 4's scores remained unchanged on subscales 2 and 3, (ie. *not distracting* and *not worrying*). Conversely, Participant 4's score on subscale 7 (*body listening*) reduced by one point between timepoint 1 and timepoint 2 (change score of -1). The highest increase was in subscale 8 (*trusting*) with a change score of 2.14. Due to lack of data at timepoints 3 and 4, this research question cannot be answered.

For Participant 5, there was inadequate data at timepoint 2 to compare the scores from timepoint 1. Hence, the answer to this research question for Participant 5 is unknown. Participant 4 and 5's scores are graphically represented in Figure 14.9 (a) and (b) below.

Figure 14.9

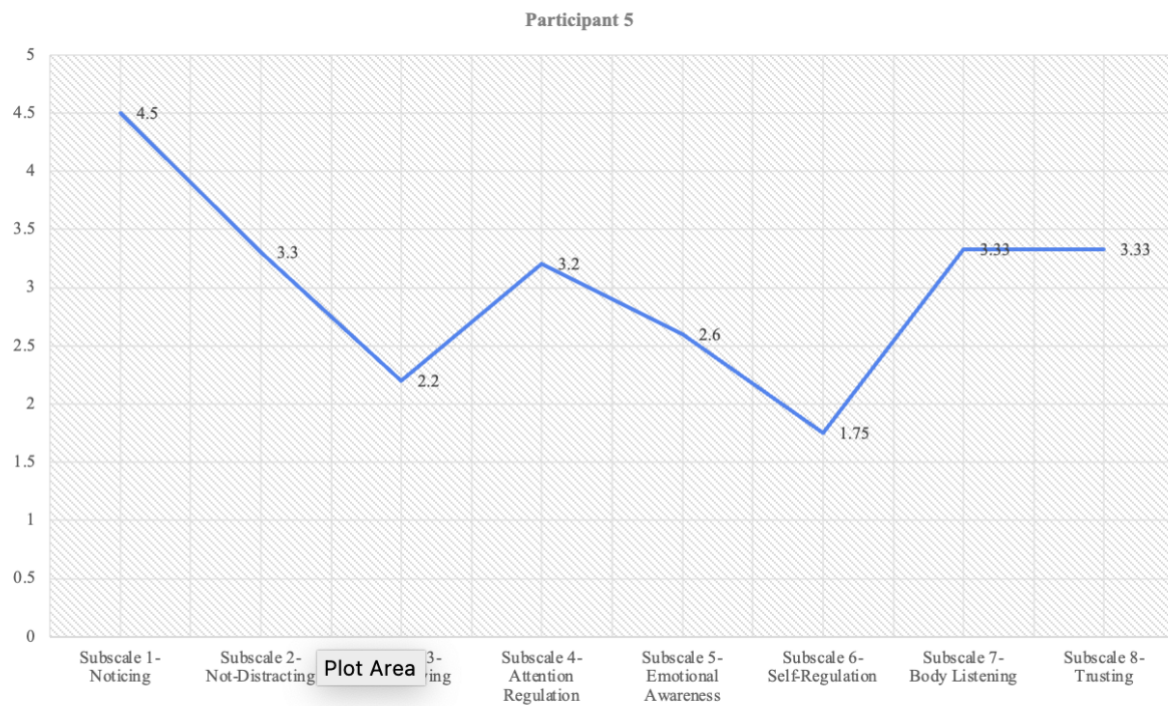
Individual Graphs (a and b) of Incomplete Data (MAIA-2 Scores)

a) Participant 4



Legend: Blue: Timepoint 1 (week 1), Red: Timepoint 2 (week6)

b) Participant 5



Legend: Blue: Timepoint 1 (week 1), Red: Timepoint 2 (week6)

RQ3. Does participation in a 12-week group dance/movement therapy intervention reduce cortisol levels in adults with treatment resistant depression?

Since Participants 4 and 5 did not provide adequate hair samples (i.e., at least two samples), there was insufficient data to compare with one another or answer this research question.

RQ4. Are the findings consistent between the self-report measure and biomarker of stress congruent with one another (i.e., the PSS-10 and cortisol hormone levels, respectively)?

The answer to this research question for Participants 4 and 5 is unknown since there was no cortisol data to compare the Perceived Stress Scale (PSS-10) scores with.

RQ5. How did the adults with treatment resistant depression engage with and experience the 12-week group dance/movement therapy intervention?

Although this research question cannot be answered due to incomplete data, the following data provides insight into Participant 4's experience prior to dropping out. Conversely, since Participant 5 did not participate in the focus group interviews and dropped out before the 1:1 interview on week 16, there was no data to analyse deductively or inductively in this section.

Individual Summaries of Qualitative Findings

The following information was gathered from Participant 4's participation in two focus group interviews.

Deductive Analysis. At timepoint 2, Participant 4 shared that she experienced a shift in her body awareness. She said, *"I think compared to the answers from two weeks ago, it's more in the middle rather than the extremes, and [I] feel more of my body and feel more awareness."* Comparatively, Participant 4 had said the following at timepoint 1: *"I wasn't really aware of my awareness of my body."* She added, *"if any emotions come through me. I let that emotion go in my mind and don't care about what my body says and keep all of my*

emotions inside my heart. I started this from a really young age, so I don't really think about what my body feels like."

Inductive Analysis. Participant 4 shared her difficulty with sleeping and even keeping her eyes closed in general, including during the dance/movement therapy intervention sessions. She described feeling "*overwhelmed*" at night and often sleeping only between "*one and five AM.*" In contrast to Participant 1's description of feeling conscious, Participant 5 said, "*I don't feel that [conscious] from presenting my moves [moving in front of others in the group setting].*" Participant 4 also talked about her previous dance experiences and how the intervention sessions seemed different. She shared her preference for dance/movement therapy over choreography due to the spontaneous nature of movement in dance/movement therapy. She said, "*in the choreography class, there is a fixed routine, and I feel very stressed out. If I am just dancing randomly [referring to dance/movement therapy session]- it's a lot of fun.*"

Participant 4, 1:1 Interview. Participant 4 dropped out before the 1:1 interview at week 16. Hence, no individual data is available for inductive analysis in this section.

14.16 Tier Two: Synthesised Results

Tier two presents the triangulated results of quantitative data; since three forms of data were not collected, triangulation of data was not possible for Participant 4 and 5. The synthesised qualitative results under tier two results can be directly seen in the upcoming joint display table (Table 14.6).

Transformed Qualitative Results

Tier one quantitative results were transformed into qualitative results following the same process as shown in Figure 14.6 (Section I of this chapter). Hence, the final qualitative descriptors were identified to transform the quantitative to qualitative data: *stress*, *body*, and *thoughts*.

14.17 Tier Three: Mixed Methods Results

RQ6. How do participant descriptions of their experience in a 12-week group dance/movement therapy intervention elaborate on the quantitative findings collected from the same individuals?

Based on the steps taken to analyse the results of Participants 1, 2 and 3, where the transformed qualitative and existing qualitative data were synthesised to answer the mixed methods research question; Participant 4's mixed methods results have been presented based on available data. The integrated incomplete data highlighted: symptomatology and sensations. The results for Participant 4 have been tabulated below (see Table 14.6). Since Participant 5 did not contribute to qualitative data, the answer to this mixed methods research question remains unanswered.

Table 14.6

Integrated Results based on Incomplete Data from Participant 4

Construct of Interest	Individual Data Sets		Integrated Interpretation
	Transformed Quantitative Data	Synthesised Qualitative Data	
Emotional regulation in the context of: • Cognition (thoughts) and • Soma (body) amid stress.	Body: P4's scores showed an increase in noticing and tracking her body sensations between timepoint 1 and 2 (subscale 1-<i>noticing</i>). P4's scores also indicate a reduction in the ability to actively listen to body sensations to gain insight (subscale 7, <i>body listening</i>) and an increase in the ability to have an accepting and trusting attitude towards her body signals (subscale 8, <i>trusting</i>). Thoughts: P4's scores did not demonstrate a change in the level of thoughts specifically regarding the domain <i>emotional reaction and regulation</i>, which includes sub-scales 2 and 3, not <i>distracting</i> and <i>not worrying</i>, respectively.	Sleep: one of the depressive symptoms that P4 talked about at both timepoints was a difficulty with sleep. She linked closing her eyes to feeling anxious and used the phrase "<i>loose track of time</i>" when describing herself waiting to fall asleep. Culture: P4 shared how deep rooted her pattern of emotional suppression was due to her upbringing that taught her to "<i>keep all of my emotions inside my heart,</i>" resulting in not considering or tuning in to the awareness of the body. Body: An experiential change in P4 from timepoint 1 to timepoint 2 was a shift from "<i>extremes</i>" to feeling more "<i>centred</i>" regarding being aware of her body (feelings & sensations). This shift coincided with P4 sharing	The integrated data reveals a divergent relationship between the data sets. Qualitative data indicates challenges with specific symptoms, such as difficulty falling asleep, anxiety, and possible dissociation. Not all symptoms were linked to treatment resistant depression, suggesting other comorbidities. These challenges were not reflected in the quantitative data, nor were the increased PSS-10 scores reflected in the qualitative data, indicating an incohesive narrative between the data sets. Due to insufficient data, these mixed method findings cannot be considered complete or be used to directly answer the research question, which focuses on outcomes after a 12-week group-dance/movement therapy intervention. Instead, these integrated findings elaborate on the quantitative findings by illuminating divergence between data sets and highlighting cultural patterns of emotional suppression rather than expression, challenges with

Stress: P4's scores demonstrated inconsistent outcomes with regards to stress levels; while her PSS-10 scores indicate increased stress between time points 1 and 2, her self-regulation scores increased in the MAIA-2 suggesting a divergent relationship between the questionnaires.	about the possibility of “fun” from the sessions.	symptomatology and perceived increase towards accepting body sensations through the growing awareness of body sensations between timepoints 1 and 2.
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Abbreviation: P=Participant; PSS-10: Perceived Stress Scale 10, MAIA-2: Multidimensional Assessment of Interoceptive Awareness-2.

14.18 Discussion on Incomplete Data

Categorising Missing Data

There are three primary ways to categorise missing data: missing completely at random (MCAR), missing at random (MAR), and missing not at random (MNAR) (Mack et al., 2018).. Each category has distinct characteristics; the incomplete data for Participants 4 and 5 most aligned with the description of missing not at random (MNAR) (Mack et al., 2018).

Participant 4. In her correspondence with the therapist-researcher in this study, Participant 4 described the reasons for her dropping out of the study as an exacerbation of her depressive symptoms, which prompted her to travel overseas temporarily. Since the reason Participant 4 shared was linked to depressive symptoms, incomplete data for Participant 4 was categorised as MNAR. Typically, this category implies that attrition is attributed to unobserved data not measured in the study. Since depressive symptoms were not directly the focus of the study but still related to the study population of adults with treatment resistant depression, this information falls under the category of unobserved changes during the study.

Participant 5. Participant 5 attributed her dropping out of the study to chronic pain. Specifically, she shared with the therapist-researcher that she was experiencing “*post-herpetic neural pain*” and “*period pain*”, as the reason that she withdrew from the study. Since neuropathic pain was not the focus of the study but has been correlated with treatment resistant depression in the literature, Participant 5’s missing data was also categorised as ‘missing not at random’.

Insights from Incomplete Data

The overarching research question for this case series was: “Can a 12-week group dance/movement therapy intervention improve emotional regulation in adults with treatment resistant depression?” As mentioned in Section I of this chapter, an assumption listed at the beginning of the study was that developing interoceptive skills can stimulate proactive emotional regulation and reduce stress.

Further, in the discussion of the participants who completed participation in the study, there were three similarities noted: an increase in ‘noticing’ and a reduction in stress despite exposure to stress, a reduction in cortisol levels, and similarity in race. Like Participants 1, two, and three, and Participant 4 also experienced an increase in *noticing* body sensations (MAIA-2 subscale 1). Alternatively, unlike Participants 1, 2 and 3, Participant 4 did not experience a reduction in stress levels between timepoint 1 and timepoint 2. Similarly, while the individual interviews were conducted with Participants 1, 2 and 3, Participant 4 dropped out before completing her individual interview. Further, unlike Participant 1, 2, and 3, Participant 4 did not experience a reduction in perceived stress between timepoints 1 and 2.

In the discussion in Section I, two differences were noted between participants: the role of dance/movement therapy, and gender and sex differences. Participant 4 did not want to share the specifics of her racial and ethnic identity to avoid judgment regarding stereotypes she has experienced, which also points to encounters of racism in the past. From the obtained data,

there is insufficient information to indicate what role dance/movement therapy played in Participant 4's life.

Like the others, Participant 5 also identified as a person of colour. At the same time, the unique ethnicity of each participant is nuanced and cannot merely be reduced into one category.

14.19 Conclusion

The key findings noted in Section I were that dance/movement therapy offered a body-based form of self-assessment and regulation, a change in participants' negative somatic association, and an expansion in participants' capacity for regulation. Further insights from Participant 4's data are valuable in understanding her journey. In particular, the integrated results of Participant 4's data collected from timepoints 1 and 2 highlight cultural patterns of emotional suppression rather than expression and a possibility of "*fun*" and increased awareness of body sensations, despite an increase in perceived stress during the intervention period. Lastly, the additional challenges to treatment due to comorbidities in treatment resistant depression are reinforced via the attrition that occurred in this study.

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Chapter 15: Discussion

The overarching aim of this doctorate research was to explore how dance/movement therapy influences emotional regulation in adults with a diagnosis of treatment resistant depression. The results of studies two and three provide foundational data that is directly related to this thesis' aim. Alternatively, Study I illuminates the effectiveness of dance/movement therapy while discovering common practices used by dance therapists working with adults experiencing both stress and depression and thus the potential for application in treatment resistant depression. Since stress and depression are the main symptom clusters in treatment resistant depression (Murphy et al., 2017), this breakdown of symptomatology was a pragmatic step towards developing knowledge in this area. However, the connection is still indirect when contextualised within adults who have a confirmed diagnosis of treatment resistant depression.

Studies one and two were focussed more on processes and discovering '*how*' dance/movement therapy was being practised. Due to this, studies one and two also allowed for the exploration of relevant research topics within dance/movement therapy academia, as seen in the discussion sections of the relevant publications in this thesis (Chapters six and 10 respectively). Alternatively, the publication related to Study III was primarily focussed on outcomes. Hence, in Section I of this discussion chapter, I will consider intriguing aspects of Study III, including unanticipated outcomes that could not be discussed within the publication (Chapter 14, Section I).

The complexity of treatment resistant depression, as established in previous chapters, will not be discussed further in this chapter. Section II of this chapter will discuss the relevance of this doctorate research within dance/movement therapy academia, followed by recommendations for future research and discussing limitations of this doctorate research that have not been covered in previous chapters.

Section I: Further Discussion on Study III

Study three was a convergent parallel mixed methods case series designed to investigate the effects of a 12-week group dance/movement therapy intervention with adults with a diagnosis of treatment resistant depression. The first section of Chapter 14 presented the results of three participants who completed the study. The second section of Chapter 14 presented the incomplete data obtained from two participants who dropped out of the study.

With regard to participants who did not complete the study, the data suggests an increase in Participant 4's awareness of body sensations despite an increase in perceived stress. This data also highlights additional challenges to treatment due to comorbidities in treatment resistant depression. With regard to participants who completed the study, the key findings discussed in the previous chapter suggested that dance/movement therapy: (i) offered a change in participants' negative somatic associations, (ii) expanded the participants' capacity for regulation, and (iii) offered a body-based form of self-assessment and regulation. Further, the participants experienced a reduction in both perceived stress and biomedical stress (cortisol levels) and an increase in interoceptive awareness after participating in the 12-week group dance/movement therapy intervention. Additionally, in the integrated, mixed methods findings of the case series, the difficulty of learning new ways of managing stress in adults with a diagnosis of treatment resistant depression was noted. However, the potential reasons for this were not discussed in Chapter 14 and are hence discussed below. The data suggest three possibilities: unlearning helplessness, a comfort curve, and changes in motivation levels. These unanticipated outcomes provide valuable insight into the participants' journeys. I also discuss additional thematic and non-thematic insights that did not directly answer the research question of Study III but are additional learnings from this case series.

15.1 Unlearning Helplessness

Cognitive theories of depression propose that prolonged stress and depressive symptoms can cause learned helplessness (Vollmayr & Gass, 2013). Learned helplessness is a behavioural phenomenon that stems from a thought pattern which influences what one perceives as ‘possible’. While the theory has been long critiqued for its lack of causal explanation in all people with a depression diagnosis (Abramson et al., 1978), in the case of treatment resistant depression, the lengthy course of sub-optimal treatment effects adds a reasonable systemic cause for learned helplessness. In the case of treatment resistant depression, this learned pattern is not being able to change in response to treatment. Hence, learned helplessness perpetuates a thought pattern that change is possibly unachievable. Sedek and Kofta (1990) intelligently word the root of learned helplessness by titling their paper, “when cognitive exertion does not yield cognitive gain” (p.729). This statement is also applicable to the systematic medical exhaustion experienced by adults with a diagnosis of treatment resistant depression. It has also been proposed that learned helplessness can “corrode” internal motivation (Wu & He, 2022), which can understandably reduce one’s desire to take initiative and problem-solve. Although Study III was not focussed on behavioural outcomes, it appears that dance/movement therapy sessions resulted in this behavioural outcome (increased motivation) stemming from a shift in participants’ core beliefs regarding the potential to change an existing stress pattern. This was clear in the qualitative data from Participants 1 and 2.

Participant 1

According to Participant 1’s perceived stress scale scores, he experienced a reduction in perceived helplessness across the study (as seen in a reduction from 17 to 7 in subscale-1). At timepoint 1¹⁸, Participant 1 mentioned a strong desire to feel an absence of somatic cues

¹⁸ Timepoint 1 (week 1), Timepoint 2 (week 6), Timepoint 3 (week 12), Timepoint 4 (week 16)

related to stress and dysregulation - "*I crave that feeling.*" Simultaneously, he also described "*powering through*" his awareness of distress in his body passively rather than actively responding to or trying to navigate them. Since passivity has been associated with learned helplessness, it is plausible that one of the reasons for a change in this subscale score was a shift in Participant 1's thought patterns which were potentially rooted in learned helplessness. At timepoint 3, Participant 1 still shared his preference for not experiencing cues of stress and dysregulation in his body as he self-identified the absence of cues to mean he was "*relaxed*". At the same time, he also demonstrated a different outlook towards the end of the study, he said, "*of course I would be trying the different movements going forward*", indicating a shift from passivity to potentially thinking that change is possible and hence attempting to respond to his bodily cues.

Participant 2

At week 16, Participant 2 described the challenge of changing her stress response patterns; she said, "*It's hard to change,*" and attributed this to her "*character or nature*". She also used the phrase "*muscle memory*" while describing the difficulty in learning new ways to manage stress. Hence, expanding on learned helplessness from a somatic perspective. Participant 2's words compel consideration of what learned helplessness may look like in the body. Like Participant 1, Participant 2 also shared a shift in her cognitive and somatic patterns. However, this does not take away from the difficulty in being able to respond to stress differently.

In both cases, a categorical part of the dance/movement therapy intervention that may have contributed to such change is the 'Point of Return' experiential. Considering that this experiential was focussed on dancing through cues of dysregulation, it may have modelled successful, body-based problem solving, which challenged learned helplessness in Participants 1 and 3.

15.2 Change in Motivation Levels

Closely linked to unlearning helplessness are changes in motivation levels, as seen in Participant 2. However, it cannot be determined for certain whether her changes in motivation levels altered learned helplessness or vice versa. In the case of Participant 2, she described a clear increase in her motivation levels upon becoming aware of her stress response patterns. Her earlier stress response patterns seem connected to fatigue, discouragement from the belief that change may not be possible, and a sense of ‘passivity’ aligning with ‘learned helplessness’. At timepoint 1, she said, *“I just give up, you know, I just give up, lying in bed!”* However, at timepoint 4, she said, *“I push myself to do things...in a good way, not the harsh push.”* Upon asking what she meant by the phrase *“pushing herself”*, she clarified, *“more motivation instead of criticism.”* This response suggests that the 12-week group dance/movement therapy intervention helped increase Participant 2’s motivation levels, which was an unanticipated benefit and learning from this case series.

15.3 A Comfort Curve

Similar to the concept of a learning curve, here I use the term ‘comfort curve’ to encapsulate the time it took participants to get comfortable with the ‘dance and movement’ aspects of the intervention. As mentioned in the introduction section of the previous chapter (Chapter 14, Section I), the dance/movement therapy sessions were psychodynamically driven. Implying that they delved into and integrated unconscious process with consciousness. In this case series, this ‘becoming comfortable’ primarily involved learning and understanding one’s stress response patterns. Further, one’s perception of how dance and movement are perceived may also influence their comfort curve with the intervention. Four of the five participants shared having previous dance experiences, which may have influenced their expectations from the session and their willingness to engage.

15.4 Previous Dance Experience

With Prior Dance Experience

In the case of Participant 1, despite sharing his “*comfort*” with dance and movement via his own “*cultural dances*”, he expressed feeling conscious about certain aspects of the sessions. At timepoint 2, Participant 1 said, “*I have felt stupid myself on a few occasions of externalising how I was feeling and presenting it in different body movements. Yeah, like what we have been doing. I was thinking about I’m looking so stupid right now, right? I have had those kinds of thoughts; I would not say it’s frequent. It’s easy enough to follow the instructions and the thoughts haven’t been intrusive.*” Although Participant 1 said his thoughts were not intrusive, it is still a notable experience that can occur in sessions. Like Participant 1, Participant 4, had previous dance experience via formal dance classes and attributed her comfort with movement to this prior experience. At timepoint 2, she said, “*I also used to do some choreography dancing - so it is quite different from that kind of dance... I think it's more helpful in this session. In the choreography class, there is a fixed routine, and I feel very stressed out and if I am just dancing randomly it's lot of fun.*”

Without Prior Dance Experience

Unlike Participant 1 and 4, Participants 2, 3 and 5 did not share any specific information regarding prior dance experiences. In the case of Participant 2, she expressed being comfortable with dance and movement from the very first session. In the interviews, she clarified being comfortable while dancing with other group members and witnessing her movements being mirrored by others. Participant 2 did not indicate any specific time needed to get comfortable with the movement in sessions. However, she described feeling more comfortable when the mirrors in the room were covered compared to moving and dancing in front of the mirror. When the mirrors were not covered, she expressed feeling “*self-conscious*” and “*out of place.*” She also indicated a sense of fragmentation upon watching

herself move in the mirror. At timepoint 3, she said, *“When I look in the mirror, I feel out of place and can only see parts, like either my hands, or my nose, or my face,”* indicating a fragmented self-perception while dancing in front of the mirror.

Similarly, Participant 3 also described feeling self-conscious in front of the mirror. At timepoint 3, she said, *“...but with the mirror, I do tend to dissociate a little bit, just because I am looking at myself. Especially when I can see myself, but I don't feel connected.”* Apart from this discomfort with the mirror, Participant 3 described her comfort curve to include being able to overcome feelings of consciousness by the second or third session. She said, *“...walking into the first session, it was a little bit like - there's a lot of people here. Alright, like it just felt like a lot. But then afterwards, pretty much after one or two sessions it was easier to get comfortable with everyone. Like when you realise like everyone has their own thing that they're trying to work through.”* Since Participant 5 did not participate in the interviews, she did not contribute any data on this sub-topic.

Current literature lacks capturing if or how prior dance experience plays a role in participants' experiences or outcomes from dance/movement therapy sessions. However, some studies highlight data on the experiences of dance/movement therapy students as the research participants, since these students typically have prior dance/movement experiences, we can obtain some associated data on this topic. One study found prior dance experience to be an obstacle in pursuing dance/movement therapy training. No specific data about students' complex mental health experiences were reported. However, the students were reported to have a higher reliance on social welfare compared to the control group) (Wengrower, 2017). The author, Wengrower (2017), especially noted the challenge of letting go of learnt movement techniques and a shift from the aesthetic nature of movement to a more expressive nature of movement. It is unknown if this finding carries forward to research participants with complex mental health experiences.

Another dance/movement therapy study focussed on authentic movement as the primary intervention technique and, one of six study participants (n=6) reported having prior experience with authentic movement (Yahid, 2019). While Yahid (2019) does describe all participants as having varying degrees and types of prior movement experiences, the author does not explicitly categorise any differences in experiential outcomes between participants with or without previous authentic movement experience. Similarly, another study by Orkibi (2012) recognised prior artistic engagement in creative arts therapy students and it revealed that shifts and modifications occur in students' relationship with their art form (from aesthetic to expressive) throughout graduate studies. The author, Orkibi (2012) highlights the importance of individual differences and circumstances that must be accounted for to understand the influence of each person's artistic exposure and journey before experiencing creative arts therapy or its relevant trainings- as done via this case series approach. Since current literature does not ascertain an effect of prior dance experience in dance/movement therapy, these findings contribute to a nascent pool of literature on the topic of prior dance experiences on the experience of dance/movement therapy participants with complex mental health conditions.

15.5 Further Thematic Insights from Study III

The key qualitative themes identified in Section I of Chapter 13 were body, thoughts, and stress. These themes were developed based on the qualitative data and from the data transformation process (of converting quantitative to qualitative data), as depicted in Figure 14.6 in Chapter 14. Further, there were two more qualitative themes which do not directly answer the research question but are still two additional insights into understanding the thoughts and experiences of the participants in the case series; they are- the power of mirroring and comparing dance/movement therapy to previous therapies.

The Power of Mirroring

Participants 2 and 3 spoke to the benefit of mirroring, specifically as a process that enabled personal insight for each of them.

Participant 2. At timepoint 2, Participant 2 shared nuanced insight she gained into her emotions. She said, *“I think I’ve mentioned it before, like in a social event, I often feel so anxious...then, I realised in one session when everyone mirrored my feelings- I realised that anxiousness equals fear.”* This is a clear example of how witnessing her feelings being mirrored back to herself helped her differentiate and clarify her complex feelings in social situations. Mirroring helped her differentiate “anxiety” from “fear” which further enabled her to reinterpret her body language and movements with an emotion that resonated more accurately with her. In the session, Participant 2 emphasised the importance of this insight as it helped her become more understanding of her own needs in social settings.

Participant 3. During the interviews, Participant 3 specifically attributed “accepting” her presentation of depression to mirroring. She spoke about how mirroring was a clear initiator to a perception shift of what she thought depression was “supposed” to “look like.” Here, she highlighted how mirroring helped her gain insight into her unique presentation of depression. Participant 3 categorically attributed this to one of the sessions, which involved embodying and mirroring each participant’s experience and presentation of depression. At timepoint 2 she said, *“I think that’s the one that led me to be more accepting of myself. And to see that it’s very different for everyone, and to see how it looked like for myself from the outside.”* Further, she added, *“Because I always thought it had to look like a certain way... It was in life and depression in general, like, I know that even if it is for me, it means I’m still able to get things done, that doesn’t mean that I am not depressed. I am still. I’m just in my own version of it.”* It was through mirroring that Participant 3 gained insight into the variation in how depression may present differently in each person. This reinforces previous

dance/movement therapy literature that report an increased insight in participants after participation in sessions (Homann, 2010).

Comparing Dance/Movement Therapy to Previous Therapeutic Experiences

The third thematic insight that is not directly related to the research question was the participants comparing their experience of dance/movement therapy with previous therapeutic experiences (via therapy or therapy-based research studies). Since adults with treatment resistant depression have typically attempted to address their symptoms via varied types of treatments and approaches (Gaynes et al., 2020; Voineskos et al., 2020), this is not entirely surprising. Further, comparing dance/movement therapy with other therapies also indicates a reflective involvement from the participants; this assumption is linked to a review by Lai (2011) who suggested that critical thinking about any given topic is linked with a deep level of engagement. All three participants who completed the study shared their experiences of dance/movement therapy in comparison to other therapies in the interviews.

Participant 1 brought up his participation in a counselling and a social anxiety research study. He primarily highlighted the different types of structure in dance/movement therapy versus his previous research study experience and this case series. At timepoint 2, he shared, *“This is my third study... one was a counselling [study] and then another was a social anxiety study, and they went on like for 12-13 weeks, and in both, everything was connected...it was a lengthy process because every session the counsellor would ask us to do certain things during the week. And it's not the case with this therapy. So is it possible to maybe, for instance to add movements in each session that we can or at least I can repeat during the week... let's say, two things we can try during the week.”* From this example, it appears that Participant 1 desired more instructional support and structure from the dance/movement therapy sessions. This is a valuable insight while holistically understanding Participant 1's experience of the intervention. It is interesting to note this desire for work to

be completed between sessions despite having a structured intervention protocol in place. This begs a subsequent consideration of describing the meaning of the psychodynamic nature of sessions with participants during screening. Although Participant 1's final mixed methods results demonstrate desirable study outcomes, this mismatch in expectations may be vital to consider while planning future studies for this population. Finally, since Participant 1 did not discuss this again after timepoint 2, it may be plausible that a structured experiential like the 'Point of Return' addressed a gap in his experience of dance/movement therapy and previous research experiences.

As mentioned in Section I of Chapter 13, Participant 2 compared her experience of "*psychodynamic talk therapy*" with dance/movement therapy sessions. Specifically in terms of the former being oriented to the past and the latter being oriented to the present. She also discussed the potential for them to be complementary to one another due to dance/movement therapy's role in her life. She said, "*so, in personal [1:1] therapy, I take psychodynamic therapy, there's digging into the past and what's going on with you. But here, it's about the activity and for me, it's not so intense, it's more relaxed and comfortable to focus on what's going on right now.*" This experience reinforces current dance/movement therapy research, recognising dance/movement therapy's focus on the '*here and now*' as a potential benefit (Chace et al., 1993; Pierce-Knapp, 2010).

Lastly, Participant 3 shared her thoughts of dance/movement therapy being "*more helpful*" than talk psychotherapy. She attributed this to the dance and movement aspects of the session and a "*sense of connection*" with the group members which helped her be "*present*" and "*dissociate less.*" Further, Participant 3 shared about her recent experience with her psychotherapist (prior to the study); she said, "*...the past few times, that I ended up going there [talk therapy], I would just dissociate while we were talking, and I could tell I was dissociating, but I couldn't get back into it [the present] ... it [talk therapy] was like a*

tunnel vision.” Compared to her experience of talk therapy, she expressed being more “*motivated*” to attend dance/movement therapy due to being more present in sessions.

15.6 Non-Thematic Insights from Study III

I considered a few statements made by the participants to be poignant and relevant for discussion in this thesis. I have therefore considered them below. They were not shared across the case series.

1. “In the past I was bearing the pain without knowing I was bearing it. But now when I am aware, I feel angry.”

Increased emotional processing involves uncomfortable feelings, and hence this statement made by Participant 2 is an example that awareness comes at a cost. At timepoint 3, she shared, “*So, it’s like, before this time [the study], the pain in my body, it would start in my mind, and I could not get rid of the idea of it. So, I would worry about it. But now- I don’t worry about it, I just feel angry about it. Maybe it’s because I’m so stressed now.*” Here, Participant 2’s high stress levels were based on an external factor from resuming her studies after one year of medical leave; which also coincided with an increase in her PSS-10 scores at timepoint 3 compared to timepoint 2. However, despite this increase, her PSS-10 scores were still lower compared to the start of the study. Participant 2’s experience is critical as she highlights the burden of awareness. Although she desired to change her stress pattern and was able to begin doing this via the study, these quotes capture the hard work of therapy and “*feeling your feelings.*” While the benefits of becoming aware of self-patterns have been vastly documented in dance/movement therapy literature (Barnstaple, 2016; Dieterich-Hartwell, 2017; Hindi, 2012), the literature does not discuss the difficulty of processing the awareness gained even when it is desired, as it is in the case of Participant 2.

2. “Where is the dance in the dance/movement therapy?”

At timepoint 3 (week 12), Participant 1 posed an intriguing question in the context of his reflections on the study when he asked, “*where is the dance in the dance/movement therapy?*” It appears that although the sessions included active rhythmic movements, this did not match Participant 1’s expectation of what dance would look like in the sessions. It is unclear if Participant 1 was referring to the psychodynamic nature of the ‘dance’, which embraces ambiguous movement patterns to be the ‘dance’ in sessions. Regardless, this statement is relevant in the current dance/movement therapy discourse, including the critique and concerns specifically related to the dilution of ‘dance’ in dance/movement therapy sessions. In the recent years, the erasure of active dance from dance/movement therapy has been a topic of debate primarily in the USA. I concur with Chiriaeff (2020) who expressed that dance is movement, and all movement can be considered *as* dance in sessions (ADTA, Chiriaeff, 2020; Suzanne Garrison, personal communication, 2015). Alternatively, Erber (2024) specifies that ‘movements’ are considered to be fluid and explorative based on the present moment in sessions. Others emphasise the need to actively retain the stylistic use of dance as an art form (Elissa White, personal communication, 2016; Dannunzio, 2016) primarily owing to the capacity of dance to enable vitality in dance/movement therapy (Schmais, 1985).

While there are varied perspectives on an ideal version of dance/movement therapy, the debate and concern of the erasure of stylised dance has been an active part of the field since the work of the early forerunners in the USA. Trudi Schoop (1904-1999) advised caution towards relying too heavily on other theoretical fields in 1978, and eloquently described ‘dance’ as a “*physical formulation of self*” (Schoop, 2000, p. 96) and encouraged people to believe in the “*power of dance itself*” (Schoop, 2000, p. 101). At the same time, Schoop also encouraged agency in each person’s use of ‘dance’ in dance/movement therapy;

she said, “*however we use dance in our practice, it must relate to our human quality*”(Schoop, 2000, p.101).

Both arguments have their merit—expanding the definition of dance to include all movements that occur in sessions breaks the inherent expectations of the aesthetic movement and gender roles embedded in many dance forms (Erber, 2024) and allows for more emotional projection. Alternatively, the stylised use of dance offers rhythmic cohesion and catharsis. This tension between the varied perspectives of what constitutes ‘dance’ in dance/movement therapy among professionals and the expectation of participants when they read the word ‘dance’ is ever present in the field. This is also seen in the different expectations of dance in sessions as seen in Participant 1’s question at the end of the intervention sessions.

3. “*I always wanted to do it but never really took the risk, but now, I did it!*”

Participant 2 described feeling a sense of accomplishment from having completed the study. She said, “*at first, 3 months ago, I felt quite hesitant. Doing all these things because for me it's not easy. For me, it's a big challenge! It means that I have to really connect with the local event deeply. Which I always wanted to do, but never really, took the risk. But now I did it and I finished it. I really appreciate having this opportunity to take part in the research.*” This statement demonstrates the pride and joy that Participant 2 felt, which was an unanticipated, favourable outcome from the case series.

15.7 Study III, Contextual Considerations

Group Format

Considering that four of the five participants were international students in Australia, the group format of the intervention offered may have also influenced the results. Specifically, Participant 2 described the intervention as an opportunity to meet and connect with local people. At week six, she said, “*I think I really want to mention that- aside from the*

therapy itself. So, I think every week of people getting together. And that helps me build a connection with local people,” to which Participants 1 and 3 nodded in agreement. It is worth considering whether similar results would have been obtained if the dance/movement therapy intervention had been offered in a 1:1 format.

External Factors

As noted in the previous chapter, concurrent treatments may have played a role in the results of Study III (Table 14.2 in Chapter 14). In addition, social factors and limited access to resources may have also contributed to the study’s findings.

a) Social Factors. In the current literature, depression has been identified as an illness of power (Neitzke, 2016). Considering this viewpoint of depression, social factors that may have influenced the findings of this study should be considered. Within this case series, people of colour and international students were the primary demographic. The power disparity experienced by international students (Khanal & Gaulee, 2019; Newton et al., 2021) may be a contributing factor to the interpretation of data in this study. Since I, the therapist-researcher in the case series, was also an international student who was a person of colour, unconscious identification with the participants leading to researcher bias may have affected the interpretation of qualitative data. Caution and supervision were actively relied on to prevent bias in interpretation. Equally, this factor (demographic details of the therapist-researcher) could have also contributed to a safe emotional experience for the study participants, possibly affecting the results.

b) Limited Access to Resources. In the 1:1 interview, Participant 2 commented on limited resources as one of the lived experiences of adults with a diagnosis of treatment resistant depression. She said: *“yeah, you know, during my personal therapeutic experience, I know how hard it is for someone who has mental health*

issues to find the correct medicine, suitable doctors, the right way of treating themselves. I know how hard it is! And millions of people won't have the opportunity to get the least medical resource. They cannot get it! I think that's one of the things that motivated me to participate in this research because I know how limited the resource is.” In this quote, Participant 2 not only highlights the limited resources available for treatment resistant depression in Australia but also attributes her participation and engagement in the study to this social reality. As discussed in Chapter 2, Participant 2’s experience reinforces the literature that reports complex and limited healthcare experiences for adults with treatment resistant depression.

Section II: A Discussion on This Doctorate Research

Section II of this chapter will discuss the relevance of all three studies within dance/movement therapy academia. It will be followed by recommendations for future research and a discussion of the limitations of this doctorate research that have not been covered in previous chapters/ publications.

15.8 Are there any Answers Towards the Overarching Research Question of this Thesis?

The overarching research question of this study was: how does dance/movement therapy influence emotional regulation in adults with treatment resistant depression? To answer this question, I conducted two preliminary studies (a systematic review with meta-analysis and a descriptive survey). Through them, I identified the common dance/movement therapy interventions for main symptom clusters in treatment resistant depression; then, I examined the potential links between dance/movement therapy and self-regulation. Next, I conducted a case series in which the intervention was influenced by the preliminary studies towards answering the overarching research question. From the descriptive survey, I incorporated the active use of kinesthetic empathy as a pathway to regulation and from the

systematic review, I incorporated embodiment, active body engagement, and the relational use of movement in the intervention of Study III.

The case series revealed somatic aptitude (described as an interplay between interoception and embodiment), and a body-based form of assessing and responding to dysregulation, as possible influences towards regulation in adults with treatment resistant depression. Given the limited data available due to the low sample sizes (especially in Study II and III, i.e. the descriptive survey and case series), it is not possible to generalise these findings. However, the overall findings can be built upon and or challenged via continued research on these topics.

15.9 Theoretical Perspectives in Dance/Movement Therapy and Key Findings of This Doctorate Research

Due to the paucity of literature on the research topics of this doctorate research, contextualising the outcomes of this study within literature strictly focussed on treatment resistant depression is somewhat restrained. However, the findings of this doctorate research do build upon existing literature on dance/movement therapy and its effects on adults experiencing depressive symptoms (Bradt et al., 2015; Goldbeck et al., 2014; Jeong et al., 2005; Karkou & Meekums, 2017; Koch et al., 2014; Koch et al., 2007; Meekums et al., 2015; Xiong et al., 2009) by expanding the literature to include treatment resistant depression. Further, since everyone with a diagnosis of treatment resistant depression was first diagnosed with depression, this makes the findings of this doctorate research relevant to depression research too. The current literature suggests that dance/movement therapy reduces secondary symptoms of depression like stress (Timmermann et al., 2024) and can enable a small improvement in negative body association (Pylvänäinen et al., 2020) which is also reported in this case series. Additionally, the cortisol level findings from the case series study also

reinforce emerging evidence that dance/movement therapy can be beneficial in reducing secondary symptoms of depression, like stress.

A Thread of Kinesthetic Empathy

In the introduction chapter of this thesis, I noted kinesthetic empathy as central to my dance/movement therapy practice. I noted this after discussing three vignettes from my practice: excerpts from my work with Dina, Evin and Claudia at an outpatient day treatment program in New York, USA. I introduced their stories to demonstrate the change I noticed in participants' responses to stress, which was towards an antecedent-focused emotional regulation strategy (Colombo et al., 2020). I also used the phrase "clinical introspection" which helped me discern that my therapeutic presence is primarily driven by kinesthetic empathy. This introspection involved reflecting on the various dance/movement therapy and non-dance/movement therapy theoretical influences. I then extracted the commonalities among them to identify if there was a core to my therapeutic presence and dance/movement therapy practice. During this process, I reflected on the work of Blanche Evan (1909-1982), Marian Chace (1896 -1970), Trudi Schoop (1904-1999), and Carl Jung (1875-1961). As a result, I made a note of phrases from the description of these named influences that aligned with my work both cognitively and somatically. Here, my decision was based on somatic alignment, which was similar to the process I described in Chapter four, where I discussed incorporating my body towards decision-making. The phrases I noted were mutual connection, empathetic response, embodied communication, empathise through movement, and empathic attunement to subtle embodied cues. After reviewing these phrases in isolation, I noticed an interesting and potentially apparent discovery. I realised these phrases were not specific to one dance/movement therapy forerunner or innovator.

Further, I realised that these words were arguably not unique to dance/movement therapy as a field either. It was this recognition from my "clinical introspection" which

helped me confidently assert that my practice is both influenced by and not limited to the methods of Blanche Evan (1909-1982), Marian Chace (1896 -1970) and Trudi Schoop (1904-1999). However, at a more foundational level, I identified kinesthetic empathy within the therapist-participant relationship to be central to my therapeutic presence.

Despite my clarity of understanding kinesthetic empathy being foundational and central to my therapeutic presence, there are variations in how kinesthetic empathy has been described in this doctorate research. In Study I (systematic review and meta-analysis), I do not discuss kinesthetic empathy, as the focus of the study was to discover common practices used in dance/movement therapy with adults experiencing both stress and depression that were *beyond* kinesthetic empathy. Study I was also focussed on learning about the efficacy of dance/movement therapy on the primary symptom clusters of treatment resistant depression, i.e., stress and depression. However, in Study II, which was a descriptive survey, I focussed primarily on kinesthetic empathy and described it as something that can be ‘used,’ insinuating that kinesthetic empathy can be ‘applied’ as a method in dance/movement therapy.

Next, in Chapter four, where I discuss my process of developing the intervention protocol for Study III, I reiterate my curiosity about kinesthetic empathy and the therapeutic movement relationship. Here, I describe kinesthetic empathy as a *method* that can be *applied* toward co-regulation between the research participants and myself as the therapist-researcher. I mention three phases for the theme development section of sessions, each lasting four weeks. They were sensory identification and interoception, co-regulation, and finally, emotional self-regulation. In these phases, I mention and describe kinesthetic empathy as a *method* that can specifically enable co-regulation in a relational therapeutic experience. Although my understanding of kinesthetic empathy as a method has been elucidated in Chapter 10, the publication (Chapter 14, Section I) does not focus on kinesthetic empathy as it was specifically conducted to discover the ‘effects’ of dance/movement therapy. In Study III,

I also re-iterate kinesthetic empathy within dance/movement therapy to be a unique relational experience between a dance/movement therapist and their participant/s. I also use Meekum's (2012) description of kinesthetic empathy to be a metaphorical offering that calls for engaging sensory awareness, embodied attunement, and active body engagement. description of kinesthetic empathy, which calls for engaging sensory awareness, embodied attunement, and active body engagement to offer kinesthetic empathy. Lastly, I acknowledge my use of the phrase 'relational process' while describing kinesthetic empathy in Chapter 14.

At face value, these descriptors of kinesthetic empathy may seem inconsistent, but instead, they are an explicit symbol of a larger difference in the perceptions of kinesthetic empathy ongoing in the field of dance/movement therapy (Artpradid, 2023; Christopher & Tamplin, 2022; Ehrenberg & Wood, 2011; Federman, 2011; Fischman, 2015; Rova, 2017). These differences also capture the complexity of understanding and developing knowledge around kinesthetic empathy. Another reason for a potentially inconsistent appearance has been my decision to intentionally avoid one universal definition of kinesthetic empathy (as stated in Chapter 10, Study II). In doing so, I aimed to demonstrate an openness to the ongoing discovery of what kinesthetic empathy means in dance/movement therapy. Further, my decision was based on my ontological stance of *Anekantavada* (अनेकान्तवाद), which propels me to embrace multiple perspectives and fully accept the absence of one specific definition with regard to understanding kinesthetic empathy.

On a deeper level, each description of kinesthetic empathy in this doctorate research illuminates essential aspects of it, such as being central to the 'relational process' and a 'method' in dance/movement therapy. This integrated perspective of kinesthetic empathy is seen in Study III, specifically by my use of Meekums's (2012) description of kinesthetic empathy as a metaphor for a therapeutic relationship which include sensory awareness, embodied attunement, and body engagement. Sensory awareness and body engagement can

be viewed as the result of kinesthetic empathy as a method. In contrast, embodied attunement highlights a possible outcome of the relational process embedded in kinesthetic empathy. In this doctorate research, sensory awareness and active body engagement were explicitly used in Study III; alternatively, embodied attunement was inherently present in Study III and identified in the findings of Studies I and II.

Since kinesthetic empathy itself was not the focus of Study III, I draw on Meekum's (2012) description of kinesthetic empathy and discuss the thread of kinesthetic empathy via participant examples on these three aspects as an integrated presentation of theory and research observations:

Sensory Awareness. As mentioned in Chapter 12, sensory awareness and interoception were the primary goals from weeks 1-4 of the intervention in Study III. In the interview at timepoint 3, Participant 1 shared his experience of noticing an increase in his sensory awareness. He said, *"I think I've been increasingly becoming aware of my body's sensations. That is something that I've been observing over the last 2-3 months."* Here, it is evident that Participant 1 is highlighting an increase in his interoceptive awareness. Simultaneously, this quote suggests sensory awareness as a form of knowledge. Considering the implicit nature of kinesthetic empathy in the session, this example reinforces current research that suggests kinesthetic empathy as a nuanced form of knowledge (Artpradid, 2023) and sensory awareness as a component of kinesthetic empathy (Meekums, 2012).

Active Body Engagement. Active body engagement was an explicit part of all 12 sessions of the intervention. My use of active body engagement involved cognitive, emotional, and somatic aspects of the body. For example, Participant 2 shared that dance/movement therapy sessions helped her *"pay attention to what's going on around the body"*. The use of the word "attention" represents both a somatic and cognitive engagement hence combining sensations with thoughts. This link between embodied cognition and

kinesthetic empathy has been reinforced by Artpradid (2023). Likewise, Participant 3 also alluded to active body engagement which helped her stay cognitively and somatically engaged. She said, *“the more I am with my body- the more present I am.”* Another example is when Participant 3 said, *“like for me today, it made me realise that, when I’m moving a certain way I start to feel a certain way.”* Here she specifically highlighted the influence of her body on her emotional state. She said, *“...Like when we were doing the heaviness, I could feel my face kind of going into like a frown.”* Participant 3’s example demonstrates how certain types of body engagement (specific postures) may influence emotions. Reed et al. (2020) encourage caution concerning the generalisation of a standardised view of the influence of body postures on emotions, thus, encouraging personalised meaning making based on postures for each person, as seen in the example of Participant 3’s quote.

Embodied Attunement. Compared to the first two aspects of kinesthetic empathy, as explained by Meekums (2012), embodied attunement was more implicit rather than explicit. Essentially, there was no specific goal of embodied attunement; however, it was still experienced in the sessions. This has been described by Participant 3 when she attributed accepting her presentation of depression to a session where the group members engaged in mirroring. Participant 3 said, *“I think that’s the one that led me to be like more accepting of myself. To see that it’s very different for everyone, and to see how it looked like for myself from the outside.”* This example seems fitting with the emergent research highlighting mirroring to create empathic attunement between two individuals (Castro Jaramillo & Panhofer, 2022). Castro Jaramillo and Panhofer (2022) also suggest that mirroring and embodied attunement to be transformational tools which can increase bonding and safety. Embodied attunement was also possibly seen in the “safety” Participants 2 and 3 reported experiencing in the group.

Hence, through this doctorate research, I have intentionally touched on varied perspectives of kinesthetic empathy based on a core recognition that kinesthetic empathy is inherently multifaceted and cannot be easily reduced to one single definition. Further, along with kinesthetic empathy, the third study of this doctorate research utilised somatic aptitude as a way of supporting emotional regulation in the participants.

Discovering Somatic Aptitude

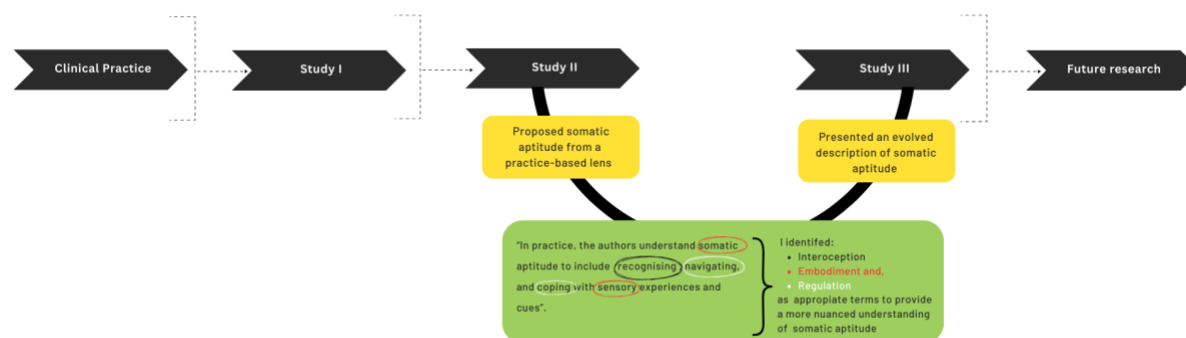
Compared to kinesthetic empathy, somatic aptitude was not an interest that stemmed from my clinical practice. Instead, it was an interest that evolved from within this doctorate research, specifically from Study II.

Prior to Chapter 10 (which describes Study II), somatic aptitude had not yet been discovered. Following Study II, somatic aptitude was added as one of the key terms in the Introduction chapter of this thesis. In retrospect, I also recognise the presence of somatic aptitude in the literature review (Chapter two) based on its practice-based description as a skill that helps recognise, navigate, and cope with sensory experiences and cues (Erber, 2024). Specifically, somatic aptitude is apparent in the sections where I discuss emotional self-regulation as the body's way of seeking stability amid stress and highlight actively using the body as a resource towards stability in Chapter two (Jeong et al., 2005; Meekums et al., 2015; Röhricht et al., 2013; Xiong et al., 2009).

Considering that somatic aptitude is not an existing dictionary term, my proposed description of somatic aptitude also evolved between Study II to Study III. When conducting Study III, I labelled previous descriptors of somatic aptitude to fall under the description of interoception and embodiment with a goal of regulation. While the descriptions in Studies II and III hold the same core meaning, I present a more nuanced understanding of somatic aptitude in Study III. Figure 15.1 below represents the evolution of this term in this doctorate research.

Figure 15.1

Visual Evolution of the Term Somatic Aptitude



Therefore, when I used the term somatic aptitude in the aim of Study III, it demonstrates the same intent of using the body as a resource via interoception and embodiment towards regulation. The aim of Study III was, “To explore the effects of group dance/movement therapy sessions on stress associated with treatment resistant depression and improve emotional regulation through somatic aptitude.” Since this term was discovered through the research process, it is a tangible example of allowing the data to guide me in this doctorate research.

15.10 A Dance of Possibilities

Reflecting on the prospects that emerge from this research, I considered four main lenses: 1) The therapist’s offering; 2) The client experience; 3) Future research, and 4) A confluence of therapist offering and client experience via the ‘Point of Return’ experiential. Here, the phrase ‘dance of possibilities’ seemed most fitting due to the following reasons. First, the methods of studies conducted in this doctorate research focused on gaining foundational data regarding dance/movement therapy for adults with a diagnosis of treatment resistant depression and not generalisable data. Therefore, the term ‘possibilities’ does not overestimate claims but simply presents what is possible based on the obtained data. Second,

the phrase ‘possibilities’ ascertains the need for further inquiry. Third, the word ‘possibilities’ suggests potential. Potential regarding the outcomes of dance/movement therapy within the overarching question of this doctorate research including unknown findings that are yet to be discovered in this research area. The possibilities have been categorised under four sub-headings below.

First, a Dance of Possibilities Regarding Participant Experiences

As mentioned in the introduction of this thesis, the term ‘participants’ was used instead of clients/recipients of care/ consumers, etc. The same applies here. This doctorate research has implications for how participants can be better supported through dance/movement therapy, primarily in three specific ways.

1. As the Antithesis to the Medical Model. Poor doctor-patient relationships, including those that can be dismissive and lacking empathy (McPherson et al., 2014) have been reported as negative experiences of adults with a diagnosis of treatment resistant depression. Considering that dance/movement therapy is inherently strength and agency based, the very option to participate in dance/movement therapy could be beneficial. Additionally, embedded within participation in dance/movement therapy sessions comes access to choice and opportunity for emotional expression, which is inherently antithetical to the reductiveness of the medical model. In this way, dance/movement therapy may also juxtapose the unequal power dynamics of the medical model.

2. As a Step Towards Social Parity. Continuing from the previous point, dance/movement therapy sessions offered within the medical model (inpatient, outpatient hospital settings etc.) may also be a way to create an environment towards parity between providers and participants. Literature on treatment resistant depression categorically encourages collaborative relationships between participants and their care providers (Ellison & Harney, 2000). Since the 12-week protocol used in the case series mindfully promoted

collaboration and partnership, it could be adapted and used as an avenue to create change towards dismantling power dynamics to an extent and promote social parity within healthcare.

3. To Alter Negative Somatic Associations. Although dance/movement therapy's effect on negative somatic associations was not the focus of the case series, all three participants who completed the study reported experiencing a shift in their negative somatic associations. Specifically pausing and attempting to understand their somatic cues instead of assuming that all sensations indicated an undesirable emotional state (which Participants 1, 2, and 3 reported as high stress and anxiety). Considering the list of potential comorbidities in treatment resistant depression (Adekanattu et al., 2023), Study III's intervention protocol could be incorporated to encourage participants to make new meanings from their somatic cues rather than associate them with heightened negatives states. This also aligns with the psychotherapeutic principle of 'inner-reality testing' (Billow, 2016), which highlights the need to question one's affective perception or evaluation of situations.

Second, a Dance of Possibilities Regarding the Therapist's Offering

Although the focal population of this doctorate research was adults with a diagnosis of treatment resistant depression, the findings of this research are also relevant to major depressive disorders. This is because the prevalence of treatment resistant depression is within major depressive disorders (Fava, 2003). Hence, the practice recommendations from all three studies have been combined in Table 15.1 below as a consolidated view of possibilities in therapists' offerings based on this doctoral research.

Table 15.1*Consolidated Practice Recommendations from Studies I, II, and III*

Study I: Systematic review and Meta-analysis	
Aim	Movement Recommendation
- To encourage diverse and expansive movement patterns - To utilise the psychotherapeutic component of dance therapy	- Use of props for ‘surrogate movement expression’ based on the projective quality of props may be used to facilitate expansive movements. - Use of verbalisation and metaphors.
Study II: Descriptive Survey	
Aim	Movement Recommendation
- Co-regulation between therapist and participant - Attunement with self (for the participant)	- Mirroring and embodied attunement to create a space for co-regulation. - Shared rhythms for group cohesion - Use of metaphors to connect the conscious and unconscious awareness - Exploring diverse movement pathways - Verbal discussion about developing one’s own sense of kinesthetic empathy
Study III: Case Series	
Aim	Movement Recommendation
- Understanding personal stress response pattern - Emotional regulation: Via a three-phase dance/movement therapy intervention protocol, each phase lasting 4 weeks focused on: a) Interoception and sensory identification b) Co-regulation	- Point of Return’ experiential as a body-based assessment a) Sensory exposure via use of props or, externalizing or, somatic tracking or, internal rhythms or, mirroring or, using memory to track past body-based sensations. b) Playing with polarities or, improvisation movement and/or choreography or, recognising the ‘Point of Return’ experiential.

Further, findings from Study III could also be used specifically while working with participants who wish to emotionally regulate themselves differently via dance/movement therapy. Here, the three-phase evidence-informed theme development section of Study III could be directly offered to participants.

Third, a Dance of Possibilities Regarding Future Research

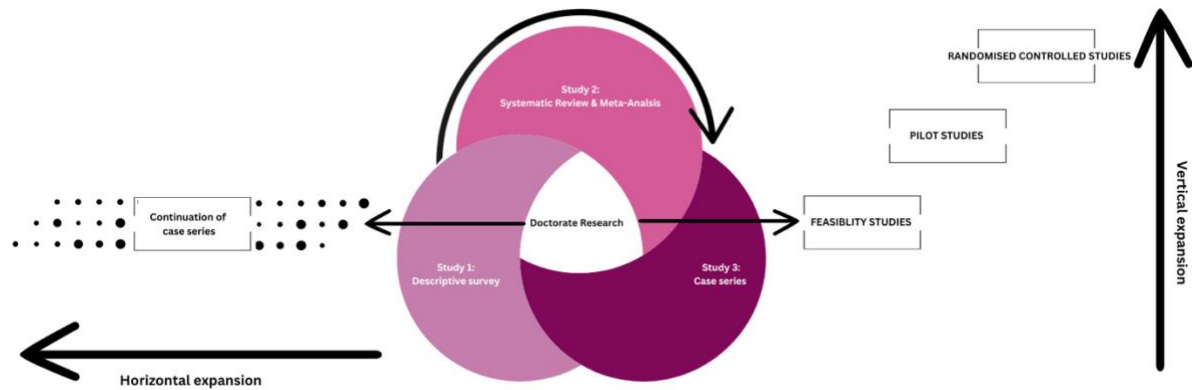
Considering this doctorate research included exploration on a niche and novel topic in dance/movement therapy, there is great potential for further research. Future research could follow one of two trajectories:

1. Vertical Expansion. Here, I use the term vertical to suggest research that can build upon this doctorate research to develop an evidence-based protocol or generalisable data focussing on outcomes. In the case of this vertical expansion, the next steps may include conducting a feasibility study where the evidence-informed protocol developed in this study is assessed and modified if needed. Next, small-scale pilot studies could be conducted, followed by a large-scale randomised control trial. The possibility of vertical expansion is represented in Figure 15.2 following the next paragraph.

2. Horizontal Expansion. Here, I use the term horizontal to suggest research focussed on deepening current knowledge on the participant experiences. In the case of this horizontal expansion, the next steps may include continued case series studies based on the evidence-informed protocol with participants across different ethnic groups and geographies. The goal of this horizontal expansion would be to retain the case series format but diversify the population demographic by discovering how individuals from different backgrounds experience this group dance/movement therapy intervention (illustrated in Figure 15.2 below).

Figure 15.2

Visual Evolution of Research Possibilities



Since the findings of the case series reinforce the influence of body-based assessment of dysregulation (body) on perception (mind), a tangible area of focus for future research could be examining the mind-body nexus from a neurobiological lens within this population. Obtaining tangible answers for the underlying mechanisms responsible for such change will contribute valuable knowledge as dance/movement therapy continues to advance as a field.

The findings of this case series suggest a reduction in cortisol levels following dance/movement therapy intervention. As higher cortisol levels are associated with an overactivation of the hypothalamus-adrenal-pituitary axis in depression (Amasi-Hartoonian et al., 2022), there is tremendous potential to investigate how dance/movement therapy affects this critical axis in emotional regulation. It is recommended that future research considers hair cortisol concentrations compared to other forms of cortisol collection. Hair cortisol is most suited for dance/movement therapy research as cortisol in hair is unaffected by movement or circadian rhythms, as seen in cortisol collected via saliva or blood samples, thus avoiding confounding variables while measuring outcomes. Further, since every three inches of hair can determine cortisol concentrations for six weeks at a time, retrospectively, this type

of data collection can potentially reduce participant burden by reducing the number of samples required (as seen in this case series).

Lastly, since the findings of the case series suggest that dance/movement therapy enables a perception shift regarding participants' capacity to regulate themselves across all three participants, another tangible direction for future research could be researching and discovering the mechanisms through which change within established thought loops/patterns was possible.

Fourth, a Confluence of Therapist's Offering and Client Experience via the 'Point of Return' Experiential

This experiential titled 'Point of Return' was conceptualised through the braiding process I described in Chapter 12, titled 'dancing with the data'. Through this reflective movement practice, I conceptualised and integrated interoceptive awareness and dance to assess and respond to cues of dysregulation in the body, which I carried out from week 6 onwards in the intervention protocol. I present an animated video example to demonstrate this experiential. The animation is based on an example from this study where the 'Point of Return' experiential was used to recognise stress patterns, move through them differently, and identify each person's pivotal cue before they self-determined the need to start practising self-regulation. As mentioned in Chapter 14, this closely aligns with the allostatic load theory of stress, which aims to combine daily processes geared towards homeostasis and highlights the importance of being aware of patterns of individual responsiveness to stress (Word et al., 2022).

Video 15.1

Animation Demonstrating the 'Point of Return' Experiential



Note: Please click on the image above to view the video; closed caption have been enabled

All three participants discussed incorporating this experiential in their lives in some way. Participant 1 said, *“The Point of Return is something I keep going back to...I try to not go beyond. Yeah. Yeah, kind of. Maybe try to keep myself in the first part of the spectrum where it is more manageable and more comfortable than going to the other extreme.”*

Likewise, Participant 2 gained insight into her movement patterns and what they meant for her emotionally. She said, *“it helps pay attention to what’s going on around the body.*

Especially understanding how the movements and expressions link to emotions...And also,

overall, the structure made me consciously aware of how I can therapise myself.” In the

context of the interviews, the phrase *“therapise myself”* was indicative of regulating her

emotions. Participant 3 also specifically shared that she was developing a more nuanced

understanding of her individual stress response patterns. At timepoint 3, she shared, *“I knew*

before that I was tired, but I wasn't sure to what extent. But now I know to what extent I am

tired. And even throughout the day, I can sort of check-in and see how tired my body is.”

Participants 4 and 5 dropped out of the study before having the opportunity to practise this experiential.

This evidence-informed experiential has the potential to be tried in tele-health based dance/movement therapy practices. Further, since the process of developing this experiential equally valued traditional forms of evidence and artistic reflexivity, it not only provides a tangible experiential within this population but also models a decolonised and pragmatic way to innovate experiential within the medical model. Hence, this experiential is a confluence of the possibilities of both the therapist's offering and the clients' experience that emerged from this doctorate research.

15.11 Closing Reflections and Observations

Navigating the Challenge of Low Recruitment

Study II. As mentioned in Chapter 10, the invitation to participate in the descriptive survey was shared with potential participants via newsletters and emails through various professional dance/movement therapy associations across the globe. Despite keeping recruitment open for four months, the survey received a response rate of 4.72%. In Chapter 10, I listed highly demanding work hours during the COVID-19 pandemic and reasonable therapist fatigue as potential reasons for the low response rate. Upon further reflection, another possible reason for this low response rate is that perhaps not many therapists invited to participate resonated with using kinesthetic empathy in their work. Or, if they did use kinesthetic empathy in their work, they may not have been working in treatment resistant depression. The low recruitment numbers indicate possible barriers to be addressed in future research in the area of dance/movement therapy and treatment resistant depression. Despite the low response rate, a deductive qualitative analysis method enabled generation of data from the responses received to answer the research questions.

Study III. As mentioned in Chapter 13 (bridging material), Study III was initially conceptualised to be a two-group comparative study (each group consisting of five participants). While it was possible to recruit the first group, I was unable to recruit a second group. During recruitment, I received 18 expressions of interest from the community. Ineligibility was due to not having tried any form of treatment prior, hence not categorising their condition to be treatment resistant, as well as logistical and comorbidity-based challenges. Some individuals who were eligible to participate could not do so due to mobility concerns and incompatible schedules. This pattern of co-occurring conditions coming in the way of participation was also seen in the case of Participant 5, who had to drop out of Study III to manage her chronic pain and, Participant 4 dropped out to prioritise managing her depressive symptoms.

Although this challenge of low recruitment was navigated by altering the format of Study III to a case series, it was a considerable challenge during data collection. It is worth considering whether this pattern in low recruitment for this diagnosis indicates how the condition itself may be a barrier to accessing treatment and a contributing factor to low recruitment with attrition.

Reconceptualisation of Studies Due to COVID-19

Having begun my doctorate research amid the COVID-19 pandemic, part of my duty of care to potential participants required me to think carefully and redesign my initial research proposal to suit social distancing. I did this by reconceptualising the third study to be a telehealth study. Further, due to travel limitations, even a potential in-person study was being designed while keeping the cultural context of India in mind. However, with COVID-19 restrictions being lifted, I further reconceptualised my research plan to conduct Study III in person in Australia. While this back and forth was not uniquely my experience but faced by many engaged in research in the last four years, navigating a pandemic while responding

to the evolving research needs was particularly challenging. Supervision and peer support were primarily used to navigate future anxiety (Miki et al., 2020), which has been identified as an implication of conducting research through the pandemic.

Grappling with ‘Felt’ Inauthenticity as a Therapist

As mentioned under the section describing potential social factors in this Chapter, Study III left me curious about the role of my racial identity on the obtained findings. Although I did not intentionally recruit a group of people of colour, the outcomes of the group’s racial composition left me wondering about any other chance-based occurrences based on my racial representation in the social microcosm of group-dance/movement therapy, which may have influenced the findings. Since I did not include my field notes as a form of data, I am left wondering if the participant report is a sufficient way to gather data towards understanding the reality of adults with a diagnosis of treatment resistant depression. Or would an alignment with *Anekantavada* (अनेकान्तवाद) imply incorporating the therapist’s observations too to obtain multiple perspectives? Further, since my stance on epistemic relativism highlights my belief in generating knowledge that is congruent with social realities, I am curious about unexplored avenues by not involving my perspectives on the social microcosm of the sessions. Considering this research was within the logistical time constraints of a doctorate project, I chose not to modify my protocol, (as it had taken a year to obtain ethics approvals for research with this vulnerable population). However, the above-described reflections have lived in my body as the therapist researcher since the unanticipated recruitment of a group of people of colour. I have held the tension between what felt inauthentic to my therapist self and the need for a safe and reasonably predictable intervention protocol in the best interest of my research participants and “researcher self.”

As part of playing a dual role of therapist-researcher in Study III, I acknowledge being keenly organised in my role as researcher with the responsibilities of implementing the

therapy program. However, considering that any relational therapeutic experience opens itself to unconscious processes like projection, transference, and countertransference, I am left reflecting on any potentially missed opportunities for exploring these dynamics due to having an intervention protocol. While I recognise the importance of this for the safety of research participants, I simultaneously wonder how it may be possible to involve the therapist-researcher to engage with such unconscious processes in sessions while conducting mixed methods research. The role of such spontaneity in responding to unconscious processes is clear in interpretivist research, I recognise this as an area of my future development as an early career researcher interested in mixed methods research.

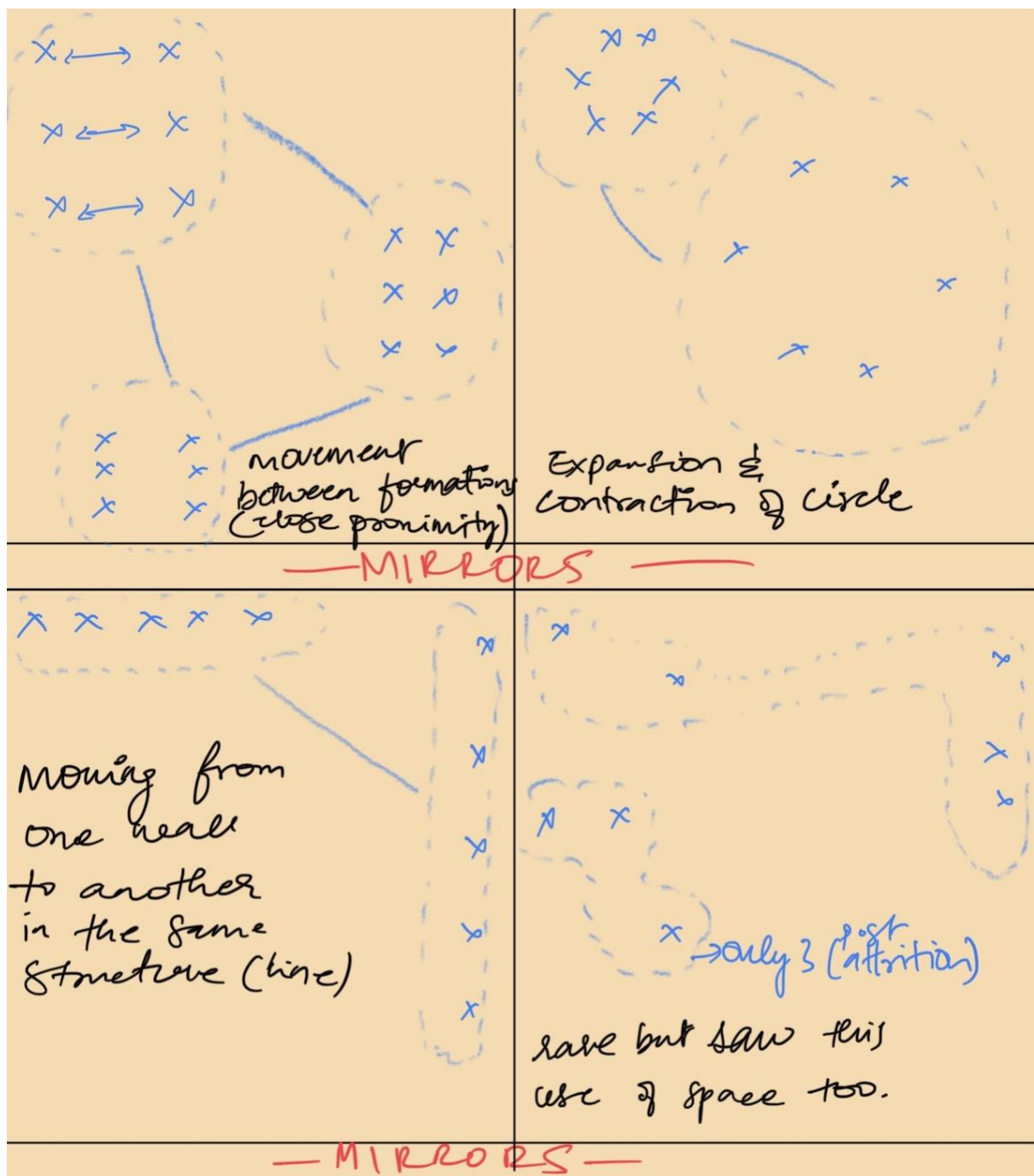
Curiosity about Use of Space

As a dance/movement therapy student, I was taught that a smaller use of kinesthetic space indicated lesser psychological flexibility than a more expansive use of space. In the case series, each participant certainly had a unique way in which their bodies interacted with the space, but it was not necessarily small or limited. In fact, I observed the participants using expansive movements from the first session. As I reflect upon this, I wonder if this observation challenges this assumption in dance/movement therapy or is representative of the individuals compartmentalising or masking their symptomology to an extent in sessions. Due to the persistent nature of treatment resistant depression, it would not be surprising if participants had learned to cope through masking.

I did notice an interesting pattern in the group's use of space across the intervention period. Each week, without any specific direction towards the shared use of space, I noticed the group moving across different room areas, but together. I noticed the group members maintained proximity with one another unless I intentionally directed them to explore/move in different parts of the room. I have included a drawing from my field notes to demonstrate this in Figure 15.3 below.

Figure 15.3

Reflecting on the Use of Space; An Image From my Field Notes (drawn on week 12)



The group moving in a personally expansive and collectively explorative way in the space is an area of further exploration for myself. I am especially reflecting on this as space was not explicitly explored in the systematic review and meta-analysis and was not a part of the survey respondent's responses either.

Use of Language in this Doctorate Research

In the introduction chapter, I stated my goal to inhibit de-personalising and pathologising language like ‘depressed adults’ by replacing it with ‘adults with a diagnosis of treatment resistant depression’. However, through this doctorate research, I recognise that this has not always been possible, particularly due to incorporating publications subject to word limits and peer review feedback towards using more succinct language. As a result, I acknowledge a minor loss in agency as I have discussed my doctorate research differently to the way I had initially envisioned it (specifically, regarding the use of language). Hence, I actively tolerated and worked through this tension between the need for research dissemination via publications and the ability to use consistent language and terminology across the thesis. I relied on the philosophy of pragmatism to reassess the binary idealism between “good/ bad”, “acceptable/ unacceptable”, and “consistent/ inconsistent” language to accept the complex reality of conducting research within the constraints of a thesis with publications.

Reflecting on the aforementioned ‘dance of possibilities’ that emerged from this doctorate research whilst navigating challenges, the role of pragmatism and *Anekantavada* (अनेकान्तवाद) is made evident. Further, the closing thoughts and reflections listed above (such as the restricted use of language based on compiling a thesis with publications and grappling with felt inauthenticity) may be a consideration for added support for doctorate candidates from Universities. Lastly, the steps taken towards developing an evidence-informed intervention protocol for Study III and the consolidated practice recommendations (Table 15.1 in this chapter) remain significant contributions as foundational developments in the area of dance/movement therapy and treatment resistant depression.

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Chapter 16: Conclusion

This doctorate research was conceived from a desire to explore my observations from practice, specifically, observations of increased capacity for emotional regulation in adults with a diagnosis of treatment resistant depression after engaging in dance/movement therapy sessions. As previously identified, treatment resistant depression is a challenging diagnosis to live with, not only due to the nature of the diagnosis itself, which causes significant long-term low mood (Schroder et al., 2022), but due to associated co-morbidities, sub-optimal doctor-patient relationships, and high costs linked with long-term treatments (Cusin & Peyda, 2019).

Common interventions for treatment resistant depression include pharmacotherapy (i.e., antidepressants, antipsychotics, nitrous oxide, psychedelics, etc.), biomedical approaches (i.e., transcranial magnetic stimulation and surgical neuromodulation), and psychotherapy (Thase & Connolly, 2019). Apart from psychotherapy, these treatments have unpleasant physical side effects with long-term health repercussions and can also be invasive (specifically, neuromodulation), thus driving the need for research on creative, strength-based, non-invasive treatment options like dance/movement therapy. Further, my value centring *न्याय* or justice (mentioned in the Introduction), along with the prevalence¹⁹ of treatment resistant depression (Hankerson et al., 2022; McIntyre et al., 2023; Ross et al., 2018), cemented my desire to advocate for creative treatment approaches through research in this area.

Although treatment resistant depression had not yet explicitly been explored in dance/movement therapy literature, my doctorate research has collected formative data demonstrating the potential for dance/movement therapy to increase participants' capacity to self-regulate in this population; and build upon existing research on dance/movement therapy

¹⁹ Approximately 40-120 million individuals (i.e., 30% of individuals with a diagnosis of depression), out of which Black, Indigenous, People of Colour, and members of the Lesbian, Gay, Bisexual, Transgender, and Intersex++ community are disproportionately affected.

and depression (Bradt et al., 2015; Goldbeck et al., 2014; Jeong et al., 2005; Karkou & Meekums, 2017; Koch et al., 2014; Koch et al., 2007; Koch et al., 2019; Meekums et al., 2015; Xiong et al., 2009). Reflecting on the literature review in this thesis, I wish to reinforce two key discoveries which equally paved the way for this research: 1) the recognition of depression as an interoceptive disorder (Dunn et al., 2010), and 2) discrediting the idea that depression is caused by a neurochemical imbalance (Moncrieff & Horowitz, 2022). These discoveries urge researchers to consider non-pharmacological options to build interoceptive skills, positioning dance/movement therapy as a potential treatment option.

I adopted a pragmatic approach to collect preliminary data before conducting the intervention study (Study III). Additionally, I recognised the historical roots of power inequity in academia which led me to intentionally balance both qualitative and quantitative forms of data collection across this doctorate research. Such as, including oral narratives through survey responses, a meta-analysis, and a mixed method case series. This approach of collecting varied forms of data in this doctorate research aligned with my ontological stance of critical realism and *Anekantavada* (अनेकान्तवाद), or multi-sidedness (as described in the introduction chapter of this thesis).

First, I conducted a systematic review and meta-analysis to identify the outcomes of dance/movement therapy on the primary symptom clusters of treatment resistant depression (i.e., stress and depression). Five studies were included in the systematic review, three of which were appropriate for a meta-analysis, which determined a lack of sufficient statistical evidence to prove symptomatic reduction via dance/movement therapy. The meta-analysis revealed a large effect size for stress reduction ($d = 0.85$), but no effect for depressive symptoms. Longevity of effects was also seen more in stress reduction than a reduction in depression levels. The review also illuminated common dance/movement therapy techniques such as improvisation, shared rhythm, use of props for ‘surrogate movement expression’, and

structured movement as common ways of working with adults experiencing stress and depression.

Next, I conducted a descriptive survey to examine dance/movement therapists' use of kinesthetic empathy in treatment resistant depression. I chose to focus on kinesthetic empathy based on my clinical introspection, which pointed to kinesthetic empathy as the core of my therapeutic presence in clinical settings where I first noticed the positive change from dance/movement therapy. Eight dance/movement therapists completed the survey. The study results also indicated that kinesthetic empathy as a 'pathway to regulation', develops rapport, increases interoception and fosters somatic aptitude (Christopher & Tamplin, 2022).

Finally, I implemented an interventional study using a convergent parallel mixed methods case series design (Creswell, 1999). In this study, I aimed to explore whether group dance/movement therapy sessions may help alleviate stress and/or develop emotional regulation by fostering interoceptive awareness in participants with treatment resistant depression. I developed the intervention protocol in this study through braiding (Watson, 2020) insights from clinical practice, researcher reflexivity, and the findings of studies I and II.

The results of the participants who completed the intervention study (n=3) suggested that a 12-week dance/movement therapy intervention can facilitate a change in two areas: a reduction in negative somatic associations, and expanding one's capacity for emotional regulation, primarily through a body-based form of assessing dysregulation. The data revealed three possibilities for these outcomes: unlearning helplessness, a comfort curve, and changes in motivation levels. All three participants highlighted the 'Point of Return' experiential, which focuses on dance to change something for them at the level of their thoughts by engaging in their bodies. They were able to alter their self-perception, be more motivated, and have increased confidence whilst facing dysregulation. The integrated data

suggested a convergent relationship between quantitative and qualitative forms of data for these participants. I was also able to make conclusive statements regarding the incomplete data from participants who dropped out (n=2). The data from participants who dropped out also highlighted additional challenges to treatment due to comorbidities in treatment resistant depression.

Together, the three studies completed for this doctorate research pointed to three avenues of possibilities related to dance/movement therapy and treatment resistant depression. First, possibilities of participant experiences include modifying negative somatic associations, increased capacity for self-regulation, increased interoception and decreased stress levels. Second, possibilities for therapists' offering to their participants experiencing symptoms of treatment resistant depression include props to offer sensory support and stimulation, kinesthetic empathy as a pathway to regulation, and the three-phase intervention developed and used in the third study. Further, the 'Point of Return' experiential from the evidence-informed protocol, is a contribution that has potential for clinical use beyond treatment resistant depression. Third, possibilities for future research, including using formative data gathered from the publications in this doctorate research (Christopher & Tamplin, 2022; Christopher, 2024a, 2024b; Christopher et al., 2024), offer a blueprint for future feasibility and pilot studies in this area, including research on perception shift and the use of space for this population. Lastly, the critical reflection on missing oral narratives in dance/movement therapy academia (Christopher, 2024b) prompts and furthers the current discourse on decolonising the practice of dance/movement therapy.

The cumulative findings of this doctorate research suggest dance/movement therapy is a promising treatment option through which to address challenging experiences of treatment resistant depression, such as difficulty with self-regulation, managing long-term stress and low interoceptive skills. Further, participant experiences demonstrated adaptive

copied strategies despite challenges with changing pre-existing patterns of self-regulation.

Expanding on the work of this doctorate research is an avenue to continue building knowledge on creative and non-invasive treatment options like dance/movement therapy for adults with a diagnosis of treatment resistant depression.

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Appendix A

Systematic Review, Supplemental Material

Inclusion Criteria:

- (i) Primary keywords and their variations across databases included:

“dance therap*” OR “dance/movement therap*” AND
“stress” OR “stres*” AND
“depress” AND
“study” OR “studies” or AND
“treat* resist* AND
“adult*”.

The words used to obtain search results based on the primary keywords were:

((("dance therapy"[All Fields] OR "dance therap*"[Title/Abstract] OR "dance movement therap*"[Title/Abstract]) AND "stress"[All Fields]) OR "stres*"[Title/Abstract] AND "depression"[All Fields]) OR "depress*"[Title/Abstract]) OR AND "study"[All Fields]) OR "studies"[All Fields]) AND "treatment resistance"[All Fields]) OR (("therapeutics"[MeSH Terms] OR "therapeutics"[All Fields] OR "treatments"[All Fields] OR "therapy"[MeSH Subheading] OR "therapy"[All Fields] OR "treatment"[All Fields] OR "treatment s"[All Fields]) AND ("resist*"[All Fields] OR "resistance*"[All Fields] OR "resistances"[All Fields] OR "resistant"[All Fields] OR "resistants"[All Fields] OR "resistivity"[All Fields] OR "resists"[All Fields])) OR ("treat*"[All Fields] AND "resist*"[All Fields])) AND ("adult"[MeSH Terms] OR "adult*"[Title/Abstract] OR ("adult"[MeSH Terms] OR "adult"[All Fields] OR "adults"[All Fields] OR "adult s"[All Fields]))

- (ii) The following filters were selected in our subsequent advanced search advanced search:
- Outcome filters: “Stress” AND “Depression”,
 - Article/publication type: original study),
 - Species: Humans (adults)
 - Language: English
 - Sex/ gender: all
 - Population age: 18+.
- (iii) The date range applied for the search was studies published within January 2001 to July 2023.

Exclusion Criteria:

- (i) Studies that highlight the effect of stress but do not talk about the effect of stress on the sympathetic nervous system.
- (ii) Systematic reviews on informal literature (blogs etc.).
- (iii) Studies conducted with children and adults as participants.
- (iv) Studies conducted with stress only as a product of a terminal illness and,

- (v) Studies in which the intervention includes fitness focused movement (like Zumba, Yoga, Pilates, exercise).

II. The eligibility criteria of all the five included studies can be viewed in the table below:

Table A

Study	Inclusion Criteria	Exclusion Criteria
Bräuninger (2012)	Adults experiencing stress	• Presence of psychosis • Active psychotherapeutic and/or medical treatment within previous 12 months or at present • Absence of written consent at onset of DMT group; psychiatric illness; serious physical disability or limitation
Pylvänäinen et al. (2015)	Adults with a depression diagnosis and depression as primary symptom	• Presence of psychosis, • Suicide attempts or clear suicide plans, • Diagnosis of severe personality disorder, • Diagnosis of current alcohol or substance abuse problem, or • Debilitating somatic symptoms
Ho et al. (2016)	• Women who were ethnic Chinese aged 18 years or older • Living with stages 0 to III primary breast cancer	• Recurrent breast cancer • History of other cancers • History of psychiatric illness or physical disabilities that rendered them incapable of joining the DMT program.
Ho et al. (2018)	• Women who were ethnic Chinese aged 18 years or older • Living with stages 0 to III primary breast cancer	• Recurrent breast cancer • History of other cancers • History of psychiatric illness or physical disabilities that rendered them incapable of joining the DMT program.
Ho et al. (2020)	• Adults aged 65 or older	• Clinical diagnosis of major psychiatric disorder or abuses of drug or alcohol

	• CDR rating of 0.5 and 1 (very mild to mild dementia) • Mobility of at least the upper limbs and body, sufficient visual and auditory abilities to complete assessments • Stable doses of medication for at least 30 days before screening.	• that could cause cognitive impairment, • History of stroke • Prevalence of other severe illnesses that led to neurological deficits that limit participation in the interventions
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III. Studies excluded during screening and full text review steps are presented in Tables B and C below

Table B: List of 54 studies excluded after screening:

Study	Rationale for Exclusion (By at least two reviewers independently)
1. Goldbeck, L., Fidika, A., Herle, M., & Quittner, A. L. (2014). Psychological interventions for individuals with cystic fibrosis and their families. <i>Cochrane Database of Systematic Reviews</i> , (6).	Not an original study but a review. Wrong drug Wrong population
2. López-Rodríguez, M. M., Baldrich-Rodríguez, I., Ruiz-Muelle, A., Cortés-Rodríguez, A. E., Lopezosa-Esteba, T., & Roman, P. (2017). Effects of Biodanza on stress, depression, and sleep quality in university students. <i>The Journal of Alternative and Complementary Medicine</i> , 23(7), 558-565	Not a DMT Study
3. Archer, S., Buxton, S., & Sheffield, D. (2015). The effect of creative psychological interventions on psychological outcomes for adult cancer patients: a systematic review of randomised controlled trials. <i>Psycho-Oncology</i> , 24(1), 1-10.	Not an original study but a review. Use of creative movement instead of DMT
4. Ristiniemi, H., Perski, A., Lyskov, E., & Emtner, M. (2014). Hyperventilation and exhaustion syndrome. <i>Scandinavian journal of caring sciences</i> , 28(4), 657-664.	No use of DMT in the intervention, Wrong population

5. Pinniger, R., Brown, R. F., Thorsteinsson, E. B., & McKinley, P. (2012). Argentine tango dance compared to mindfulness meditation and a waiting-list control: A randomised trial for treating depression. <i>Complementary therapies in medicine</i> , 20(6), 377-384	No use of DMT in the intervention,
6. Schmoll, D. (2011). Body dysmorphic disorder and depression: Phenomenological and psychotherapeutic aspects: A report of five cases. <i>Psychopathology</i> , 44(3), 137-146.	Does not study stress
7. Shors, T. J., Olson, R. L., Bates, M. E., Selby, E. A., & Alderman, B. L. (2014). Mental and Physical (MAP) Training: a neurogenesis-inspired intervention that enhances health in humans. <i>Neurobiology of learning and memory</i> , 115, 3-9.	No use of DMT in the intervention,
8. Donorfio, L. K., Vetter, R., & Vracevic, M. (2010). Effects of three caregiver interventions: Support, educational literature, and creative movement. <i>Journal of women & aging</i> , 22(1), 61-75.	No use of DMT in the intervention, Wrong population, Creative movement and not DMT
9. Cevasco, A. M., Kennedy, R., & Generally, N. R. (2005). Comparison of movement-to-music, rhythm activities, and competitive games on depression, stress, anxiety, and anger of females in substance abuse rehabilitation. <i>Journal of music therapy</i> , 42(1), 64-80.	No use of DMT in the intervention,
10. Gultekin, Murat, Sertac Ak, Ali Ayhan, Aleksandra Strojna, Andrei Pletnev, Anna Fagotti, Anna Myriam Perrone et al. "Perspectives, fears and expectations of patients with gynaecological cancers during the COVID-19 pandemic: a Pan-European study of the European Network of Gynaecological Cancer Advocacy Groups (ENGAGe)." <i>Cancer medicine</i> 10, no. 1 (2021): 208-219.	No use of DMT in the intervention
11. Air, M. E. (2013). Psychological distress among dancers seeking outpatient treatment for musculoskeletal	No use of DMT in the intervention Does not measure depression

injury. <i>Journal of Dance Medicine & Science</i> , 17(3), 115-125.	
12. Cambria, A. M. (2021). <i>Dance/Movement Therapy Approach to Emotion Regulation for College Students Exposed to Bullying: A Phenomenological Perspective</i> . The Pennsylvania State University.	Children and not adults Does not measure depression
13. Kochan, C. A. (2021). <i>Introducing Dance/Movement Therapy Principles to Undergraduate Dance Majors</i> (Doctoral dissertation, Pratt Institute).	Does not measure depression
14. Street, K. (2020). <i>Effectiveness of Ashtanga and Vinyasa Yoga: Combating Anxiety, Depression, Stress and Sleep Quality</i> . University of Arkansas.	No use of DMT in the intervention
15. Gilmore, T. D. (2020). <i>African American Sexually Abused Women and the Use of Praise and Worship Dance as a Therapeutic Healing Modality: A Qualitative, Phenomenological Study</i> (Doctoral dissertation, Eastern University).	No use of DMT in the intervention, wrong outcome, wrong population
16. Langston, J. M. (2020). <i>The lived experiences of adult male trauma survivors with dance movement therapy</i> (Doctoral dissertation, Walden University).	Does not measure stress
17. Carnesi, L. K. (2019). <i>Dance/Movement Therapy, Creative Arts Therapy, and How Dance and Performing Arts Managers Can Assist Program Participants and Employees in Times of Need</i> (Doctoral dissertation, Drexel University).	Not an original study, wrong population, wrong outcome
18. Chaney, J. K. (2018). <i>Effects of a Modified Dance Intervention on Health-Related Quality of Life, Depression, and Sleep in Older Adults</i> . University of Central Arkansas.	No use of DMT in the intervention
19. Chinappi, J. F. (2017). <i>The Effects of Chronic Skin Disorders and Ballet on</i>	Does not measure depression

<i>Body Image, Stress, Social Support, and Self-Esteem: A Quasi-Experimental Study</i> (Doctoral dissertation, Capella University)	
20. Valentino-Bottaro, J. R. (2016). <i>Using dance classes for Parkinson's disease to improve quality of life</i> (Doctoral dissertation, Capella University).	No use of DMT in the intervention
21. Kober, G. D. (2014). <i>Dance-movement therapy in a black rehabilitation ward: an exploratory study</i> . University of Johannesburg (South Africa).	Published in 1988
22. Kirk, A. E. (2014). <i>Dance/movement therapy for adult women with posttraumatic stress disorder: A quasi-experimental study of symptom reduction and integration</i> (Doctoral dissertation, Institute of Transpersonal Psychology).	Does not measure depression
23. Thompson, L. (2014). <i>The Effect of Tap Dance Classes on Older Adults</i> (Doctoral dissertation, Walden University).	No use of DMT in the intervention
24. Kim, M. (2014). <i>Ballroom Dance/movement Therapy for Elderly Korean Immigrants in New York City</i> (Doctoral dissertation, Sarah Lawrence College).	Does not measure depression
25. Downing, C. (2012). <i>A model for the facilitation of mental health through belly dancing as movement</i> . University of Johannesburg (South Africa).	No use of DMT in the intervention and Does not measure depression or stress
26. Basson, W. (2010). <i>The development and evaluation of an holistic intervention programme for adolescents of divorce</i> . University of Johannesburg (South Africa).	No use of DMT in the intervention
27. Hall, J. L. (2009). <i>Heterocorporealities: Popular dance and cultural hybridity in uk drum'n'bass club culture</i> . University of Surrey (United Kingdom).	No use of DMT in the intervention and Does not measure depression or stress
28. Goodill, S. (2005). <i>An introduction to medical dance/movement therapy: Health care in motion</i> . Jessica Kingsley Publishers.	Not an original study

29. Ottenberg, M. (2001). <i>An evaluation of measures of depression to provide recommendations for their use in dance/movement therapy outcome research</i> . MCP Hahnemann University.	Not an original study and no mention of stress
30. Har-El, R. B. (2000). <i>Influence of neck exercises, combined with either the Chace technique of dance therapy or aerobic training, on pain perception, mood state and cervical range of motion of adults with chronic mechanical neck pain</i> . New York University.	Does not measure depression or stress
31. Stopa, J. B. (1995). <i>The short-term effects of the range of motion dance program on the mood of individuals with depression</i> . Rush University, College of Nursing.	Not DMT but DMT based models (RAM)
32. Guzmán, A., Freeston, M., Rochester, L., Hughes, J. C., & James, I. A. (2016). Psychomotor Dance Therapy Intervention (DANCIN) for people with dementia in care homes: A multiple-baseline single-case study. <i>International Psychogeriatrics</i> , 28(10), 1695-1715.	Does not measure depression or stress
33. Salgado, R., & de Paula Vasconcelos, L. A. (2010). The use of dance in the rehabilitation of a patient with multiple sclerosis. <i>American Journal of Dance Therapy</i> , 32(1), 53-63.	Dance not DMT
34. De Tord, P., & Bräuninger, I. (2015). Grounding: Theoretical application and practice in dance movement therapy. <i>The Arts in Psychotherapy</i> , 43, 16-22.	Not an original study
35. Gurusathya, C. (2019). Dance as a catalyst for stress busting. <i>Central European Journal of Sport Sciences and Medicine</i> , 26, 15-29.	Dance not DMT
36. Laird, K. T., Vergeer, I., Hennelly, S. E., & Siddarth, P. (2021). Conscious dance: Perceived benefits and psychological well-being of participants. <i>Complementary Therapies in Clinical Practice</i> , 44, 101440.	Dance not DMT

37. Lemerrier, L., Bernard, P., Delmotte, J., Vincent, L., Cartron, G., & Ninot, G. (2015). Adapted physical activity program (dance) in adults treated by hematopoietic stem cell transplantation: a feasibility study. <i>Oncologie</i> , 17, 47-56.	Dance not DMT
38. Padała, O., Krupa, A., Putowski, M., Konopelko, M., & Piasek, E. (2019). The efficacy of art therapy in psychiatric patients. <i>Journal of Education, Health and Sport</i> , 9(8), 377-383.	Art Therapy not DMT
39. Pinniger, R., Thorsteinsson, E. B., Brown, R. F., & McKinley, P. (2013). Tango dance can reduce distress and insomnia in people with self-referred affective symptoms. <i>American Journal of Dance Therapy</i> , 35, 60-77.	Tango dance not DMT
40. Salihu, D., Kwan, R. Y. C., & Wong, E. M. L. (2021). The effect of dancing interventions on depression symptoms, anxiety, and stress in adults without musculoskeletal disorders: an integrative review and meta-analysis. <i>Complementary Therapies in Clinical Practice</i> , 45, 101467.	Not an original study and no DMT
41. Weis, J., Troitzsch, A., & Dresch, C. (2022). Dance theatre as a form of dance movement psychotherapy for male cancer survivors. <i>Body, Movement and Dance in Psychotherapy</i> , 17(3), 200-217.	Dance theatre not DMT
42. Vardhan, V., Goyal, C., Chaudhari, J., Jain, V., Kulkarni, C. A., & Jain, M. (2022). Effect of dance movement therapy on cancer-related fatigue in breast cancer patients undergoing radiation therapy: a pre-post intervention study. <i>Cureus</i> , 14(1).	Wrong outcomes (fatigue only and not depression or stress)
43. Bräuninger, I. (2014). Specific dance movement therapy interventions—Which are successful? An intervention and correlation study. <i>The Arts in Psychotherapy</i> , 41(5), 445-457.	No Depression in Title or abstract, measures hormonal stress

44. Theorell, T., & Anderberg, U. M. (2003). Dance/movement therapy and changes in stress-related hormones: a study of fibromyalgia patients with -interpretation. <i>The Arts in Psychotherapy</i> , 30, 255-264.	No Depression in Title or abstract, measures stress
45. Karathanou, I., Bebetos, E., Filippou, F., Psirri, A., & Konas, I. (2021). Greek traditional dance as a practice for managing stress and anxiety in cancer patients. <i>Journal of Cancer Education</i> , 36, 1269-1276.	No use of DMT in the intervention
46. Kulshreshtha, M., Saraswathy, K. N., Babu, N., & Chandel, S. (2023). Self-reported perceived stress, depression, and generalized anxiety disorder among Kathak dancers and physically active non-dancers of North India. <i>Frontiers in Psychology</i> , 14, 1114377.	No use of DMT in the intervention
47. Johnston, S. A., Roskowski, C., He, Z., Kong, L., & Chen, W. (2021). Effects of team sports on anxiety, depression, perceived stress, and sleep quality in college students. <i>Journal of American College Health</i> , 69(7), 791-797.	No use of DMT in the intervention
48. Boing, L., de Bem Fretta, T., Lynch, B. M., Dias, M., da Rosa, L. M., Baptista, F., ... & de Azevedo Guimarães, A. C. (2023). Mat Pilates and belly dance: Effects on patient-reported outcomes among breast cancer survivors receiving hormone therapy and adherence to exercise. <i>Complementary Therapies in Clinical Practice</i> , 50, 101683.	No use of DMT in the intervention
49. De Witte, M., Orkibi, H., Zarate, R., Karkou, V., Sajani, N., Malhotra, B., ... & Koch, S. C. (2021). From therapeutic factors to mechanisms of change in the creative arts therapies: A scoping review. <i>Frontiers in Psychology</i> , 2525.	Not an original study and no DMT
50. Gultekin, M., Ak, S., Ayhan, A., Strojna, A., Pletnev, A., Fagotti, A., ... & Fotopoulou, C. (2021). Perspectives, fears and expectations of patients with	No use of DMT in the intervention

gynaecological cancers during the COVID-19 pandemic: a Pan-European study of the European Network of Gynaecological Cancer Advocacy Groups (ENGAGe). <i>Cancer medicine</i> , 10(1), 208-219.	
51. Kheirallah, K. A., Al-Zureikat, S. H., Al-Mistarehi, A. H., Alsulaiman, J. W., AlQudah, M., Khassawneh, A. H., ... & Serlin, I. A. (2022). The association of conflict-related trauma with markers of mental health among Syrian refugee women: the role of social support and post-traumatic growth. <i>International journal of women's health</i> , 1251-1266.	No use of DMT in the intervention
52. Weis, J., Troitzsch, A., & Dresch, C. (2022). Dance theatre as a form of dance movement psychotherapy for male cancer survivors. <i>Body, Movement and Dance in Psychotherapy</i> , 17(3), 200-217.	Not DMT
53. Cheng, P., Xu, L., Zhang, J., Liu, W., & Zhu, J. (2021). Role of arts therapy in patients with breast and gynecological cancers: a systematic review and meta-analysis. <i>Journal of palliative medicine</i> , 24(3), 443-452.	Not an original study bur review
54. Moratelli, J. A., Veras, G., Lyra, V. B., Silveira, J. D., Colombo, R., & de Azevedo Guimarães, A. C. (2023). Evidence of the Effects of Dance Interventions on Adults Mental Health: A Systematic Review. <i>Journal of Dance Medicine & Science</i> , 1089313X231178095	Not an original study bur review

Table C: List of 5 studies excluded after full text review:

Study	Rationale for Exclusion (By at least two reviewers independently)
1. Langston, J. M. (2020). <i>The lived experiences of adult male trauma survivors with dance movement</i>	Lack of a clear/ independent exploration of stress and depression outcomes (the study examines trauma a whole).

therapy (Doctoral dissertation, Walden University)	
2. Kirk, A. E. (2014). <i>Dance/movement therapy for adult women with posttraumatic stress disorder: A quasi-experimental study of symptom reduction and integration</i> (Doctoral dissertation, Institute of Transpersonal Psychology).	Lack of a clear/ independent exploration of stress and depression outcomes (the study examines PTSD).
3. López-Rodríguez, M. M., Baldrich-Rodríguez, I., Ruiz-Muelle, A., Cortés-Rodríguez, A. E., Lopezosa-Estepa, T., & Roman, P. (2017). Effects of Biodanza on stress, depression, and sleep quality in university students. <i>The Journal of Alternative and Complementary Medicine</i> , 23(7), 558-565.	Different intervention (the study clearly differentiates Biodanza from dance therapy)
4. Donorfio, L. K., Vetter, R., & Vracevic, M. (2010). Effects of three caregiver interventions: Support, educational literature, and creative movement. <i>Journal of women & aging</i> , 22(1), 61-75.	Different intervention
5. Aithal, S., Karkou, V., Kuppusamy, G., & Mariswamy, P. (2019). Backing the backbones—A feasibility study on the effectiveness of dance movement psychotherapy on parenting stress in caregivers of children with Autism Spectrum Disorder. <i>The Arts in Psychotherapy</i> , 64, 69-76.	Inadequate training of interventionist.

Bräuninger, I. (2012). Dance movement therapy group intervention in stress treatment: A randomized controlled trial (RCT). *The Arts in Psychotherapy*, 39(5), 443-450.

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Ho, R. T., Fong, T. C., Cheung, I. K., Yip, P. S., & Luk, M. Y. (2016). Effects of a short-term dance movement therapy program on symptoms and stress in patients with breast cancer undergoing radiotherapy: A randomized, controlled, single-blind trial. *J Pain Symptom Manage*, 51(5), 824-831.

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<https://doi.org/10.1093/geronb/gby145>

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<https://doi.org/10.1093/geronb/gby145>

Pylvänäinen, P. M., Muotka, J. S., & Lappalainen, R. (2015). A dance movement therapy group for depressed adult patients in a psychiatric outpatient clinic: Effects of the treatment. *Frontiers in psychology*, 6, 980-980.

<https://doi.org/10.3389/fpsyg.2015.00980>

Systematic Review Results

Overview of Results in a Tabular Format (referred as Supplementary Table A in the publication)

Study Author	Population	Intervention		Comparator/Control	Measures and Data Collection Timepoints	Narrative Results
		Frequency & Duration	DMT Approach(s) or Theory(s) Referenced			
Bräuninger, 2012 Study Location: Germany	Adults who considered themselves to be experiencing stress based on self-selection N=162 Randomized into: - DMT Group (n=97) - Waitlist group (n=65)	10 sessions of DMT group intervention over 3 months 90-minutes each Once a week Total hours of DMT intervention: 15 hours	No specific DMT approach or defined interventions were named (Attunement was briefly alluded to).	Standard care (daily life routine) The wait list control group received no treatment during all three measurement points (this is reasonable, since it is not a clinical population)	Brief Symptom Inventory (BSI) Stress Management Psychopathology Data Collection Timepoints (T) - T1- Pre - T2- Post - T3- 3 month follow up	Perceived Stress: Dance Therapy significantly reduced stress (short and long term) in the therapeutic group. DMT was found to reduce emotional distress and promote new coping strategies. Depression: Social isolation, mental retention, resignation, self-pity, and self-blame significantly reduced in the therapeutic group, but remained stable in the waitlist group.
Pylvänäinen et al., 2015 Study Location: Finland	Adults with a diagnosis of major depressive disorder receiving outpatient treatment. Additional diagnoses found in the DMT group also had a diagnosis of anxiety, eating disorder and personality disorders. N= 25 Non-randomised (self-selection): - DMT Group (n=18) - Waitlist Control group (n=7)	12 sessions of DMT group intervention over 3 consecutive weeks 90-minutes each Twice a week Total hours of DMT intervention: 18 hours	-A Chace approach to DMT (emphasis on rhythm, group cohesion and mirroring) -Authentic Movement	Standard care The non-intervention group in this study was: termed Treatment as usual.	The Clinical Outcomes in Routine Evaluation-Outcome Measure (CORE-OM) The Symptoms Check List- 90 (SCL-90) The Hospital Anxiety and Depression Scale (HADS) Becks Depression Inventory (BDI-II) Data Collection Timepoints (T) - T1- Pre - T2- Post - T3- 3 month follow up	Stress: Dance therapy fostered better global stress management in the intervention group compared to the control. Depression: Negative and low mood reduced in the dance therapy group more compared to the control.

Ho et al., 2016 Study Location: Hong Kong	Adults experiencing symptoms of stress and depression secondary to a breast cancer diagnosis. N= 139 Randomized into: • DMT group (n=69) • Waitlist control group (n=70)	12 sessions of DMT group intervention over 3 consecutive weeks 90-minutes each Twice a week Total hours of DMT intervention: 18 hours	-Active use of rhythm -Improvisation -Group dances -Structured & planned movements (like, stretching, relaxation exercises).	Standard care The wait list control group received radiotherapy and standard nursing care in the hospitals.	The Perceived Stress Scale Brief Symptom Inventory The Pittsburgh Sleep Quality Index The Functional Assessment of Cancer Therapy Breast scale. Data Collection Timepoints (T) • T1- Pre • T2- Post • T3- 3 month follow up	Stress: The use of spontaneous rhythmic movement was found to -Aid participants to relax -Freely express their feelings and, -Teach them a more adaptive and flexible method of interpreting the stressful experience. Depression: Participation in DMT with increased social connection, support, and subsequently healthier coping responses.
Ho et al., 2018 Study Location: Hong Kong	Adults experiencing symptoms of stress and depression secondary to their breast cancer diagnosis. N= 121 • Randomized into: DMT group (n=63) • Waitlist control group (n=58)	12 sessions of DMT group intervention over 3 consecutive weeks 90-minutes each Twice a week Total hours of intervention: 18 hours	-Active use of rhythm -Improvisation -Group dances -Structured & planned movements (like, stretching, relaxation exercises).	Standard care The waitlist control group received radiotherapy and standard nursing care in the hospitals. No parallel mental health treatments were received during the waiting period.	Perceived Stress Scale and Saliva samples Data Collection Timepoints (T) • T1- Pre • T2- Post • T3- 3 month follow up	Stress: The DMT group displayed a slightly steeper diurnal cortisol curve at Time 2 indicating better functioning of the HPA regulatory feedback system in participants Depression: No clear direct effect on depression.
Ho et al. (2020) Study Location: Hong Kong	Adults living with a clinical diagnosis of dementia (DSM IV) or mild neurocognitive disorder (DSMV), currently receiving psychogeriatric outpatient care. N= 166 Randomized into: • DMT group (n=56) • Exercise group (n=56) and Control group (n=55)	24 hrs of intervention that spanned over 12 weeks. 60 minutes each session Twice a week Total hours of intervention: 24 hours	-Use of rhythmic and contralateral movements -Simple group dances -Movement games -Improvisational dance/movement -Movement interactions among group members Verbal processing after movement	Exercise was a comparator in this study. It was found that exercise did not alleviate any psycho-social symptoms associated with dementia. Comparator frequency: 24 one-hour sessions held twice a week for 3 months. The waitlist control group received treatment as usual	Combined analysis of five psychosocial tests (The de Jong F Loneliness Scale, Visual Analogue Mood Scale, The instrumental activities of daily living scale, Behavioural and psychological symptoms of dementia); and Salivary cortisol measures Data Collection Timepoints (T) • T1- Pre • T2- Post • T3- 6 month follow up	Stress: Reduction in mean cortisol levels. Depression: Short-term benefit for decreased depression, loneliness, and negative mood and neuroendocrine functioning compared with waitlist control. Overall, DMT had no adverse effects address some bio-psycho-social needs in dementia treatment which steadily reduced by the 1-year follow-up There were “considerable rebounds” in depression (negative mood, and loneliness) in the DMT group at the one-year follow-up.

				(pharmacological). No parallel mental health support was provided to the WCG.	T4-12 month follow up	
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Legend for Table

DMT: Dance/Movement Therapy (referred to as ‘dance therapy’ in this manuscript)

TAU: Treatment as Usual

WG: Waitlist Group

HPA: Hypothalamic-pituitary-axis

BSI: Brief Symptom Inventory

CORE-OM: The Clinical Outcomes in Routine Evaluation-Outcome Measure (CORE-OM)

HADS: The Hospital Anxiety and Depression Scale (HADS)

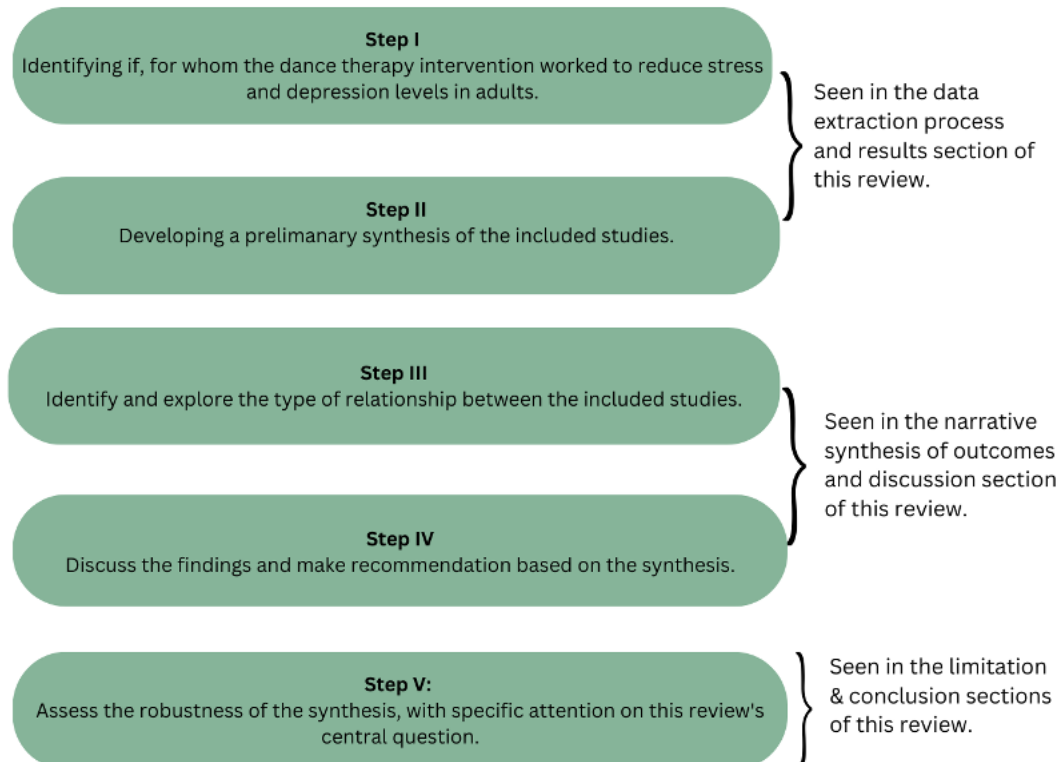
BDI- II-: Becks Depression Inventory (BDI-II)

SCL-90: The Symptoms Check List- 90 (SCL-90)

Appendix B

Supplementary Figure B

Steps of the Narrative Synthesis; Adapted from Impellizzeri and Bizzini (2012)



Appendix C

Study I- Ethics Approval



Office of Research Ethics and Integrity

Human Ethics Application Approval

ATTENTION: PROF Katrina Skewes McFerran

3582 - Melbourne Conservatorium of Music
6599 - Fine Arts and Music
The University of Melbourne

Research Application

Reference Number: 2021-21146-20260-3

Project Title: Exploring dance therapists' use of kinesthetic empathy to foster self-regulation in adults living with treatment resistant depression.

Dear PROF Katrina Skewes McFerran,

Thank you for your response to queries raised by HASS 2 at a meeting held on 01/07/2021.

The Committee agreed to **approve** the application on the basis that it meets the requirements of the National Statement on Ethical Conduct in Human Research (2007, Updated 2018). Please see overleaf, *Summary Details for the Approved Human Ethics Project and Conditions of Approval*. It is your responsibility to ensure that all people associated with the Project are made aware of what has been approved.

Desk-based elements of your project and face-to-face research can commence now, as can data collection that can be conducted online or via telephone, subject to necessary approvals or amendments to ethics applications.

Please consult the COVID-19 website for research guidance, FAQ and updates. <https://staff.unimelb.edu.au/covid-19-response/research-activity>

If you have any queries on these matters, or require additional information, please contact me using the details below. Please quote the ethics ID number and the title of the Project in any future correspondence.

Yours sincerely,

MS Yasi Saninejad

Research Ethics Officer

Human Ethics Team

Office of Research Ethics and Integrity | Research, Innovation & Commercialisation
Level 5, Alan Gilbert Building, 161 Barry Street, Carlton
The University of Melbourne, Victoria 3010, Australia
T: (03) 8344 1694 E: saninejadf@unimelb.edu.au

Summary Details for the Approved Human Ethics Project

Project Title:	Exploring dance therapists' use of kinesthetic empathy to foster self-regulation in adults living with treatment resistant depression.
Reference Number:	2021-21146-20260-3
Approval Date:	16/08/2021
Expiry Date:	16/08/2024
Responsible Human Ethics Committee	HASS 2
Project Supervisor	PROF Katrina Skewes McFerran
Other Investigators	DR Jeanette Tamplin, Ms Neha Christopher
External Investigators	

Documents table:

Appendix D

Study I: Long Answer Survey Questions

Q1 Hello! I am a PhD student at the Creative Arts Therapy Research Unit at The University of Melbourne. I am interested to gain preliminary insights on the prevalence and nature of kinesthetic empathy to foster self-regulation as a dance therapy intervention in treatment resistant depression.

This survey project has 11 questions in total.

- The first 7 questions which will ensure that you are eligible to participate in this study and will collect your contact information for correspondence. This will take around 2-3 minutes to complete.
- The next 4 questions are open ended questions and are anticipated to take 15 minutes to complete.

This project aims to collect data on:

- How kinesthetic empathy is used as a dance therapy intervention in treatment resistant depression
- Any key factor/s that support the link between the intervention and observed change, i.e., between kinesthetic empathy and self-regulation If you choose to participate in this survey project, please be informed that your participation is voluntary and will not be compensated.

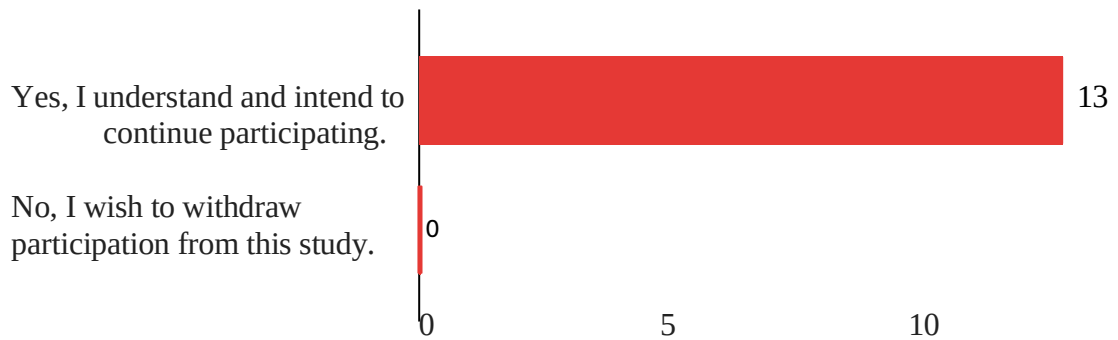
Your responses will be kept completely confidential and stored securely on Qualtrics. You have the right to withdraw at any point.

The graduate researcher (Ms. Neha Christopher) is the main point of contact and can be emailed at ncchr@student.unimelb.edu.au. The responsible researcher and primary researcher for this project is Professor Katrina McFerran.

Please note: If you feel any distress while taking this survey, please feel free to stop the survey and seek support if needed (from a friend, family member, therapist or supervisor etc.). This graduate researcher will also offer a virtual confidential conversation to debrief any content shared here by participants; details for which will be shared in a follow up email after the survey has been completed. There will be no judgment of any participants' clinical skills. These survey results will be analyzed on the foundations of respect for each participant's work in their community.

By clicking the button below, you are acknowledging the following:

- You are at-least 18 years of age.
- Your participation in the study is voluntary.
- You are aware that you may choose to withdraw your participation at any time for any reason.
- You give consent to be contacted by the graduate researcher.
- The plain language summary and advertisement emailer provided you with adequate information to decide upon your participation in this study.



Do you hold a Masters Degree in Dance Therapy?



Have you worked for a minimum of 2 years in the field of Dance Therapy? [There is no specific setting requirement; setting can vary from in-patient psychiatry setting to long term clinical settings, private practice, etc.].



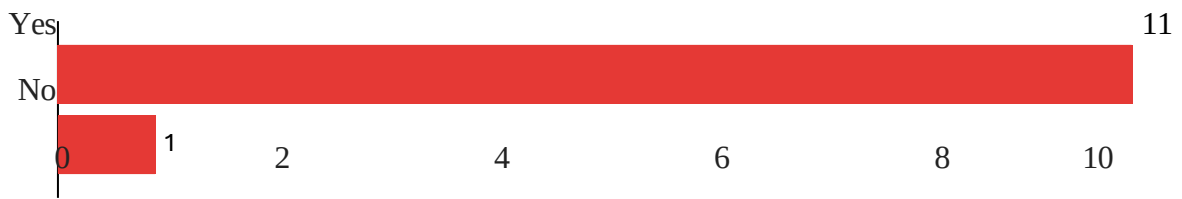
Have you ever engaged* with clients living with treatment resistant depression?**

*In this project, engagement may be understood as an overall time period of 6 months across any time duration

**Treatment resistant depression (TRD) refers to a type of depression where one doesn't get better in spite of intervention (Al Harbi, 2012). For example, individuals with TRD may not recover even after trying 2 cycles of anti-depressants.



As a dance therapist, do you/ have you employed kinesthetic empathy to foster self-regulation in your practice?



Could you mention any specific ways in which you used kinesthetic empathy in your work?

Mirror

mirror posture, gesture, muscle tension

Through mirroring as a dmt style

kinesthetic empathy has played a huge role in fostering relational connections between the client and myself. I have also used it during the warm-up stage of the process or during the end for grounding and self-regulation purpose.

Mirroring the movement, posture and facial expression of the clients; meeting them where they're at and being curious; Being gentle and calm in nonverbal communication helping them feel safe and understood

Kinesthetic empathy is at the core of my work. I rely on the information I gather through my body, through the process of kinesthetic empathy, at all phases of my work with an individual or group. It is one of the primary ways I gather information and it is one of the primary ways I engage with my clients. Connecting via KE, helps me to attune to others, which in turn lends itself beautifully to the process of co-regulation.

Kinesthetic empathy has been a key tool to understand the embodied culture and the inner environment of my client's experience. Since many clients that do undertake dance therapy with me are coming in as a last resort as compared to all the other various psychotherapeutic interventions, it gives me an added vocabulary to understand that which they haven't been able to articulate or address in their prior attempts.

Devising any intervention required the resonant state of Kinesthetic empathy. Attuning and moving with the client in particular helped me get in this state but also over a period of time, having observed movement patterns allowed this to be a continuous and consistent state with long term clients.

In your experience, how do clients respond to kinesthetic empathy in dance therapy sessions?

Following, watching

welcoming when conscious of it, seemingly receptive when subconscious

Increased eye contact, touch or verbalization of body sensations while moving with therapist or other clients

in my experience kinesthetic empathy is used differently in individual sessions and group sessions. while in individual sessions - its more subtle and has a huge impact of small gentle movements. whereas in groups, aspects of mirroring and sharing rhythms, exploring movement and metaphor becomes more prominent. but in both scenarios, the increase in trust, communication and connection has been successful.

It takes time but this can help them start to feel comfortable; they begin to feel safe which then strengthens the therapeutic relationship; to begin to feel less resistant

In my years of experience as a DMT and working mostly with groups, I have found patients to be especially responsive to the concept of KE. I often will spend time speaking about it and teaching them to develop their own sense of KE.

In my experience, many of them are surprised with the reflections or offerings that emerge from kinesthetic empathy. They sometimes find connecting at an embodied level less effortful as compared to articulating it. The trust in the therapeutic approach of the body is deepened when they also experience it the language of the body, that which was unspoken finds its space in the relationship.

K.E. continues to be the most important factor of the relationship in DMT sessions. without it, I cannot imagine setting up a working alliance, rapport or trust.

Please specify how you are able to attribute any mentioned changes to kinesthetic empathy.

Through the eyes and sometimes smiling and moving together

By verbalizing what i witness within myself or from the client

I see and hear a softening, an increase in opening up verbally and emotionally-increase in emotional release.

There is very clear increase of trust and therefore clients become even more vulnerable and open to the connection that gets established in the sessions. This has become very obvious in these times as clients themselves talk about how distant they feel during online sessions to how connected they feel in in-person sessions. There is more willingness to bring the body to the fore during the in-person

They begin to open up more; they seem to feel like they can be more themselves; they don't seem as cautious as they did when we first began.

Many a times, one can see how the body postures and movement patterns shift after experiencing Kinesthetic empathy. Clients have also mentioned how they are more comfortable with an embodied approach and open to body awareness and the language of the body as compared to the first few sessions. One of my clients used more pathways across space and their kinesphere expanded after experiencing authentic embodied empathy.

This is a hard point to speak to, as I work in a very short term psychiatric hospital, so my time with patients is fleeting. I very much focus on the here and now and it is usually only through verbal processing and sharing, that I learn that the patient has found the process of KE to be beneficial ... or to have contributed to some shift within them.

relational spaces, which are central to the therapeutic process, rely on Kinesthetic empathy to be fostered. All insight and reflection begins there.

Based on your experience, are there any key factor/s that support the potential link between kinesthetic empathy and self-regulation?

Connection moment

I believe that when a therapist is able to relate to a client using kinesthetic empathy, the client has a felt sense of being seen/matched and creates a stronger bond/alliance between in the partnership. This then allows the client to attune to the therapist with the whole self and is moved to co-regulate.

Emotional regulation within the individual's body and mindfulness

mainly with the population that we are discussing, i have closely witnessed clients, after many months - gently start physically mirroring me eg: open posture, straighter back, eye contact, deep breathing, engaging the body in expression more and sometimes even take risks by becoming creative. though this is not an over night process, i have witnessed these changes slowly helping the client after they feel safe and settled in therapy. this has naturally led us to explore independence , and mechanism that help in self-regulation. the aspect of "here and Now" and how does one experience self-regulation has been an important part of therapy.

Co-regulation seems to be key in being able to link kinesthetic empathy and self-regulation. When we empathize with the client, we are able to co-regulate with them which can then help them self-regulate

I'm not sure I fully understand this question but I will answer as best I can. I believe that what is key, is that when I am attuning with another, through my training in KE, I am better able to offer movement interventions, designed to support or initiate self-regulation or co-regulation.

Kinesthetic empathy in my experience (reflexively and via processing) have the potential to allow for a deeper, meaningful and authentic connection with the body and how their experiences find their way through movements. This further allows the body to learn ways of feeling comfort and work towards a more tolerant embodied experience, leading to a sense of gaining resources for self- regulation

the key factor in the link would be the aspect of understanding and engaging with the client's unique body presentation and movement language to understand what self regulation means in their context

Appendix E

Study III- Ethics Approval



Human Ethics Application Approval

28/02/2023

ATTENTION: DR Jeanette Tamplin

3582 - Melbourne Conservatorium of Music
6599 - Fine Arts and Music
The University of Melbourne

Reference Number: 2023-24580-36996-6

Project Title: Exploring the Effect/s of Group Dance Therapy Sessions on Emotional Regulation in Adults Living with Treatment-Resistant Depression

Dear DR Jeanette Tamplin,

Thank you for your response to queries raised by the HASS 1 ethics committee.

The Committee agreed to approve your application on the basis that it meets the requirements of the [National Statement on Ethical Conduct in Human Research \(2007, Updated 2018\)](#). Please see below the **Summary Details for the Approved Human Ethics Project** and the **Conditions of Approval**. You are responsible for ensuring that all people associated with the Project are made aware of what has been approved.

Please contact us via the Correspondence tab if you have any questions or if you require further assistance.

Kind regards,

MR Tim Mattingbrook

Research Ethics Officer

Human Ethics Team

Office of Research Ethics and Integrity | Research, Innovation & Commercialisation
Level 5, Alan Gilbert Building, 161 Barry Street, Carlton
The University of Melbourne, Victoria 3010, Australia
T (03) 8344 8662

E: timmm@unimelb.edu.au

Summary Details for the Approved Human Ethics Project:

Project Title:	Exploring the Effect/s of Group Dance Therapy Sessions on Emotional Regulation in Adults Living with Treatment-Resistant Depression
Reference Number:	2023-24580-36996-6
Approval Date:	28/02/2023
Expiry Date:	28/02/2026
Responsible Human Ethics Committee	HASS 1
Project Supervisor	DR Jeanette Tamplin
Other Investigators	Ms Neha Christopher, DR Ella Dumaresq
External Investigators	Professor Sharon W Goodill

Appendix F

Study III- A list of questions asked in the semi-structured interviews

A) A List of questions that were asked in the semi structured focus group interviews:

- (i) Thank you for filling out the questionnaires, has anything come up for you from filling in the questionnaires?
- (ii) Do you experience any repeated somatic cues as your stress levels increase?
- (iii) What are some of your automatic responses to stress? Which parts of your body is involved in this automatic response?
- (iv) Is there anything from our sessions that can help you better track your automatic responses to stress?

B) A List of questions that were asked in the semi structured 1:1 interviews:

- (i) Were there any external life circumstances that you consider to be relevant in your participant in this study?
- (ii) What was your experience of the group?
- (iii) Could you share your thoughts on anything you consider to be central to your personal narrative of navigating life with TRD?

Appendix G

Cortisol Hair Sample Collection Steps

Stratech Scientific APAC PTY Ltd
Suite 5, 1 Mona Vale Road, Mona Vale NSW, 2103
ABN: 36 125 577 979

Tel: +61 (0)2 9997 7728
Fax: +61 (0)2 9012 0019
<http://www.stratechscientific.com.au>

Instruction for collection of hair sample

Necessary materials:

- aluminium foil
- scissors
- paper clips
- hairgrip
- comb
- cord

Use hairgrip or similar to expose hair at the neck; divide off and comb the hair sample so it is approx. 0.5cm in diameter. For hair length less than 3cm please take a least 0.5cm diameter.

Fix hair sample with cord.

Cut hair close to the scalp.

Lay hair sample on the foil; place cut-end to the marked part of the foil. Only one sample is needed.

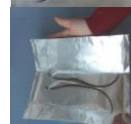
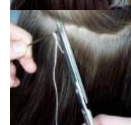
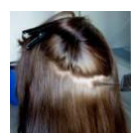
Wrap hair sample in foil; do not bend the sample
Please write name date and contact details on the foil.

Fix sample with paper clip at cut-end.
Keep samples dark and away from humidity.

For any questions regarding hair sampling or analysis please call
Dr Mark Longster at Stratech Scientific on 04224 76242.

Please send samples for analysis to:

Stratech Scientific APAC PTY Ltd
Suite 5, 1 Mona Vale Road, Mona Vale NSW, 2103



Appendix H

Study III-Supplemental material related to the publication (Chapter 14, Section I)

I. Individual Quantitative Results

Participant 1 (P1):

Multidimensional Assessment of Interoceptive Awareness- 2 (MAIA-2)	P1				Change Score (T4-T1)
	Timepoint 1 (week 1)	Timepoint 2 (week 6)	Timepoint 3 (week 12)	Timepoint 4 (week 16)	
Subscale 1-Noticing	3.25	4.5	4.5	4.75	1.5
Subscale 2- Not-Distracting	0.16	0.83	2.16	2.66	2.5
Subscale 3- Not-Worrying	0.6	1.4	2	2.8	2.2
Subscale 4- Attention Regulation	2.42	3.14	3.14	3.85	1.43
Subscale 5- Emotional Awareness	4.2	4.2	4.8	4.8	0.6
Subscale 6- Self-Regulation	3	3.5	4.25	4.5	1.5
Subscale 7- Body Listening	0	1.3	3	4	4
Subscale 8- Trusting	1	1.33	3.33	4	3

- P1's scores indicated an increase in interoceptive awareness in all five domains of this 8-subscale questionnaire. There was an increase in scores between T1 and T4, with a change in scores across all subscales that were above the MCID. P1's scores indicated the highest increase under subscales 7 and 8, ie. *body listening* (total change score of 4) and *trusting* (total change score of 3). The lowest increase was seen in subscale 5, *emotional awareness* (change score of 0.6), noting a high baseline score of 4.2/5 on this subscale for P2 and thus less room for improvement.

Perceived Stress Scale-10 (PSS-10).	P1	
-------------------------------------	----	--

	Timepoint 1 (week 1)	Timepoint 2 (week 6)	Timepoint 3 (week 12)	Timepoint 4 (week 16)	Change Score (T1-T4)
Total Score	28	28	11	12	16
Subscale 1-Perceived Helplessness	17	17	7	7	10
Subscale 2-Lack of Self-Efficacy	11	11	4	5	6

- P1's scores indicate a reduction in perceived stress levels from T1 to T4 with a total change score of 16. The highest total change scores between timepoints were seen between T2 and T3 (change score of 16). In the subscales, P2's highest total change score was on subscale 1: perceived helplessness (a decrease of 10 points).

Cortisol	P1			
	Timepoint 1 to 2 (i.e., weeks 1 to 6)	Timepoint 2 to 3 (i.e., weeks 7 to 12)	Timepoint 3 to 4 (i.e., weeks 10 to 16)	Change Score (T1-T4)
Cortisol levels identified in hair	0.1455 ng/50mg hair	0.125667 ng/50mg hair	0.09492 ng/50mg hair	0.05058 ng/50mg hair

- P1's cortisol range reduced by 0.05 from T1 to T4

Participant 2 (P2):

Multidimensional Assessment of Interoceptive Awareness- 2 (MAIA-2)	P2				Change Score (T4- T1)
	Timepoint 1 (week 1)	Timepoint 2 (week 6)	Timepoint 3 (week 12)	Timepoint 4 (week 16)	
Subscale 1-Noticing	3	4.5	4	3.5	0.5
Subscale 2- Not-Distracting	1.6	3.5	2.83	3.5	1.9
Subscale 3- Not-Worrying	0.8	2.8	2.2	2.4	1.6
Subscale 4- Attention Regulation	2.85	3.42	3.14	3	0.15
Subscale 5- Emotional Awareness	4.6	4.2	4.6	4.2	-0.4
Subscale 6- Self-Regulation	2.75	3	2.5	3.25	0.5

Subscale 7- Body Listening	4	4.3	4.66	3.33	-0.67
Subscale 8-Trusting	2	3.66	1.66	3	1

- P2's scores indicated an increase in interoceptive awareness on four of the five domains. Total change scores on subscales 1 (*noticing*), 2 (*not-distracting*), 3 (*not-worrying*), 6 (*self-regulation*), and 8 (*trusting*) were higher than the estimated MCID range. Although P2's score increased from T1 to T4 (change score of 0.15) on subscale 4 (*attention regulation*), it did not meet the MCID range of .38-.61 (Eggart et al., 2021). Alternatively, P2's scores on subscales 5 (*emotional awareness*) and 7 (*body listening*) reduced across the course of the study. P2's highest increase (1.9 points) was seen in subscale 2 (*not-distracting*) from T1 to T4.

Perceived Stress Scale-10 (PSS-10).	P2				Change Score (T1-T4)
	Timepoint 1 (week 1)	Timepoint 2 (week 6)	Timepoint 3 (week 12)	Timepoint 4 (week 16)	
Total Score	31	14	25	25	6
Subscale 1-Perceived Helplessness	18	7	16	16	2
Subscale 2-Lack of Self-Efficacy	13	7	9	9	4

- P2's scores indicate a reduction in perceived stress levels from T1 to T4. However, the change is lower than the MCID (a total change score of 6). Despite not having a high total change score, a steep reduction in scores is seen from T1 to T2, with a change score of 17. This is followed by a rise in scores, resulting in an overall reduced total change score of 6 from T1 to T4. In the subscales, P2's highest total change score was on subscale 2: lack of self-efficacy (decrease of 4 points).

Cortisol	P2			
	Timepoint 1 to 2 (i.e., weeks 1 to 6)	Timepoint 2 to 3 (i.e., weeks 7 to 12)	Timepoint 3 to 4 (i.e., weeks 10 to 16)	Change Score (T1-T4)
Cortisol levels identified in hair	0.159 ng/50mg hair	0.1496 ng/50mg hair	0.1321 ng/50mg hair	0.0269 ng/50mg hair

- P2's cortisol range reduced by 0.02 from T1 to T4

Participant 3 (P3):

Multidimensional Assessment of Interoceptive Awareness- 2 (MAIA-2)	P3				Change Score (T4-T1)
	Timepoint 1 (week 1)	Timepoint 2 (week 6)	Timepoint 3 (week 12)	Timepoint 4 (week 16)	
Subscale 1-Noticing	2.25	1.75	4	2.27	0.02
Subscale 2- Not-Distracting	1.17	0.33	3	3.5	2.33
Subscale 3- Not-Worrying	0.8	1.2	2	2.4	1.6
Subscale 4- Attention Regulation	1	1.71	2.14	2.14	1.14
Subscale 5- Emotional Awareness	1.8	2.6	3	3.8	2
Subscale 6- Self-Regulation	0.75	1.75	2.25	3	2.25
Subscale 7- Body Listening	0	1	2	2	2
Subscale 8- Trusting	2.33	1.3	3.33	3	0.67

- P3's scores indicated an increase in interoceptive awareness in four of five domains. Change scores were higher than the estimated MCID range for all subscales except subscale 1 (*noticing*). P3's highest increase was seen on subscale 2 (*not-distracting*) with a change score of 2.33. There was also a notable increase in subscale 7 (*body listening*) from 0 at the start of the study to 2 at T4.

Perceived Stress Scale-10 (PSS-10).	P3				Change Score (T1-T4)
	Timepoint 1 (week 1)	Timepoint 2 (week 6)	Timepoint 3 (week 12)	Timepoint 4 (week 16)	
Total Score	29	29	17	16	13
Subscale 1-Perceived Helplessness	18	18	10	11	7
Subscale 2-Lack of Self-Efficacy	11	11	7	5	6

- P3's scores indicated an increase in interoceptive awareness in four of five domains. Change scores were higher than the estimated MCID range for all subscales except subscale 1 (*noticing*). P3's highest increase was seen on subscale 2 (*not-distracting*) with a change score of 2.33. There was also a notable increase in subscale 7 (*body listening*) from 0 at the start of the study to 2 at T4.

Cortisol	P3			
	Timepoint 1 to 2 (i.e., weeks 1 to 6)	Timepoint 2 to 3 (i.e., weeks 7 to 12)	Timepoint 3 to 4 (i.e., weeks 10 to 16)	Change Score (T1-T4)
Cortisol levels identified in hair	0.1309 ng/50mg hair	0.1197 ng/50mg hair	0.06989 ng/50mg hair	0.06101 ng/50mg hair

- P3's cortisol range reduced by 0.06 from T1 to T2.