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Author(s): Veid, Natalia; Pollari, Annukka; Hyvönen, Katriina; Pylvänäinen, Päivi

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Dance movement therapy group improves social functioning and increases positive embodied experiences in social situations

Natalia Veid^{a,b}, Annukka Pollari^{a,b}, Katriina Hyvönen^c, & Päivi Pylvänäinen^d

^aDepartment of Psychology, University of Jyväskylä, Jyväskylä, Finland

^bEducation Division department, City of Helsinki, Student Welfare Service Unit, Helsinki, Finland

^c Institute of Rehabilitation, JAMK University of Applied Sciences, Jyväskylä, Finland

^d Tampere University Hospital, Mood disorder Unit, Tampere, Finland

Corresponding author: Natalia Veid
E-mail-address: natalia.veid@gmail.com

Abstract

This Finnish study examined the impacts of a group-form dance movement therapy intervention on the social functioning, attachment styles, and embodied experiences during social situations of its participants. The sample consisted of Finnish working-age adults with diagnosed depression who were randomised into intervention and control groups. Participants responded to surveys at three measurement points: pre- and post-intervention, and a follow-up 3 months later. The quantitative results showed that social functioning increased in the intervention group between the pre-intervention and follow-up measurement points but there was no change in attachment styles. The embodied experiences of participants during social situations were analysed qualitatively. The prevalence of *avoidant reactions* and *insecurity* decreased between the pre-intervention and follow-up measurement points. This study deepens understanding of the embodied experiences depression sufferers encounter in social situations, and provides insight into the ways in which dance movement therapy may be effective in decreasing depressive symptoms.

Keywords: Dance movement therapy; DMT; social functioning; group intervention; CORE-OM; attachment

Introduction

Over 300 million people are suffering from depression worldwide (World Health Organization, 2017). Within the Finnish population, it is estimated that around 5–7% have depression (Isometsä et al., 2021), and the World Health Organization (2017) suggests that depression is the single largest cause of disability globally. Depression impacts people's ability to function in multiple ways. These can include negative perceptions and beliefs regarding one's own body (Papadopoulos & Röhrich, 2014), and impairments in social functioning (Szanto et al., 2012). The potential of dance movement therapy (DMT) to positively affect social functioning in depression sufferers has not previously been widely studied, and this paper aims to investigate this phenomenon.

DMT is a form of creative arts psychotherapy based on movement and embodied experience, focussing on the connection between physical movement and emotional expression (Chaiklin & Wengrower, 2009; Meekums, 2002; Schmais, 1974). In the therapeutic process of movement, the body expresses emotions, and the thoughts and feelings of the participant can be changed through the movement of the body. In DMT, movement and dance are methods to connect with oneself to improve personal strengths, recognise and process emotions, and practice social interaction with others (Meekums, 2002). In group-form, DMT participants have an opportunity to be part of a community and share their experiences with others, which can result in receiving approval, support, and validation from other group members (Chaiklin & Wengrower, 2009). The healing power of group-form DMT is attributed to a combination of social activity, synchronous movement, and vitality of experience (Hanna, 1988).

DMT has had positive outcomes in the treatment of depression (see e.g. Karkou et al., 2019). Previous studies have found that DMT led to increases in the consciousness of one's body, and greater body-mind integration. The main objectives in treating depression with

DMT are to create and support a more positive body image through the embodied expression of emotions and movement (Pylvänäinen, 2003; Pylvänäinen & Lappalainen, 2018), and the development of a more secure attachment style (Punkanen et al., 2014).

The social aspect of DMT could also be relevant in the treatment of depression. Previous negative social experiences could lead to negative predictions regarding future social situations (Kirmayer Ramstead, 2017). Consequently, one might avoid social situations as a coping mechanism (Goossens, 2014). Social isolation could lead to the development or deepening, of depression, and avoiding social situations can also lead to a lack of opportunity to develop social skills. This, in turn, could lead to an inability to function in relationships and solve the interactional difficulties that arise in them (Joiner & Timmons, 2009; Trew, 2011; Wai & Bond, 2004).

According to Joiner and Timmons (2009), depression can decrease the ability to take part in social interaction and to be in intimate relationships. It can also result in a lack of social support systems, poor social skills, insecurity, constant ensuring, and overall suffering in relationships, instead of them being positive resources. Previous research has indicated that DMT can increase feelings of social belonging (Cantrick et al., 2018; Hanna, 1988) and trust in others (Levaniemi & Maaskola, 2019).

Problems in social interaction can be observed through attachment styles, and different attachment styles can be used to predict depressive symptoms (Mikulincer & Shaver, 2012). People with insecure attachment styles are likely to have dysfunctional beliefs of themselves such as interpretations of being worthless and thus have an over-codependency of other people's approval. Insecure people are also likely to have problems with emotion regulation. Consequently, they are prone to depressive symptoms. One cause for the emergence of depressive symptoms in individuals with insecure attachments is the interpretation of inner experiences as being worthless and inadequate. In Punkanen et al. (2014), DMT intervention

significantly increased participants' secure attachment to others, and the authors' assumptions were that shared positive and creative embodied experiences in a DMT setting could strengthen secure attachment styles, which, in turn, would decrease depression. Based on the findings of these studies it would be beneficial to investigate the effects of DMT on attachment styles.

Research questions

DMT has shown positive results as a treatment for depression (e.g., Hyvönen et al., 2020; Karkou et al., 2019), but not enough research has been done to ascertain why DMT is effective. DMT is often performed in groups, but the role of this social interaction has not been widely studied.

The research questions we aim to answer in this study are:

1. Is there a difference in the social functioning and attachment styles of participants after receiving group-form DMT, compared to participants who do not?
2. What kind of embodied experiences do participants report in social situations before and after group-form DMT, and is there a change?

Based on the findings of previous studies, we hypothesise that group-form DMT intervention will increase participants' social functioning and secure attachment styles (Pylvänäinen & Lappalainen, 2018). It is also hypothesised that group-form DMT intervention will lead to positive changes in embodied experiences in social situations (Pylvänäinen, 2010).

Methods

Recruitment of participants

This study is part of a project conducted by the University of Jyväskylä Department of Psychology and funded by The Social Insurance Institution of Finland, which aimed to investigate the effectiveness of group-form DMT in the treatment of depression. Participants were recruited from all over Finland in cooperation with mental health services.

The inclusion criteria for participation were diagnosed depression, severe enough to affect the ability to study or work, a minimum of 3 months of treatment before the DMT intervention, and a written appraisal from mental health services, indicating that an intervention could be beneficial for the participant.

Participants could not have suicidal ideation, psychotic symptoms, or substance abuse problems. Pregnant women or persons with severe pain that restricted their movement could not be included in the study. After the pre-evaluation, 157 participants were recruited, and 109 were taken forward into the study. In cities where the number of participants was small, only non-randomised groups were formed ($n = 43$). Participants who were on disability pension ($n = 5$) had their own separate groups in one city. Altogether, groups were held in 11 different cities in Finland between 2017 and 2018 and were led by 12 therapists.

Data were collected at three measurement points, where participants responded to surveys regarding their depression symptoms, functioning, body image, and attachment styles. At the pre-intervention measurement (P1), comprising data gathered after participants were recruited but before the intervention began, all 109 participants (100%) responded. At the post-intervention measurement (P2), gathered immediately after the intervention, 92 participants (84%) responded. At the three-month follow-up measurement (P3), 77 participants (71%) responded.

In an attrition analysis of the study, participants who only took part in P1 were compared to those who responded at P1 and P2. In addition, those who responded at all points were compared to participants who did not respond to some of the later points. A Little MCAR

test showed that attrition was arbitrary ($\chi^2(21) = 12.884, p = .913$). Attrition analysis showed that participants who had secondary education were overrepresented among those who did not answer the body image questionnaire at P2 and/or P3 (47.1%/22.9%). In turn, participants with a university degree were overrepresented among those who answered the body image questionnaire at those points (28.6%/5.9%). Otherwise, there were no significant differences, in terms of background variables, between those who answered at all points compared to those who did not.

Participants' demographic data

Participants ($n = 109$) were randomised to an intervention group (IG) ($n = 52$) and a control group (CG) ($n = 57$). Demographic data for all participants are presented in Table 1. Baseline demographics were age, educational level, and medication because these variables had been shown to affect the outcome of measures that estimate depression or physical symptoms (Hyvönen et al., 2020; Pylvänäinen et al., 2015). Participants in the IG continued their treatment as usual, which consisted of group support once a week (8%), or discussion support every or every second week (31%), every third or fourth (37%), or every fifth week or more rarely (19%).

Intervention

The intervention was led by trained dance movement therapists who took part in a 12-day training program to prepare. The therapists also attended supervision groups regularly during the intervention delivery period. The DMT intervention consisted of 20 sessions of 75 minutes each, held twice a week for 10 weeks. Group sizes varied from 4 to 10 participants. The intervention evolved with certain themes: a sense of safety in the body, exploration of one's body boundaries, somatic resources, pleasant and unpleasant feelings, mindfulness, and body

awareness. The main methods used to examine these themes were dance and movement exercises based on structured improvisation, body awareness exercises, and reflection through drawing, writing, and verbalisation.

Table 1. Participants' Demographic Data.

Groups	IG (n=52)	CG (n=57)	All (n=109)
Gender (%)			
Female/male	98.1/1.9	94.7/5.3	96.3/3.7
Age (years)			
Mean	41.8	36.5	39.0
Min	18	18	18
Max	63	64	64
Education (%)			
Comprehensive school or equivalent	7.7	5.3	6.4
Upper secondary school	30.8	36.8	33.9
Vocational adult education	11.5	10.5	11.0
Bachelor's degree	26.9	22.8	24.8
Master's degree	21.2	17.5	19.3
Other ¹	1.9	7.0	4.6
Medication (%)			
yes/no	65.4/34.6	47.4/52.6	56.0/44.0

¹ e.g. doctorate, double degree, degree unfinished

Outcome measures

Clinical Outcomes in Routine Evaluation – Outcome Measure (CORE-OM) was used in this research to investigate the social functioning of the participants. CORE-OM is a measurement tool that examines one's psychological functioning. It consists of 34 items, relating to four domains: well-being, symptoms, functioning, and risk (Barkham et al., [2005](#); Connell et al., [2007](#)). The participants choose an answer on a 5-point Likert scale that ranges from 0 (*not at all*) to 4 (*mostly or all the time*), reflecting their latest week. The higher the score, the more difficulties are present in that specific area of psychological functioning (Barkham

et al., 2005). In this study, only the functioning factor of CORE-OM was examined. The functioning factor consists of 12 items and measures everyday functioning and functioning in social relationships (Connell et al., 2007). Mean values were calculated for the functioning factor at all measurement points. Cronbach's alphas for those variables were .800 (P1), .890 (P2) and .890 (P3).

The Relationship Questionnaire (RQ) (Bartholomew & Horowitz, 1991) was used to measure the adult attachment style. This study focussed on the second part of the RQ, which has four items, each describing the behaviour associated with an attachment style (secure, avoidant, pre-occupied, fearful-avoidant) in close adult relationships. Participants chose the description most likely to describe their attachment behaviour by rating each attachment style description on a 7-point Likert scale.

Finally, the Body Image Questionnaire (BIQ) contains 7 open questions about one's bodily experiences in social interactions, appearance, and memories, (Pylvänäinen & Lappalainen, 2018). This study used only responses to the question: *"In your body, how do you typically sense or feel your everyday interactions with others?"*

Statistical analysis

Statistical analysis was completed with the IBM SPSS 25.0 program. The normal distribution of variables was examined using histograms. Mean values of the functioning factor were calculated at all measurement points. The difference between the IG and CG at P1 was examined using an independent *t*-test. Changes in social functioning and attachment styles were analysed using multivariate analyses of variance (MANOVA).

Embodied experiences were catalogued by coding participants' responses to the BIQ at P1 (*n* = 50), P2 (*n* = 42), and P3 (*n* = 36). Themes were formed by two psychology students who worked as researchers in a DMT research group at the University of Jyväskylä.

First, two researchers coded categories independently using qualitative content analysis and compared the findings. After that, the data were coded by both researchers. The first four main themes were formed by placing similar and most mentioned experiences into groups. There were fewer positive and neutral responses in comparison to negative experiences, such as shame and anxiety, which were described more diversely. Consequently, more themes describing negative experiences were established, in order to gain precise analysis and an actual variety of answers. The final theme categories were 1) anxiety, 2) avoidant reactions, 3) positive experiences, 4) physical reactions, 5) insecurity, 6) shame and 7) nothing special. These themes included multiple subthemes. Some of these experiences were overlapping, which made definitions difficult. These experiences were discussed and coded together.

Using Krippendorff's alpha, the inter-rater reliabilities for the themes were as follows: (P1, P2, P3) anxiety .84, .95, .94; avoidant reactions .84, 1.0, 1.0; positive experiences .88, 1.0, 1.0; physical reactions .80, .87, .87; insecurity .90, .84, 1.0; shame 1.0, 1.0, .87; nothing special .84, .84, .85. The limit value for good reliability in Krippendorff's alpha is .80 (De Swert, 2012), so the reliability of the established themes was high.

Results

Demographic results

From the demographic statistics, the only use of medication was related to better social functioning at P1 and P2. However, the relationship between using medication and changes in social functioning was not statistically significant [$F(2.144) = 2.847, p = .061$] when the groups were analysed separately. Subsequently, this was not analysed further.

Attachment styles and baseline demographics were not related. The IG did not show a statistically significant change in attachment styles (safe: [$F = (2.146) = .091$], fearful:

[$F = (2.146) = .013$], anxious: [$F = (2.146) = .159$], dismissive: [$F = (2.146) = 1.943$]).

Subsequently, attachment style was also excluded from further analysis.

Changes in social functioning

There was no difference between the IG and CG in social functioning [$t(107) = -.596, p = .553$] at P1. Means and standard deviations for each group at each measurement point are presented in Table 2. The IG and CG were significantly different in the level of change in social functioning when considered across all measurement points [$F(2.146) = 3.622, p < .05$] as

Table 2. Means and standard deviations of CORE-OM questionnaire responses for participant groups.

Group	P1		P2		P3	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
IG	1,6757	0,61	1,4234	0,81	1,3784	0,77
CG	1,8202	0,54	1,8144	0,58	1,8421	0,59

Table 3. Change in social functioning between groups at different measurement periods.

Measurement time	F-value	Effect-size ¹ (η_p^2)
P1-P3	$F(1.73)=5.679^*$.072
P1-P2	$F(1.73) = 3.898^i$.051
P2-P3	$F(1.73)=0.412$	

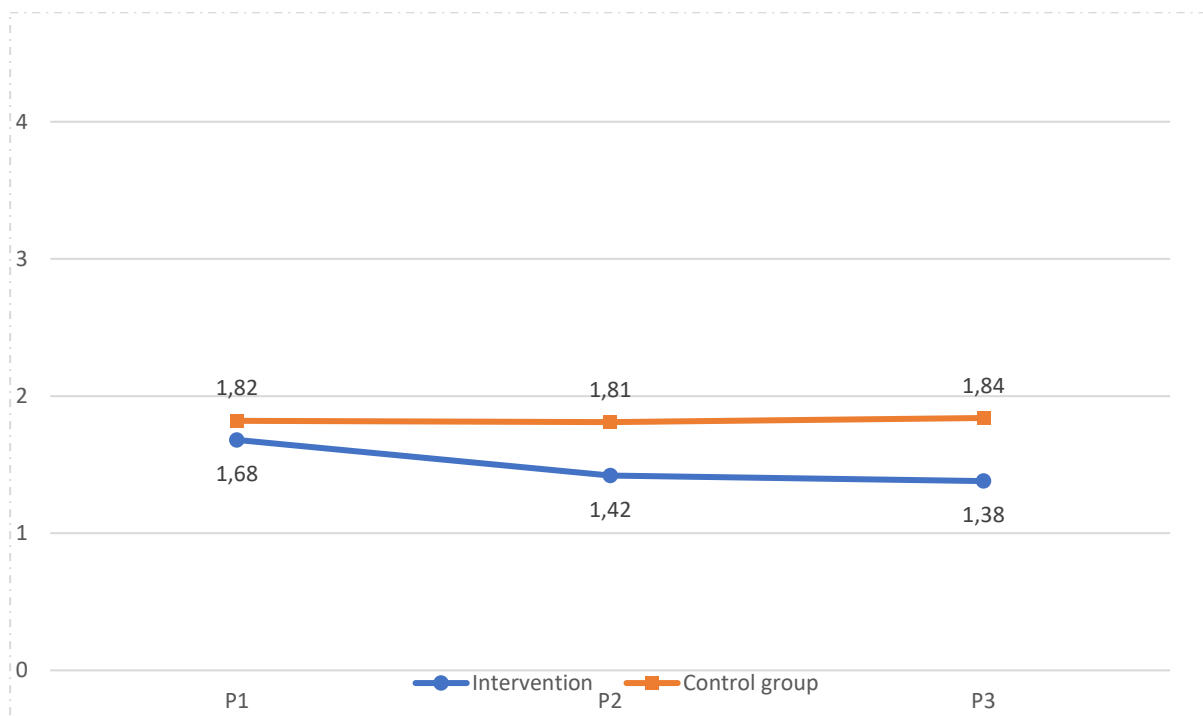
note * $p < .05$, ⁱ $p = .052$

¹the scale of the effect size: small = 0.01, medium = 0.06, large = 0.14 (Cohen, 1988)

shown in Table 3. In addition, there was an observable difference between the IG and CG in the level of change between P1 and P2. The interaction effect of time and group was significant, as social functioning increased in the IG, but did not change in the CG (see [Figure 1](#)).

Within-group changes in social functioning were significant in the IG [$F(2.144) = 4.813, p < .01$]. There were significant changes in social functioning between P1 and P2 ($F(1.72) = 4.344, p < .05$), and P2 and P3 ($F(1.72) = 8.068, p < .01$).

Figure 1. Change in social functioning between the groups at each measurement points.



Changes in embodied experiences

The number of descriptions of *positive experiences* in social interaction stayed the same across the measurement points. Descriptions of *avoidant reactions* decreased over time. Descriptions of *insecurity* decreased between P1 and P3 but slightly increased from P2 to P3. Descriptions of *nothing special* increased at P2 and remained at approximately the same level at P3. *Anxiety*, *physical reactions*, and *shame* stayed approximately the same across all points. Overall, *shame* was the least described experience of the themes. The number of responses in each theme at each measurement point is presented in Figure 2, and the keywords for each theme are in Table 4.

Figure 2. The number of experiences reported in each theme at each measurement point.

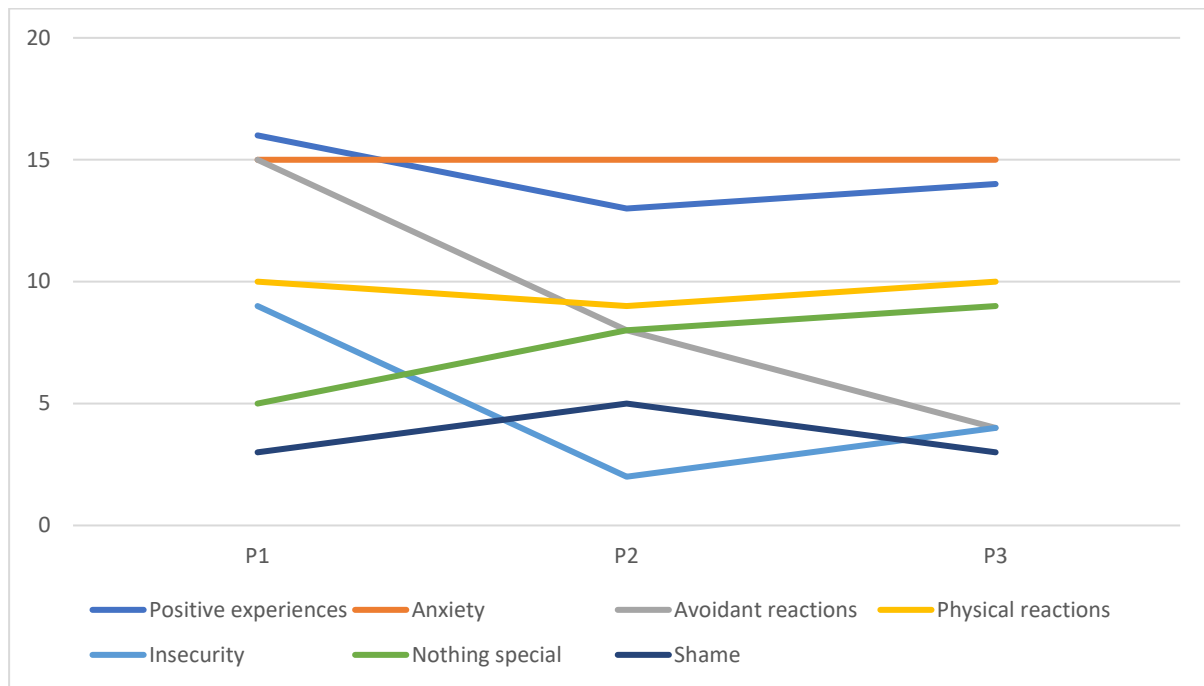


Table 4. Embodied experience themes and related keywords.

Themes	Keywords
1. Anxiety (n = 15,15,15) (n at P1, P2, P3)	Nervousness, anxiousness, panic, exhaustion, tiredness, feeling heavy, feeling stuck, uneasiness, stress, increased body awareness, negativity, discomfort
2. Positive experiences (n = 16,13,14)	Empowering, positive mood, feeling relaxed with familiar people, relieved, easier to interact in social media, open feeling in the body, willingly with other people, experiencing own body attractive, energizing, relaxing, flirting, nice, good feeling, calmness, warmth, closeness, freedom
3. Avoidant reactions (n = 15,8,4)	Needing own space, wanting to keep a distance from others, withdrawing from interaction, escaping, fear of physical intimacy, fear of encounters, experiencing the self small, making the self smaller, need to hide, fear of being seen, covering shame, fear that others notice, covering own body with clothes, curling up
4. Physical reactions (n = 10,9,10)	Stomachache, nausea, blushing, tightness in the chest, neck and shoulder tension, headache, tightness, stiffness

5. Insecurity (n = 9,2,4)	Feeling outsider, negative comparison to others, being faulted, worrying what other people think, hopelessness, difficulties in creating relationships, feeling inferior, shyness, being afraid
6. Nothing special (n = 5,8,9)	Not observing or thinking of the experiences in the body, neutral, normal
7. Shame (n = 3,5,5)	Shame, feeling embarrassed, being ashamed of own appearance

Discussion

The aim of this study was to investigate the changes in participants' social functioning, attachment styles, and embodied experiences as a result of a group-form DMT intervention. Part of the first hypothesis, that DMT would increase social functioning, was supported by the results. Social functioning increased from P1 to P3 in the IG, whereas in the CG there was no change. However, there was no change in attachment styles between the measurement points. The second part of the study examined qualitatively whether embodied experiences would change in social situations following a DMT intervention. Participants' experiences were grouped into seven themes: *positive experiences*, *avoidant reactions*, *anxiety*, *physical reactions*, *insecurity*, *nothing special*, and *shame*. Following the DMT intervention, the number of experiences in *avoidant reactions* and *insecurity* decreased, and *nothing special* increased observably. The other themes stayed relatively constant across the measurement points. The second hypothesis, that group-form DMT intervention would lead to positive changes in embodied experiences, could not be analysed statistically. However, the qualitative observations support the first hypothesis.

Previous negative experiences in social situations

The majority of the qualitative themes related to negative embodied experiences. The high amount of negative responses, especially *anxiety* and *avoidant reactions*, could be because

people suffering from depression have had negative experiences in previous social situations. These experiences, which can include sexual abuse and domestic violence (Pylvänäinen et al., 2020), might lead one to feel excluded, unaccepted, and invalidated.

Previous negative experiences might lead to negative predictions about the self in social situations that are formed cognitively but are also stored at the embodied level. Kirmayer Ramstead (2017) suggests that the brain's main function is to predict the world through sensory information that impinges on its receptors. The brain system acts to minimise the differences between prediction and actual sensory input, either by changing the embodied experience to equate to the predicted world or by changing the statistical models that create the predictions in various neural networks (Kirmayer Ramstead, 2017). Avoiding social situations can be a coping mechanism, but might also lead to developing depressive symptoms. In turn, depression might provoke further distancing of oneself in social situations (Joiner & Timmons, 2009; Trew, 2011), which creates a situation where one has less opportunity to strengthen social skills.

Despite the high incidence of mentions of *anxiety* and *avoidant reactions*, *shame* and *insecurity* were less frequent themes. The lower incidence of responses in these themes might be because they were treated separately. It is plausible that *insecurity* could be linked to *shame*, and observing these as a unified theme would give a better representation of the experiences. Humans have a basic need to connect with others and shame could be caused by not being able to connect in an expected manner, leading to insecurity in social situations.

Despite a significant increase in social functioning, DMT did not affect the experience of *shame*. This could be explained by the intervention being only 10 weeks long and *shame* and negative attachment styles being deeply rooted coping mechanisms. Change in these aspects might not be possible in such a short amount of time. However, the decrease in *avoidant reactions* and *insecurity* shows that, during DMT, it might be possible to

experience the self and one's own body positively in relation to others. This could lead to a decrease in *shame* and a positive change in attachment styles in the longer term.

That participants' attachment styles did not change is at odds with the findings of a previous study that showed an increase in secure attachment styles following DMT (Punkanen et al., 2014). This difference could be related to slow neural changes in negative predictions related to social attachments (Kirmayer Ramstead, 2017). Decreased *insecurity* and *avoidant reactions* could exemplify the attachment toward one's own body. Acceptance of one's own body is a requirement for positive change in the attachment style – to be more secure in social situations. In this study, however, *shame* and *anxiety* did not decrease. It is possible that the DMT intervention began the process of accepting one's own body, and over a longer period we might observe attachment styles changing as well.

The *nothing special* theme can be interpreted as a positive, neutral, or negative experience. Considering the heightened negative self-observation that is common in depression, it might be seen as a positive to reach a neutral evaluation of the self. On the other hand, a *nothing special* experience might express difficulties in feeling positive in the body. In depression, the predictions in sub-cortical and conscious levels are usually negative because of previous experiences (Kirmayer Ramstead, 2017). These might lead to negativity bias in our evaluation of ourselves and our environment. In addition, negative experiences in social situations can cause a coping mechanism to develop, where embodied experiences and emotions are avoided. In this study, the *nothing special* theme might reflect this phenomenon.

Positive embodied experiences

In addition to the high number of responses to the themes of *anxiety* and *avoidant reaction*, one of the most common themes was *positive experiences*, which were frequently described in relation to close relationships. The number of reported *positive experiences* was broadly

consistent across the measurement points. Having a close relationship could increase the possibility of *positive experiences* in social situations. The ability to feel *positive experiences* could also be a beneficial starting point for the DMT process.

Group-form DMT can offer an opportunity for social interaction, which can enable positive experiences (Chaiklin & Wengrower, 2009). In DMT, rhythmic dance in a group setting can help create connections with other group members. Social interactions are also made visible in a new way through movement (Payne, 2003). The participant can experience being appreciated and accepted as part of the group (Chaiklin & Wengrower, 2009). Thus, the participants can take part in social interaction, which can strengthen the sense of agency, and, through that strengthening, support social connections in other areas of life. Increased connectedness to others can decrease the symptoms of depression and social isolation. This is supported by the findings of previous studies where DMT intervention increased participants' sense of agency (Mills & Daniluk, 2002; Pylvänäinen et al., 2020), trust in others, freedom of emotional expression (Levaniemi & Maaskola, 2019), and extroversion (Punkanen et al., 2014).

Body awareness in DMT

Processing emotions, and exploring social interaction through movement, could be explanations for increased social functioning following DMT. DMT can create a safe environment in which to increase body awareness and offer a corrective experience where one can be accepted as they are. In the IG, participants' acceptance of their own bodies improved and, as found in other studies, this greater acceptance can lead to greater self-expression and easier interpretation of others' emotions (Punkanen et al., 2014; Roberts, 2016). Participants learn to give greater attention to bodily experiences when relating to others. This learned awareness can also create a curious and flexible intrapersonal way of relating to one's own body

(Pylvänäinen, 2010). This can create the conditions for an individual to settle into and more easily sense their own body, which, in turn, could lead to increased social functioning.

Decreased *insecurity* could be explained by the positive change in body image as awareness of the body increases (Pylvänäinen, 2003; Pylvänäinen et al., 2020; Pylvänäinen & Lappalainen, 2018). In this study, *insecurity* decreased from P1 to P3, but there was a slight increase from P2 to P3. Decreased *insecurity* following DMT could decrease participants' dependency on reassuring feedback from others regarding their acceptance, as the person learns to trust their own embodied perceptions. This could lead to further decreases in insecurity in social situations outside the IG and reinforce positive emotions instead of negative ones.

In addition to *insecurity*, *avoidant behaviour* decreased significantly from P1 to P3. People tend to avoid situations that they find difficult or unpleasant, or where they consider their own agency insufficient. DMT offers a safe space in which to practice being in one's own body with a sense of comfort and safety, and interact with others from this position (Payne, 2003), thus decreasing the need to avoid social situations.

Limitations and further research

The strengths of the current study were the randomised and controlled design and the follow-up measurement. The combination of quantitative and qualitative data provided a broader understanding of the changes occurring in social functioning after group-form DMT. This study also had a larger sample than previous randomised trials. In a further study, we suggest that it could be beneficial to make the follow-up time longer to better estimate the reliability of changes over time.

In the current study, there was bias in gender distribution because the majority of the participants were female. In a further study, it would be useful to study these phenomena with wider gender representation in the data. There are also concerns over the validity of the

qualitative analysis because of the small sample size and the missing data at some measurement points.

In this study, changes in attachment style were measured using only one instrument: a question taken from the RQ. It would be useful to use the full RQ or another instrument that could perhaps offer a broader, yet more precise, way to measure attachment styles and the changes in them. The increase in social functioning, and decrease in anxiety and avoidant reactions found in this study support further investigation of the effects of DMT on attachment styles. It could also be beneficial to examine the social functionality and atmosphere within each of the DMT groups because each group is unique and differences in these aspects may impact participants' individual changes in social functioning and body image.

There were missing data from the embodied experiences questionnaire at later measurement points, consequently, the results could not include the whole sample. P1 data was gathered face-to-face whereas P2 and P3 data were gathered remotely using a paper questionnaire sent to participants' homes. This might account for lower participation rates in the later measurement points.

Finally, because this study organised the answers to the body image into different themes, it could be beneficial to explore the causes and background underlying each theme. In addition, the small sample size prevented statistical observation of the qualitative findings.

Conclusions

Our results showed that group-form DMT can improve participants' social functioning and embodied experiences. They also brought depth to our understanding of the diversity of embodied experiences participants had in social situations. This study's results complement the findings of previous studies and highlight one of the ways in which DMT may be effective in decreasing depressive symptoms.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Data availability statement

The datasets used in this study are available, upon request, from the corresponding author.

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Notes on contributors

Natalia Veid, works as a clinical psychologist at the City of Helsinki. Her work focuses on promoting well-being and treating mild to moderate mental health issues among students of vocational school. She conducted this research while studying at the University of Jyväskylä.

Annikka Pollari, is a clinical psychologist and a practical nurse. She works in the student welfare services at elementary schools in Helsinki. Her work focuses on psychological interventions and assessments. She conducted this research while studying at the University of Jyväskylä.

Katriina Hyvönen, works as a Senior Researcher at the JAMK University of Applied Sciences in Jyväskylä and in private practice as a Dance Movement Therapist and Psychotherapist. Her research focuses on psychological and therapeutic interventions in promoting well-being and in the treatment of depression.

Päivi Pylvänäinen, a clinical psychologist, dance movement therapist (MA in CAT) and researcher. She has researched the use of dance movement therapy in the treatment of adults with depression and the body image of depressed patients. She is the president of the Finnish Dance Therapy Association.

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